servers is able to decode messages from the smartcard without possibility of any server 11 compromising the system by forging messages.

To further prevent tampering messages may be padded out with extra data, prior to encryption, that is randomly generated each time a message is sent. The messages may also be padded out to the same length each time. Each time an encrypted message must be resent (eg. due to a system error) it will be different. It will not therefore be possible to determine which messages are associated with which events. The recipient may ignore the extra data.

Server

The server 11 functions much as a server for a traditional distributed gaming system would, with some additional features:

- An account is maintained for each smartcard that exists. In addition to player accounting and games information the account holds the encryption key(s) used for the smartcard and other information required to monitor security.
- Software to detect tampering.
- Encryption for smartcard communications and highly secure storage of smartcard keys.
- The server 11 reads the game type played and verifies the gamble. The outcome and amount bet are used to adjust the players account. Any discrepancy between the server determined result and that of the game console are either system bugs or an attempt at tampering.

Security Server

Ensuring security of the server 11 may be a difficult and expensive process. In theory any software modifications on the server 11 require complete recertification of the software.

An encryption server 113 (See Figure 9) may be provided to physically separate the functions of the server 11 and encryption. When software unrelated to security is changed on the server 11 the security system does not need to be recertified. All communications between the server 11 and consoles 12 passes through the security server 113.

To match the bandwidth of the game server 11 and security server 113 to the application one or more game servers 11 may be used with one or more security servers 113, in any combination.

Hierarchical Server Architecture

A large network may be constructed containing an hierarchy of servers (See Figure 10). The function of the servers is somewhat different to that described for a single server system. Advantages over a single level network are possible:

- When random numbers are generated by the top level server 111 the games cannot operate without it, ensuring a high level of control. The top level server 111 is able to maintain highly accurate accounting of the entire system.
- The lower level servers 112 need not have a high level of security if they are not involved in payouts, in which case payouts are determined by a higher level server 111 that does have high level security.
- The low level servers 112 are used for local monitoring and accounting and can improve response time.
- In a very large system the load is distributed across multiple servers. Lower level servers 112 off load communications traffic.
- Communications from the console 12 to its server 11 must be relatively fast to keep games responsive. Communications between the levels of server need not be fast, if the top level server 111 generates a large number of random numbers and downloads them to the lower level servers 112 for later use. Games can proceed without immediate communication to the top level server 111 until the supply of random numbers runs out.

Smartcards 23 may use public key encryption (or digital signatures) on game outcome messages, with the public key known to each of the appropriate levels of servers. In this implementation both the low level server 112 and higher level server 111 can keep track of games and accounting information. The low level server 112 can verify transactions, but not modify them.

Examples of possible implementations are:-

State wide networks spanning an entire state, such as Nevada in the USA or Victoria in Australia. The lower level servers 112 would be located in casinos or clubs and the top level server 111 controlled by the governing body of that state.

On Internet a central high security server 113 distributes games (including random numbers) to lower security servers. The lower level servers 112 have a reduced responsibility to not loose games or results, but since it is not possible for them to tamper with games, security requirements

are reduced. Attempts to tamper are easily detected by the top level server 111.

A low level server 112 is implemented on an aeroplane. Communications between the aeroplane server 112 and ground based high level, high security server 113 may be slow, or only used when the plane has landed.

Verification Server

In an alternate implementation verification of games and accounts also takes place on a verification server, in addition to verification by the normal game server. This enables enhanced security as some types of tampering at the game server can be detected, depending on the system implementation used. The verification server may be run, for example, by a government controlled regulator to audit commercial establishments.

Copies of all communications to the smartcard affecting game outcomes, from the smartcard to server reporting game outcomes, and acknowledgments, are sent by the game server to the verification server.

Messages are encrypted, such that the verification server can read messages between the game server and smartcard. This may require that the verification server has the encryption keys shared by the game server and smartcard, or that an encryption method is used that allows a three way secure communication. Preferably, the game and verification server cannot forge the identity of the other.

Verification Mode

The secure storage means may be provided with a verification mode in which the memory contents of the secure storage means may downloaded to an external device. Preferably, in the interests of security, secret encryption keys stored within the secure storage means are not disclosed. Crytographic technuiques are used to ensure only an authorised party is able to initiate the verification mode. Typically it is the server using its secret key which is authorised, but other parties may be used when the secure storage means is provided with a secret verification key. Preferably invocation of device verification disables the secure storage means from futher use, except for device verification, and minimal changes are made to memory contents.

Downloaded Console Code

Traditional gaming machines do not allow the downloading of code because tampered code can cheat the system. Because console security is

solely dependent on the smartcard and encrypted communications, then it is perfectly reasonable to download code to the console 12 as part of the game package. No possible code can compromise the security of the system, except in so far as it may mislead the player into the nature of the game being played. However, to further enhance security, code may be authenticated with methods such as digital signatures or encryption.

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

CLAIMS:

1. A method of operating a gaming system including at least one gaming console, the console including secure storage means and a user interface allowing a user to initiate a game and observe a result, the method including the steps of:

storing game or gamble outcome information in the secure storage means for use by the console to produce a game or gamble outcome respectively; and

upon receipt of a user input initiating a game, producing a game play sequence including a game and/or gamble outcome indication determined by the game or gamble outcome information stored in the secure storage means alone or in combination with a user input.

2. The method of claim 1, wherein the information stored in the secure storage means is a sequential list of outcome information relating to a sequence of future games to be played on the console.

3. The method of claim 2, wherein the game outcome information stored in the secure storage means, is in the form of a set of random numbers sufficient to generate an entire game outcome.

4. The method of claim 1, wherein the information stored in the secure storage means is a random number seed from which outcome information relating to a sequence of future games to be played on the console is generated by operation of a random number generator.

5. The method of claim 4, wherein the random number generator is provided as a pseudo-random number algorithm.

6. The method of claim 4 or 5, wherein the game outcome information generated by the random number generator, is in the form of a set of random numbers sufficient to generate an entire game outcome.

7. The method of claim 4 or 5, wherein the outcome information is a random number used to determine a gamble outcome and the secure processing means in the console then chooses a game outcome which will achieve that gamble outcome.

8. The method as claimed in claim 7, wherein the game outcome chosen depends upon the game being played.

9. The method as claimed in any one of claims 7 or 8, wherein the game is chosen by the player.

10. The method as claimed in any one of claims 7, 8, or 9, wherein the game is chosen by the console.

11. The method as claimed in any one of claims 7, 8, 9 or 10, wherein the game being played includes a plurality of game outcomes corresponding to the gamble outcome corresponding to the random number and one of the game outcomes is chosen by the console.

12. The method as claimed in any one of claims 10 or 11, wherein games or outcomes chosen by the console are chosen at random.

13. The method as claimed in any one of claims 10 or 11, wherein games or outcomes chosen by the console are chosen sequentially.

14. The method as claimed in any one of the preceding claims wherein the secure storage means is removably connectable to or readable and writable by the console.

15. The method of claim 14, wherein the information relating to future game outcomes stored in the secure storage means is stored before the secure storage means is connected to the console.

16. The method of claim 15, wherein the secure storage means is a programmable card which is preprogrammed with outcome information before or after acquisition by a user and is inserted into the console by the user to produce one or more game outcomes on the respective console.

17. The method as claimed in any one of claims 1 to 16, wherein the production of the game or gamble outcome determination is performed in a secure processing means connected to the secure storage means by way of a secure communications path.

18. The method as claimed in claim 17, wherein communications over the secure communications path are secured by encryption.

19. The method as claimed in claim 17, wherein communications over the secure communications path are secured by physical security means.

20. The method as claimed in any one of claims 17, 18 or 19, wherein the secure processing means is a smartcard or smartcard chip which is permanently fixed in the console.

21. The method as claimed in any one of claims 1 to 13, wherein the secure storage means is a smartcard or smartcard chip which is permanently fixed in the console.

22. The method as claimed in any one of claims 1 to 20, wherein the secure storage means is a smartcard which is removable from the console.

23. The method of claim 21 or 22, wherein the secure storage means carries player identification and credit information.

24. The method of any one of claims 1 to 14, wherein a gaming server is provided and is in communication with each gaming console, the gaming server being arranged to calculate the outcome information in relation to a game for storage in a secure storage means and to send outcome signals to the console in which the secure storage means is located, the method including the steps of:

in the gaming server, precalculating data which partially or completely defines an outcome of at least one game on one console, and generating and sending to the respective console a signal indicating the precalculated data prior to a user initiating the game on the console;

in the console, receiving the data signal and storing the data as part or all of the game or gambleoutcome information in the secure storage means.

25. The method of claim 24, wherein the console, upon receipt of the user input to initiate a game, generates and sends a signal to the gaming server indicating that the stored information has been used to determine the respective game or gamble outcome.

26. The method of any one of claims 1 to 14, wherein a gaming server is provided and is in communication with each gaming console, and each console, upon receipt of the user input to initiate a game, generates and sends a signal to the gaming server indicating that the stored information has been used to determine the respective game or gamble outcome.

27. The method as claimed in claim 24, 25 or 26, wherein the gaming server additionally performs the function of an accounting server whereby the accounting server is arranged to maintain credit account information in relation to a player playing a game on the gaming system and to send accounting information to the console on which the player is playing.

28. The method as claimed in any one of claims 1 to 26, wherein an accounting server is provided and is in communication with each gaming console, the accounting server being arranged to maintain credit account information in relation to a player playing a game on the gaming system and to send accounting information to the console on which the player is playing.

29. The method of claim 27 or 28, wherein the console, upon receipt by of the user input to initiate a game, generates and sends data to the accounting server to allow the accounting server to update the players account.

30. The method of claim 24, wherein the console communicates to the gaming server data to enable the gaming server to verify the game.

31. The method of any one of claims 24 to 30, wherein the console saves data sent to each server and upon receipt of a secure signal indicating that the respective server has received the data then deletes the data from memory.

32. The method of any one of claims 24 to 31, wherein the precalculated data is transmitted from the game server to the secure storage means in the console and the game verification data is transmitted by the secure storage means to the game server.

33. The method of claim 27, 28 or 29, wherein the accounting data is transmitted from the server to the secure storage means in the console.

34. The method of claim 25 or 26, wherein the secure storage means, is not in communication with the gaming server when the game is played, and each time the secure storage means is next connected to the gaming server, it will generate and send a signal to the server indicating the stored game outcome information that has been used.

35. The method as claimed in any one of claims 24 to 34, wherein signals generated by the server and console to transmit game outcomes or to indicate game play, are encrypted prior to being sent.

36. The method of claim 35, wherein encrypted signals are each provided with a piece of unique information prior to encryption such that different signals containing the same game information are different to one another after encryption.

37. The method as claimed in any one of claims 24 to 36, wherein the server includes an auditing function to check the game and/or gamble outcome data returned from the secure device in the console.

38. The method as claimed in claim 35, 36 or 37, wherein the game outcome calculation and the encryption and decryption of signals to and from the game server are performed in the console by the smartcard.

39. The method as claimed in any one of claims 24 to 38, wherein an hierarchical network of gaming servers are provided with the console connected to a low order, low security network server which performs low

security and routine control and communication, while passing high security signals to higher level gaming servers having higher security.

40. The method as claimed in claim 1, wherein the game or gamble outcome information represents a plurality of predetermined gamble outcomes which are stored in the secure storage means.

41. The method as claimed in claim 40, wherein the game outcome information is stored as a list of values representing a plurality of game outcomes.

42. The method as claimed in claim 41, wherein all unused values in the secure storage means, except for an initial value, are hidden and playing games discloses the values one by one.

43. The method as claimed in claim 40, wherein the game outcome information is stored as an initial value representing a game outcome, and values representing subsequent games are generated from the initial value using a pseudo-random number algorithm.

44. The method as claimed in claim 40, 41, 42 or 43, wherein the secure storage means is a smartcard or smartcard chip.

45. The method as claimed in claim 44, wherein the player can redeem the smartcard device at any time for the amount of the last disclosed value.

46. The method as claimed in claim 45, wherein the redemption of the value on the smartcard is carried out via secure communication between smartcard and an accounting server.

47. The method as claimed in claim 45 or 46, wherein the last disclosed value of the smartcard is the sum of the value of gamble outcomes for all games played on the smartcard.

48. The method as claimed in claim 45, 46 or 47, wherein upon initiation of a game by a player, the console retrieves the new value of the smartcard device and displays an appropriate game sequence.

49. The method as claimed in claim 48, wherein the player acquires a smartcard device with a fixed number of values.

50. The method as claimed in claim 49, wherein the smartcard device is provided with a list of predetermined outcomes, and game play includes a step in which the player makes a bet on the outcome of each game.

51. The method as claimed in claim 50, wherein for each outcome disclosed the player first makes a bet, which is written to non-volatile

memory in the smartcard device, and the total value owed to the player is calculated from the wins and losses for each bet and outcome.

52. The method as claimed claim 51, wherein the player redeems the smartcard device for a latest value owed to the player.

53. The method as claimed in claim 52, wherein the secure storage on the smartcard device is accessed via controlled access provided by the smartcard device.

54. The method as claimed in claim 53, wherein the secure storage on the smartcard is accessed via a secure communications system within the console.

55. The method as claimed in claim 54, wherein the secure communications system is provided by a further smartcard device.

56. The method as claimed in any one of claims 40 to 55, wherein the smartcard device is programmed with multiple functions, only one of which is a gaming accelerator.

57. The method of claim 56, wherein the smartcard device is programmed for use as an ID card and/or a credit card and/or a bank ATM card.

58. The method of claim 57, wherein the protocol to access the smartcard device is compatible with another mode of the smartcard.

59. The method as claimed in any one of claims 24 to 39, wherein the console sends a signal to the secure storage means describing a state of a game being played to the game to the server.

60. The method of claim 59, wherein the secure storage means encodes the message for transmission to the server.

61. The method of claim 59 or 60, wherein the message indicates start of game, end of game, player selections, game type, or amount bet.

62. A gaming system including at least one gaming console, the console including secure storage means and a user interface allowing a user to initiate a game and observe a result, the system including:

secure storage means for storing game or gamble outcome information used by the console to produce a game or gamble outcome; and

game control means in the console arranged to receive a user input initiating a game and to produce a game play sequence including a game and/or gamble outcome indication determined by

the game or gamble outcome information stored in the secure storage means alone or in combination with a user input.

63. The system of claim 62, wherein the information stored in the secure storage means is a sequential list of outcome information relating to a sequence of future games to be played on the console.

64. The system of claim 63, wherein the game or gamble outcome information stored in the secure storage means, is in the form of a set of random numbers sufficient to generate an entire gamble outcome.

65. The system of claim 64, wherein the information stored in the secure storage means is a random number seed from which outcome information relating to a sequence of future games to be played on the console is generated by operation of a pseudo-random number algorithm.

66. The system of claim 65, wherein the game outcome information generated by the pseudo-random number algorithm, is in the form of a set of random numbers sufficient to generate an entire game outcome.

67. The system of claim 66, wherein the outcome information is a random number indicating a gamble outcome value and the console then chooses a game outcome which will achieve that gamble outcome value.

68. The system as claimed in any one of claims 62 to 67, wherein the secure storage means is removably connectable to or readable and writable by the console.

69. The system of claim 68, wherein the information relating to future game outcomes stored in the secure storage means is stored before the secure storage means is connected to the console.

70. The system of claim 69, wherein the secure storage means is a programmable card which is preprogrammed with outcome information before or after acquisition by a user and is inserted into the console by the user to produce one or more game outcomes on the respective console.

71. The system as claimed in any one of claims 62 to 70, wherein a secure processing means is provided to produce the game or gamble outcome indication and is connected to the secure storage means by way of a secure communications path.

72. The system as claimed in claim 71, wherein the secure processing means is a smartcard or smartcard chip which is permanently fixed in the console.

73. The system as claimed in any one of claims 62 to 67, wherein the secure storage means is a smartcard or smartcard chip which is permanently fixed in the console.

74. The system as claimed in any one of claims 62 to 72, wherein the secure storage means is a smartcard or smartcard chip which is removable from the console.

75. The system of claim 74, wherein the secure storage means carries player identification and credit information.

76. The system of any one of claims 62 to 75, wherein a gaming server is provided in communication with each gaming console, the server being arranged to calculate the outcome information in relation to a game for storage in a secure storage means and to send game or gamble outcome signals to the console in which the secure storage means is located, and the console including receiving means for receiving the game or gamble outcome signal and storing the information carried in the signal as the game or gamble outcome information in the secure storage means.

77. The system as claimed in claim 76, wherein the server includes an auditing means for checking game and/or gamble outcome data returned from the secure device in the console.

78. The system of any one of claims 62 to 75, wherein a gaming server is provided in communication with each gaming console, the server including an auditing means for checking game and/or gamble outcome data returned from the secure device in the console.

79. The system as claimed in claim 76, 77 or 78, the server and console each includes encryption and decryption means to encode transmission of game outcomes and/or transmissions indicating game play.

80. The system as claimed in claim 77, wherein the encryption and decryption means in the console is a smartcard.

81. The system as claimed in any one of claims 76 to 80, wherein an hierarchical network of gaming servers are provided with the console connected to a low order, low security network server which performs low security and routine control and communication, while passing high security signals to higher level gaming servers having higher security.

82. The system as claimed in claim 62, wherein the game outcome information represents a plurality of predetermined gamble outcomes which are stored in the secure storage means.

83. The system as claimed in claim 82, wherein the secure storage means is a smartcard or a smartcard chip.

84. The system as claimed in claim 83, wherein the secure storage device is arranged to keep hidden all unused values until disclosed by playing a respective game.

85. The system as claimed in claim 84, wherein the console is arranged to display an appropriate game sequence in which it retrieves, the new value of the smartcard device upon initiation of a game by a player.

86. The system as claimed in claim 85, wherein the smartcard device is originally provided with a fixed number of values.

87. The system as claimed in claim 86, wherein the smartcard device is provided with a list of predetermined outcomes, and the console includes a bet input means arranged to receive a bet on the outcome of a game.

88. The system as claimed in claim 87, wherein a non-volatile memory is provided in the smartcard device for recording player bet values , and the total value owed to the player.

89. The system as claimed in claim 88, wherein the smartcard device is provided with controlled access means in communication with the secure storage means for secure communication therewith.

90. The system as claimed in claim 88, wherein the console is provided with a secure communications system for secure communication with the secure storage device.

91. The system as claimed in claim 91, wherein the secure communications system is provided by a further smartcard device.

92. The system as claimed in any one of claims 83 to 91, wherein the smartcard device which provides the secure storage means is programmed with multiple functions, only one of which is a gaming accelerator.

93. The system of claim 92, wherein the smartcard device which provides the secure storage means, is programmed for use as an ID card and/or a credit card and/or a bank ATM card.

94. The system of claim 93, wherein the protocol to access the smartcard device which provides the secure storage means, is compatable with another mode of the smartcard.

95. The system as claimed in any one of claims 76 to 81, wherein the console sends a signal to the server via the secure storage means describing a state of a game being played to the game to the server.

96. The method of claim 95, wherein the secure storage means encodes the message for transmission to the server.

97. The method of claim 95 or 96, wherein the message indicates start of game, end of game, player selections, game type, or amount bet.

98. A secure storage means for use in a gaming console which includes a user interface allowing a user to initiate a game and observe a result, the secure storage means being arranged to store game or gamble outcome information used by the console to produce a gamble outcome.

99. The secure storage means of claim 98, wherein the information stored in the secure storage means is a sequential list of outcome information relating to a sequence of future games to be played on the console.

100. The secure storage means of claim 99, wherein the game outcome information stored in the secure storage means, is in the form of a set of random numbers sufficient to generate an entire gamble outcome.

101. The secure storage means of claim 100, wherein the information stored in the secure storage means is a random number seed from which outcome information relating to a sequence of future games to be played on the console is generated by operation of a pseudo-random number algorithm.

102. The secure storage means of claim 101, wherein the game outcome information generated by the pseudo-random number algorithm, is in the form of a set of random numbers sufficient to generate an entire game outcome.

103. The secure storage means of claim 101, wherein the outcome information is a random number indicating a gamble outcome value.

104. The secure storage means as claimed in any one claims 98 to 105, wherein the secure storage means is arranged to be removably connectable to or readable and writable by the console.

105. The secure storage means of claim 98, wherein the information relating to future game outcomes stored in the secure storage means is stored before the secure storage means is connected to the console.

106. The secure storage means of claim 105, wherein the secure storage means is a programmable card which is preprogrammed with outcome information before or after acquisition by a user and is arranged to be insertable into the console by the user to produce one or more game outcomes on the respective console.

107 The secure storage means as claimed in any one of claims 98 to 106, wherein a secure processing means is provided, and the secure storage means is arranged to be connected to the secure processing means by way of a secure communications path, and the secure processing means is arranged to provide the gamble outcome.

108. The secure storage means as claimed in any one of claims 98 to 103, wherein the secure storage means is a smartcard or smartcard chip which is arranged to be permanently fixed in the console.

109. The secure storage means as claimed in any one of claims 98 to 107, wherein the secure storage means is a smartcard which is removable from the console.

110. The secure storage means of claim 109, wherein the secure storage means carries player identification and/or credit information.

111. The secure storage means of any one of claims 98 to 110, wherein the secure storage means is arranged to communicate with a gaming server via a gaming console, the server being arranged to calculate the game or gamble outcome information in relation to a game for storage in the secure storage means and to send outcome signals to the secure storage means via the console, the secure storage means being arranged to receive and store the game or gamble outcome information.

112. The secure storage means of claim 111, wherein the game or gamble outcome information received by the secure storage means from the server is combined with existing information held by the secure storage means to generate a game or gamble outcome.

113. The secure storage means of claim 111 or 112, wherein upon receipt by the console of the user input to initiate a game, the secure storage means generates and sends a signal via the console to the gaming server indicating that the stored information has been used to determine the respective game or gamble outcome.

114. The secure storage means of any one of claims 98 to 108, wherein the secure storage means is arranged to communicate with a gaming server via a gaming console, and upon receipt by the console of the user input to initiate a game, the secure storage means generates and sends a signal via the console to the gaming server indicating that the stored information has been used to determine the respective game or gamble.

115. The secure storage means of claim 113 or 114, wherein the signal sent to the gaming server includes data indicating a game played or a function performed and the secure storgage means stores the data sent to the server until the gaming server acknowleges receipt of the signal.

116. The secure storage means of claim 111, 112, 113, 114 or 115, wherein communications between the gaming server and the secure storage means is encrypted.

117. The secure storage means as claimed in claim 98, wherein the game outcome information represents a plurality of predetermined game or gamble outcomes which are stored in the secure storage means.

118. The secure storage means as claimed in claim 117, wherein the secure storage means is a smartcard or a smartcard chip.

119. The secure storage means as claimed in claim 118, wherein all unused values in the secure storage means, except for the initial value, are hidden and playing games discloses the values one by one.

120. The secure storage means as claimed in claim 119, including a fixed number of initial values.

121. The secure storage means as claimed in claim 120, including an initial list of predetermined outcomes.

122. The secure storage means as claimed in claim 121, wherein the outcomes are initially stored in a secure form accessible only during game play whereby they are disclosed one at a time as games are played.

123. The secure storage means as claimed in claim 98, wherein for each outcome disclosed the player first makes a bet, which is written to non-volatile memory in the smartcard device, and the total value owed to the player is the sum of wins and losses for each bet and outcome.

124. The secure storage means as claimed in claim 123, wherein the secure storage on the smartcard is accessed via a secure communications system within the console.

125. The secure storage means as claimed in claim 124, wherein the secure communications system is provided by a further smartcard device.

126. The secure storage means as claimed in any one of claims 118 to 125, wherein the smartcard device is programmed with multiple functions, only one of which is a gaming accelerator.

127. The secure storage means of claim 126, wherein the smartcard device is programmed for use as an ID card and/or a credit card and/or a bank ATM card.

128. The secure storage means of claim 127, wherein the protocol to access the smartcard device is compatible with another mode of the smartcard.

129. A secure removable control device for use in a gaming console which includes a user interface allowing a user to initiate a game and observe a result, the control device being arranged to supply game or gamble outcome information used by the console to produce a game outcome.

130. The control device of claim 129, wherein the information supplied by the control device is a sequential list of outcome information relating to a sequence of future games to be played on the console.

131. The control device of claim 130, wherein the game outcome information supplied by the control device, is in the form of one or more random or pseudo-random numbers sufficient to generate an entire game outcome.

132. The control device of claim 130, wherein the outcome information is a random number indicating a gamble outcome .

133. The control device as claimed in any one of claims 129 to 132, wherein a secure processing means is provided within the control device, the secure processing means being arranged to provide the game outcome indication.

134. The control device as claimed in any one of claims 129 to 132, wherein a secure processing means is provided, connected to the control device by way of a secure communications path, and the secure processing means being arranged to provide the game outcome indication.

135. The control device as claimed in claim 134, wherein the secure processing means is a smartcard or smartcard chip which is permanently fixed in the console.

136. The control device as claimed in any one of claims 129 to 134, wherein the control device is a smartcard or smartcard chip which is permanently fixed in the console.

137. The control device as claimed in any one of claims 129 to 134, wherein the control device is a smartcard which is removable from the console.

138. The control device of claim 136 or 137, wherein the control device carries player identification and/or credit information.

139. The control device of any one of claims 129 to 138, wherein the control device is arranged to communicate with a gaming server via the gaming console.

140. The control device of claim 139, wherein upon receipt by the console of the user input to initiate a game, the control device generates and sends a signal via the console to the gaming server and/or an accounting server indicating the details of the game outcome information that has been used to determine the respective game or gamble outcome.

141. The control device of claim 139 or 140, wherein communications between the control device and the server is secured by encryption.

142. The control device as claimed in claim 129, wherein the game outcome information represents a series of game or gamble outcomes which are supplied by the control device.

143. The control device as claimed in claim 142, wherein the control device is a smartcard or a smartcard chip.

144. The control device as claimed in claim 143, wherein for each game outcome the player first makes a bet, which is written to non-volatile memory in the smartcard device, and the total value owed to the player calculated from wins and losses for each bet and outcome.

145. The control device as claimed in claim 144, wherein the secure storage on the smartcard is accessed via a secure communications system within the console.

146. The control device as claimed in claim 145, wherein the secure communications system is provided by a further smartcard device.

147. The control device as claimed in any one of claims 143 to 146, wherein the smartcard device is programmed with multiple functions, only one of which is a gaming accelerator.

148. The control device of claim 147, wherein the smartcard device is programmed for use as an ID card and/or a credit card and/or a bank ATM card.

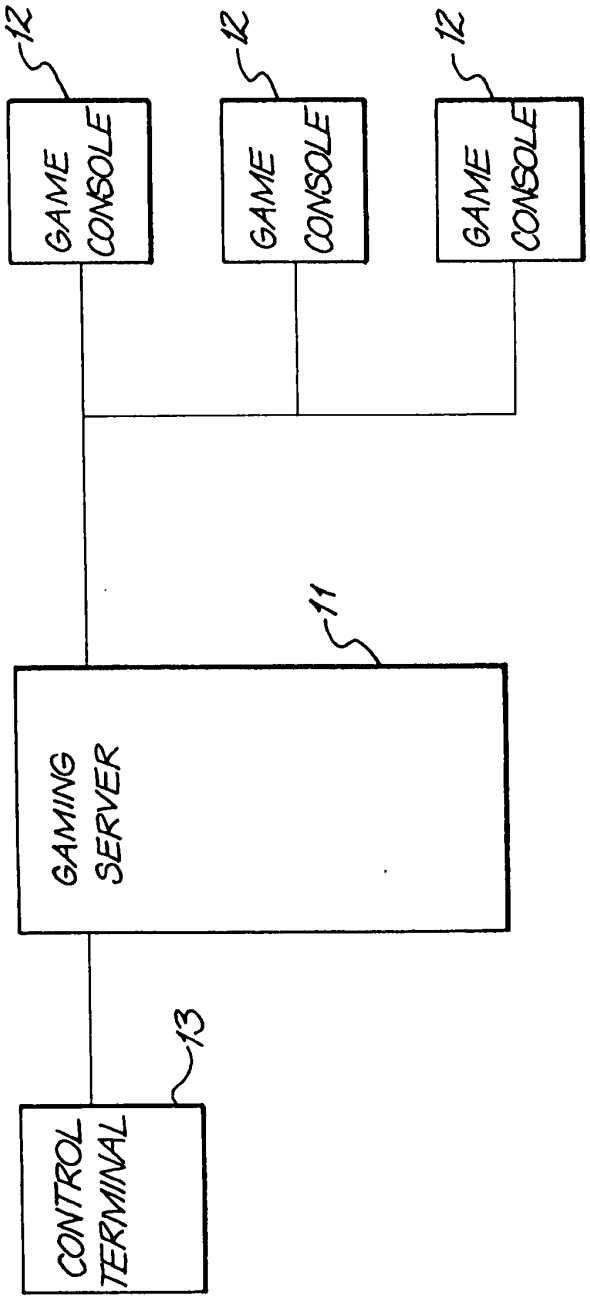
149. The control device of claim 148, wherein the protocol to access the smartcard device is an extension of another mode of the smartcard.

150. A virtual casino system including a gaming server, a gaming console and at least one virtual gaming machine operable via the console, each virtual gaming machine having its own accounting, and combinations, and

each virtual machine being uniquely identified and capable of being returned to at any time by the player.

151. The virtual casino system of claim 150, wherein each virtual machine is only capable of being returned to for play by the player provided it is not in use by another player.

152. The virtual casino system of claim 150 or 151, wherein a player can observe on the console the operation of a virtual machine while it is in use by another player.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GAME CONSOLE
12
GAME CONSOLE
12
GAME CONSOLE
11
GAMING SERVER
13
CONTROL TERMINAL

FIG. 1

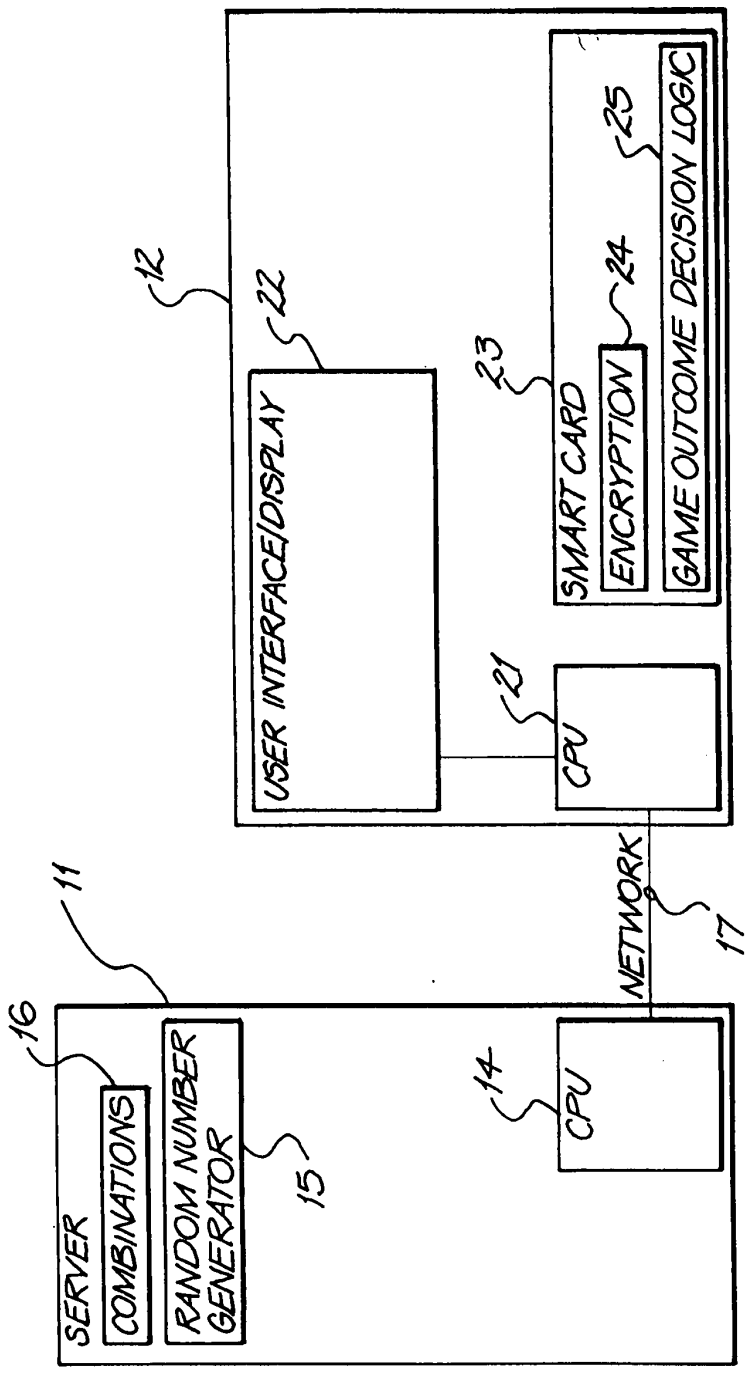
12
22
USER INTERFACE/DISPLAY
23
SMART CARD
24
ENCRYPTION
25
GAME OUTCOME DECISION LOGIC
21
CPU
NETWORK
17
11
16
SERVER
COMBINATIONS
RANDOM NUMBER GENERATOR
15
14
CPU

FIG. 2

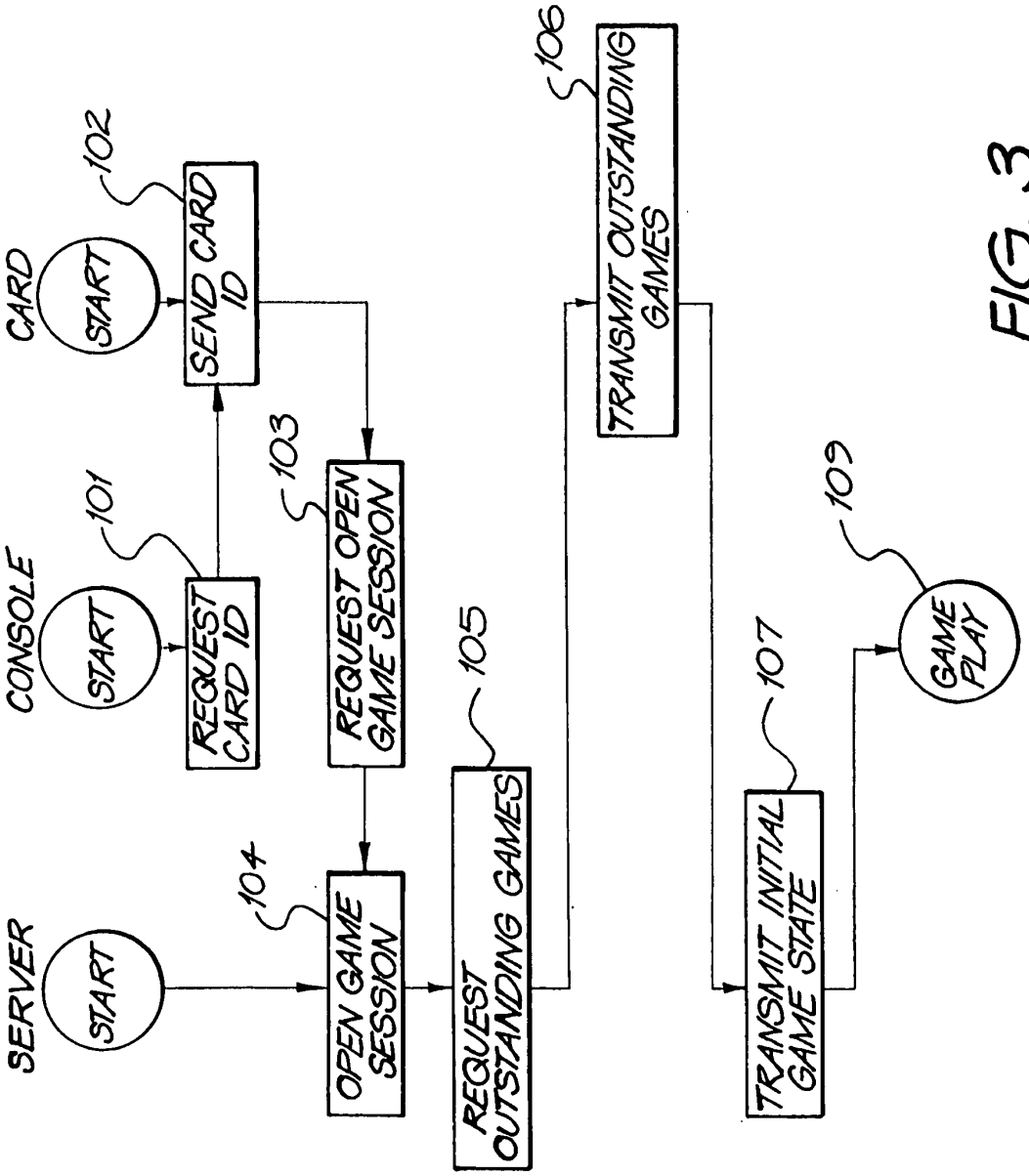
SERVER
START
CONSOLE
START
CARD
START
OPEN GAME SESSION
REQUEST CARD ID
SEND CARD ID
REQUEST OPEN GAME SESSION
REQUEST OUTSTANDING GAMES
TRANSMIT OUTSTANDING GAMES
TRANSMIT INITIAL GAME STATE
GAME PLAY
101
102
103
104
105
106
107
109

FIG. 3

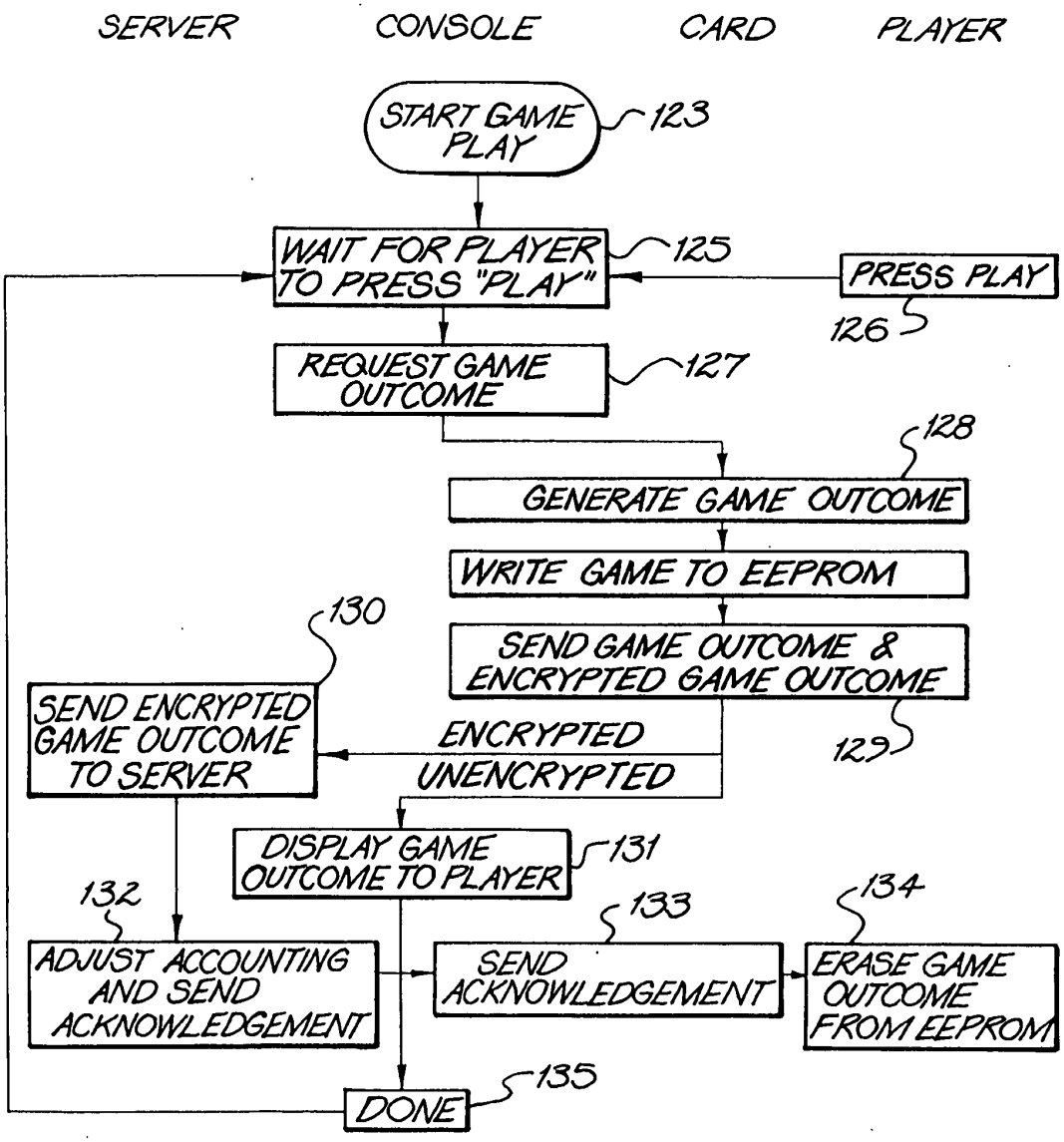
SERVER
CONSOLE
CARD
PLAYER
START GAME PLAY
123
WAIT FOR PLAYER TO PRESS "PLAY"
125
PRESS PLAY
126
REQUEST GAME OUTCOME
127
128
GENERATE GAME OUTCOME
WRITE GAME TO EEPROM
130
SEND GAME OUTCOME & ENCRYPTED GAME OUTCOME
SEND ENCRYPTED GAME OUTCOME TO SERVER
ENCRYPTED
UNENCRYPTED
129
DISPLAY GAME OUTCOME TO PLAYER
131
132
133
134
ADJUST ACCOUNTING AND SEND ACKNOWLEDGEMENT
SEND ACKNOWLEDGEMENT
ERASE GAME OUTCOME FROM EEPROM
DONE
135

FIG. 4

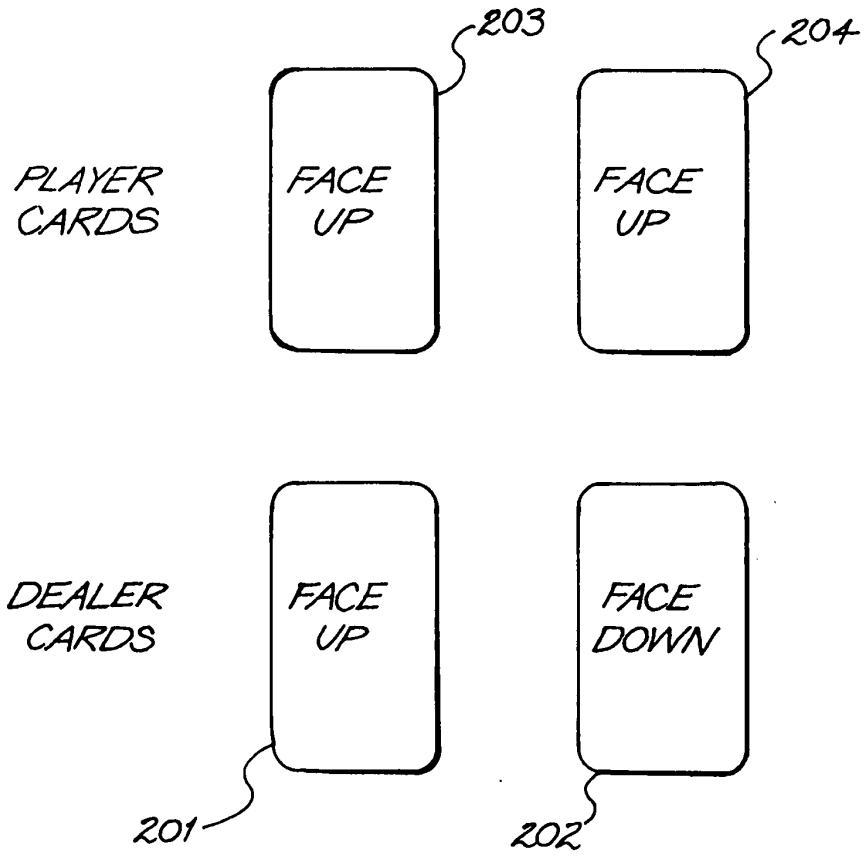
203
204
PLAYER CARDS
FACE UP
FACE UP
DEALER CARDS
FACE UP
FACE DOWN
201
202

FIG. 5

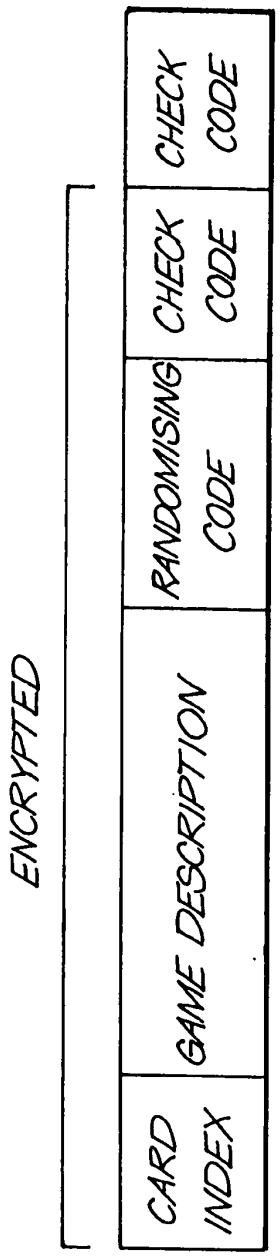
ENCRYPTED
CARD INDEX
GAME DESCRIPTION
RANDOMISING CODE
CHECK CODE
CHECK CODE

FIG. 6

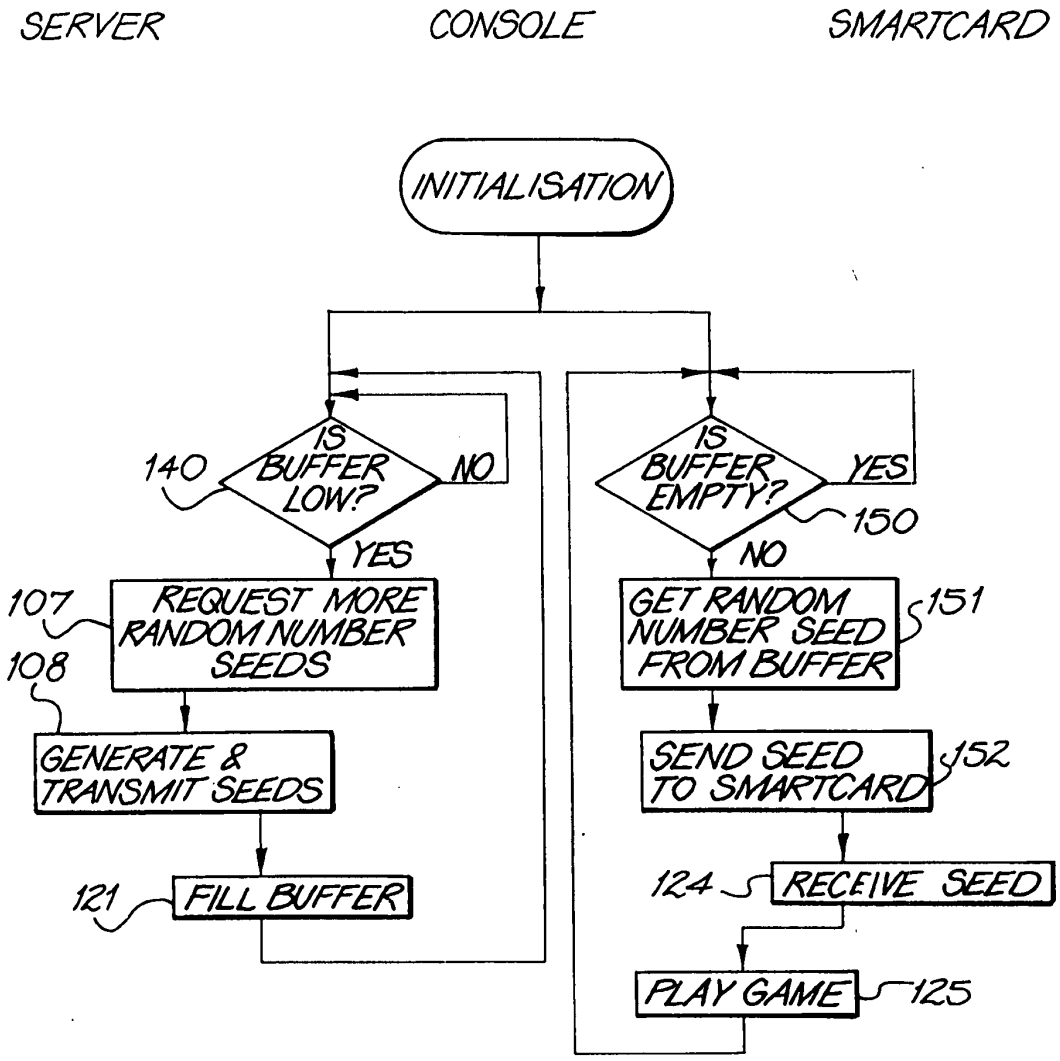
SERVER
CONSOLE
SMARTCARD
INITIALISATION
IS BUFFER LOW?
140
NO
YES
107
REQUEST MORE RANDOM NUMBER SEEDS
108
GENERATE & TRANSMIT SEEDS
121
FILL BUFFER
IS BUFFER EMPTY?
YES
150
NO
GET RANDOM NUMBER SEED FROM BUFFER
151
SEND SEED TO SMARTCARD
152
124
RECEIVE SEED
PLAY GAME
125

FIG. 7

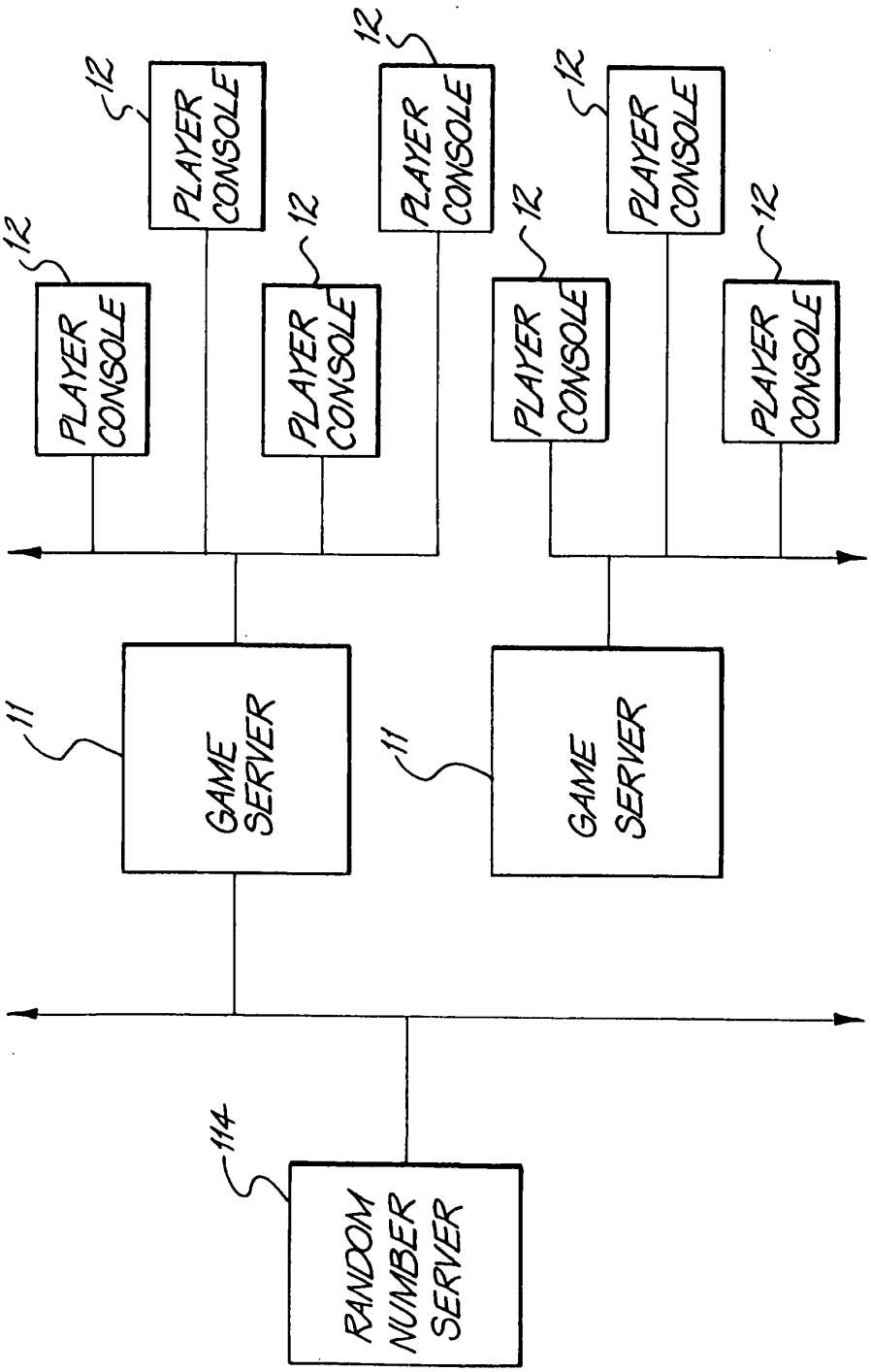
12
PLAYER CONSOLE
12
PLAYER CONSOLE
12
PLAYER CONSOLE
12
PLAYER CONSOLE
12
PLAYER CONSOLE
12
PLAYER CONSOLE
11
GAME SERVER
11
GAME SERVER
114
RANDOM NUMBER SERVER

FIG. 8

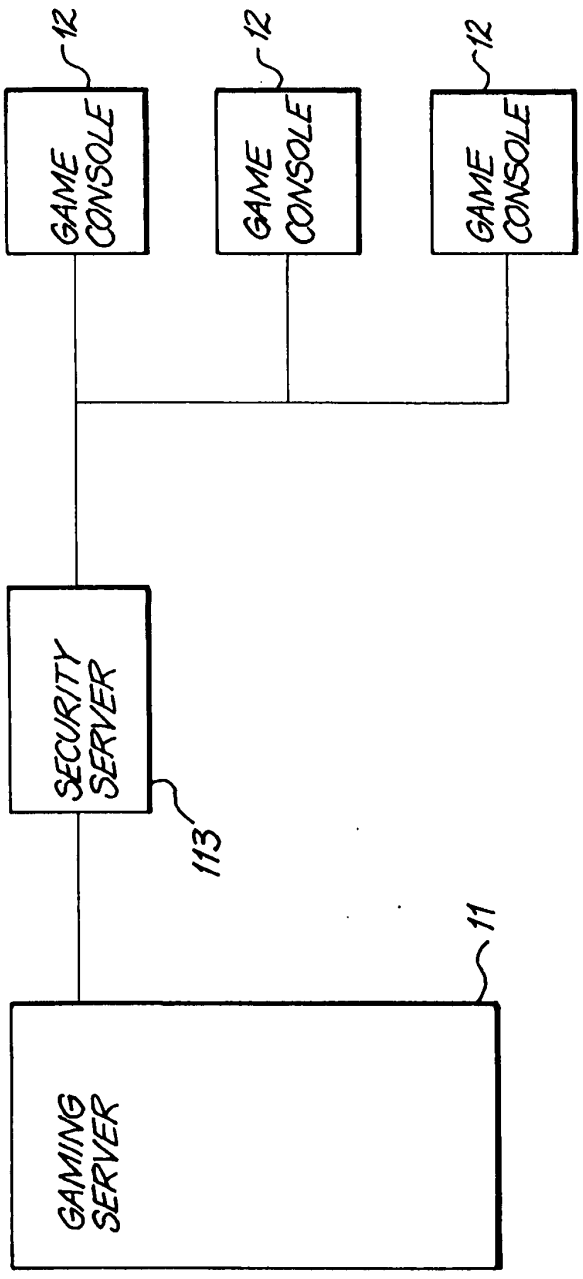
12
GAME CONSOLE
12
GAME CONSOLE
12
GAME CONSOLE
SECURITY SERVER
113
11
GAMING SERVER

FIG. 9

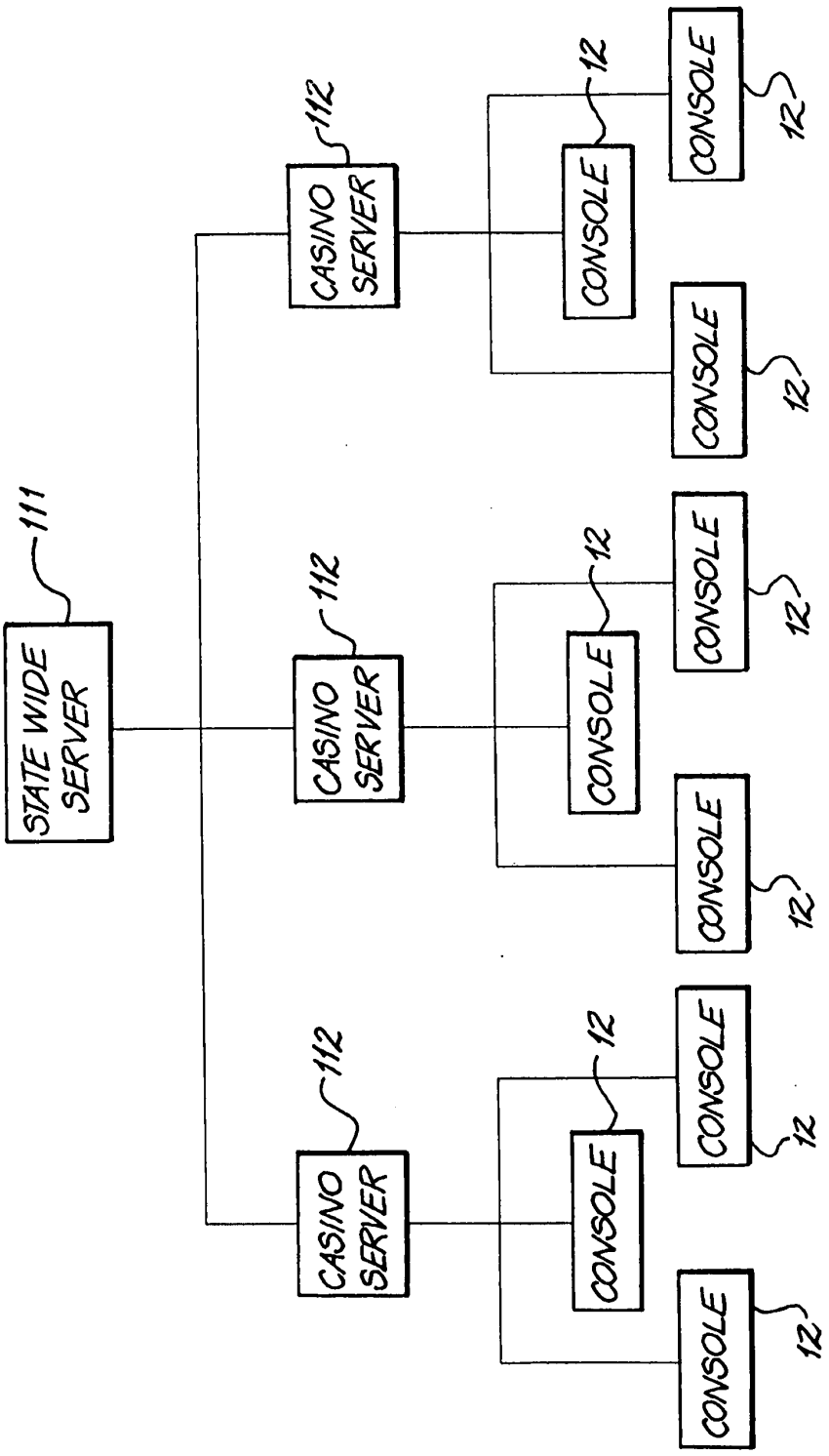
STATE WIDE SERVER
111
CASINO SERVER
112
CASINO SERVER
112
CASINO SERVER
112
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12

FIG. 10

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/AU 98/00072

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC G06F 17/60, 17/00, 15/44, A63F 9/22, 9/24

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT: (POKER()MACHINE# or FRUIT()MACHINE# or SLOT()MACHINE# OR GAM:()MACHINE#) and SERVER;
(POKER OR FRUIT OR GAM:) and (SERVER)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU, A, 44278/96 (ARISTOCRAT INDUSTRIES PTY. LTD.) 25 July 1996	98, 150-152
X	AU, B, 27192/95 (686824) (ACRES GAMING INC.) 2 May 1996	98, 150-152
X	US, A, 4636951 (HARLICK) 13 January 1987	98, 150-152

☐ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 April 1998	23 APR 1998
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929	Authorized officer S. LEE Telephone No.: (02) 6283 2205

Form PCT/ISA/210 (second sheet) (July 1992) coprow

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No.
PCT/AU 98/00072

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member				
AU	44278/96	WO	9622586			
AU	35878/95	US	5655961	WO	9612262	US 5702304
US	4636951	AT	1451/84	AU	27572/84	DE 3416229
		ES	531967	GB	2139390	JP 59209374
		NL	8401380	ZA	8403276	

END OF ANNEX

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(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
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PCT

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(25) Filing Language: English

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(30) Priority Data:
60/417,913 9 October 2002 (09.10.2002) US

(71) Applicant *(for all designated States except US)*: **LEGAL IGAMING, INC.** [US/US]; 200 Ultra Drive, Henderson, NV 89074 (US).

(72) Inventors; and

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(74) Agent: **MALLON, Joseph, J.**; Knobbe, Martens, Olson & Bear, LLP, 2040 Main Street, 14th Floor, Irvine, CA 92614 (US).

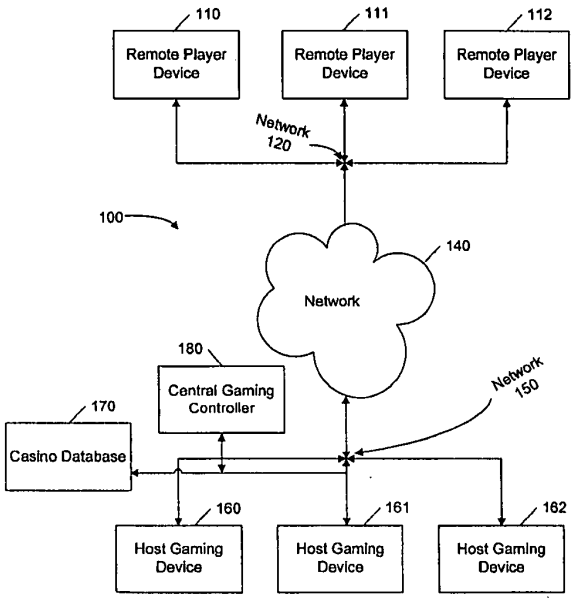
(81) Designated States *(national)*: AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, EG, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR CONNECTING GAMING DEVICES TO A NETWORK FOR REMOTE PLAY



(57) Abstract: A system (100) and method for connecting remote player devices (110) to regulated host gaming devices (160) in a network to provide remote game play. A host gaming device (160) is configured to provide game information to a plurality of remote player devices (110) to allow remote play of the host game device (160). Whether each remote player device (110) is permitted to receive gaming data is based upon, at least in part, the geographic location of the remote player device (110).

WO 2004/034223 A2

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SYSTEM AND METHOD FOR CONNECTING GAMING DEVICES TO A NETWORK FOR REMOTE PLAY

Background of the Invention

Field of the Invention

[0001] The present invention generally relates to electronic devices. In particular, the invention relates to methods and systems of interactive gaming.

Description of the Related Technology

[0002] Traditionally, the way for a gaming operator to increase revenue from gaming devices is to increase the number of gaming devices available for play. In order for casinos to increase the number of gaming devices available for play, casino floor space must be added to house the additional gaming devices. The floor space allocated to house additional gaming devices must meet specific criteria as defined by the gaming authority for the jurisdiction in which the gaming devices are to be located. Providing additional floor space is an expensive process for casino operators and often requires constructing new casino properties. Also, adding gaming devices typically requires payment of additional licensing fees for each additional game.

[0003] A trend in the gaming industry has been to provide Internet gaming. Internet gaming allows players to make wagers on the outcome of casino style games similar to that described above, except that the player does not have to be physically located in a casino to do so. Internet players make wagers and play casino games using a personal computer and wager on games running on computers connected to the Internet.

[0004] More broadly, interactive gaming is the conduct of gambling games through the use of electronic devices. The popularity of Internet gambling sites has indicated a strong market for remotely accessible gaming, or other interactive gaming. Regulated casino operators strongly desire to provide interactive gaming while capitalizing on existing infrastructure. Thus there is a need for improved electronic devices that support regulated remote gaming.

Summary of the Invention

[0005] The system of the present invention has several aspects, no single one of which is solely responsible for its desirable attributes. Without limiting the scope of this invention as expressed by the claims which follow, its more prominent features will now be discussed briefly. After considering this discussion, and particularly after reading the section entitled "Detailed Description of the Invention" one will understand how the features of this invention provide advantages which include providing remote gaming in regulated environment.

[0006] A gaming system and method of using the same to allow a host gaming device to be played from remote player devices to allow casino operators to obtain maximum advantage from their gaming licenses.

[0007] More particularly, in one embodiment gaming system may comprise a data network, a host gaming device connected to the data network, the gaming device configured to execute at least one game and a plurality of remote player devices connected to the data network. Each of the remote player devices is configured to receive game information provided by the host gaming device. Whether each remote player device is permitted to receive gaming data may be based upon, at least in part, the geographic location of the remote player device.

[0008] The host gaming device may be configured to allow no more than a predetermined number of remote player devices to concurrently receive game information provided by the host gaming device during the gaming session. This predetermined number may be determined by a gaming agency.

[0009] In another embodiment of a gaming system, at least one of the plurality of remote player devices may be permitted to receive game data based upon, at least in part, the geographic location of the remote player device, an age of a user of the remote player device.

[0010] A gaming system according to the invention may also include a central gaming controller configured to record gaming transactions on the host gaming device and on each remote gaming device.

[0011] The data network may be, in part, the Internet, and be comprised of one or more logical segment, which may include closed-loop networks. The host gaming device may be configured to identify the geographic location of a remote player device based, at least in part, on a logical segment corresponding to the remote player device. A mobile communications network, or a GPS device may also allow identification of the geographic location of the remote player device.

[0012] The host gaming device may be in a location approved by a gaming agency and include at least one game control configured to provide local use. This game control may be disabled when the host gaming device is providing game information to a remote player device. A host gaming device may also be configured to save an encrypted game state allowing a game to be resumed following a device or network failure.

[0013] A remote player device may be coupled to a credential device configured to receive information relating to a user of the remote player device. The information relating to a user may include the age of the user, or a password that is input by the user. The credential device is a smart card reader, a biometric device such as a fingerprint reader, or any type of input device. The credentials may be verified against information, such as age, password, or fingerprint in a database configured to provide information associated with each of a plurality of users of the gaming system.

[0014] In another embodiment, a gaming system may be comprised of a means for executing at least one game, the game providing game information during its execution, a local access means provides local access to the game information for a user in a location approved by a gaming agency, player means for receiving game information, presenting the game information to a user and providing at least one game control, a means for providing the game information over a data network to a predetermined number of receiving means, means for determining the location of the receiving means, and means for disabling the local access means. Other similar embodiments may also be comprised of means for creating an auditable record of gaming transactions on the playing means and on the gaming means.

[0015] Another embodiment of a gaming system, in addition to the features of the embodiments discussed above, may also include customized promotional messages to players of gaming devices.

[0016] On a remote player device, an embodiment of a method of remotely accessing a host gaming device may include: establishing access to the host gaming device through a data network, receiving gaming related information from the host gaming device through the data network, presenting the gaming related information to a player, receiving at least one control signal from the player, sending the control signal to the host gaming device through the data network, and disabling local use of the host gaming device. In one embodiment, the method may also include recording each gaming transaction occurring on the remote player device. Another embodiment of the method may include providing a geographic location of the remote player device. In another embodiment of the method, the age of the user of the remote player device is also provided.

[0017] On a host gaming device, an embodiment of a method of providing remote access, including: verifying the geographic location of a remote player device, establishing a gaming session on a host gaming device from a remote player device through a data network, receiving at least one control signal from the remote player device through the data network, and sending gaming related information from the gaming device through the data network. One embodiment of a method may also include recording each gaming transaction occurring on the host gaming device,

[0018] In order to provide tolerance for failures of system components, a method of resuming an interrupted gaming session on a gaming device is provided. One embodiment of a method may include generating a gaming state of the gaming session on the first gaming device, encrypting the gaming state, transporting the encrypted gaming state from the gaming device. The method may also include the converse: transporting the encrypted gaming state from the first gaming device to a second gaming device, decrypting the gaming state on the second gaming device; and loading the game state into a second gaming device to resume the gaming session.

[0019] An embodiment of a gaming system which provides for resuming interrupted gaming sessions across a data network. The system may include a first host gaming device connected to the data network, the gaming device configured to execute at least one game, generate a gaming state based on execution of at least one game, encrypt the gaming state, and send the encrypted gaming state over the data network. A second host gaming device may be connected to the data network, the second gaming device configured to receive the encrypted gaming state over the data network, decrypt the gaming state, and resume executing at least one game from the gaming state. A plurality of remote player devices, configured to receive game information provided by the host gaming device, may be connected to the data network. The gaming state may include user payment or credit information, and game jackpot or payout information.

[0020] Another embodiment of a gaming system providing resumption of interrupted gaming sessions may include means for executing at least one game, means for generating a gaming state based on execution of at least one game, means for encrypting the gaming state, and means for sending the encrypted gaming state. The system may also include means for receiving the encrypted gaming state, means for decrypting the gaming state and means for resuming executing at least one game from the gaming state.

[0021] To enable gaming regulatory compliance, methods authenticating gaming system users are also provide. An embodiment of a method of authenticating a user of a host gaming device may include receiving a security certificate from the smart card, sending the security certificate from the gaming device to an authenticator device, receiving an authentication reply from the authenticator, and playing a game in response to the authentication reply.

[0022] An embodiment of the method may also include presenting the security certificate from the gaming device to a certificate authority for authentication over a data network.

[0023] An embodiment of a method of authenticating a user of a remote player device for playing a host gaming device may include receiving an indicia of identity for a user, sending the indicia of identity to an authenticator device, receiving an authentication reply from the authenticator device, and authorizing use of a host gaming device based on the indicia of identity. The indicia of identity for a user may be provided by a biometric device, a smart card, or a password provided by the user.

[0024] Another embodiment of a gaming system provides authentication of users. The system may include a data network, a host gaming device interfaced to the data network, a plurality of remote player devices interfaced to the data network, and a security device configured to provide player credentials to at least one remote player device. The each of the remote player devices may be configured to receive game information provided by the host gaming device. The host gaming device may provide game information to a predetermined number of permitted remote

player devices. Whether a remote player device is permitted to receive gaming information may be based upon, at least in part, on player credentials provided by the security device.

[0025] In one embodiment, a method of remotely accessing a gaming device provides for creating records of gaming transactions on both host gaming devices and remote player devices sufficient to provide an auditable record for a gaming authority in the jurisdiction. The method may include establishing a gaming session on a gaming device for a remote player device through a data network, sending gaming related information from the gaming device through the data network, receiving at least one control signal from the remote player device through the data network, creating an auditable gaming session record representing each gaming transaction of a gaming session on the host gaming device and on the remote gaming device. In addition, the record may be sent to a third party, such as a gaming authority, through the data network.

[0026] In another embodiment of a gaming system, the gaming system includes a network comprised of a plurality of logical segments. A security policy controls the flow of data between logical segments. A host gaming device may be connected to the data network, the gaming device configured to execute at least one game. A plurality of remote player devices may be connected to the data network. The plurality of remote player devices are each configured to receive game information provided by the host gaming device, and to control a gaming session established on the gaming device, subject to the security policy. The security policy may be based, at least in part, on the geographic location of a logical segment.

[0027] One embodiment of the gaming system may include a promotional message server to deliver customized promotional messages to users of the gaming system. In this embodiment, a gaming system may include a data network, a promotional message server configured to provide customized promotional messages. Each message may be customized with information associated with a user of the gaming system. In addition, a gaming system may include a host gaming device interfaced to the data network, and a plurality of remote player devices interfaced to the data network. The plurality of remote player devices are each configured to receive game information provided by the host gaming device and to receive and present promotional messages.

[0028] In another embodiment, a gaming system may include a means for data communication, means for executing at least one game, means for providing game information over the data network to a predetermined number of receiving means, a plurality of means for receiving game information over the data communication means. Each means for receiving game information may be coupled to a means for receiving customized promotional messages. A gaming system may also include a means for presenting promotional messages in conjunction with gaming data.

[0029] A related method of displaying information on a remote player device is also provided. The method may include receiving a promotional message on a remote player device, presenting the promotional message in conjunction with gaming information for an amount of time; and removing the promotional message from the remote player device. Information in the promotional message may be used to calculate the amount of time to present the promotional message.

[0030] A remote player interface of a gaming system may have a number of embodiments. In one embodiment of a gaming system, the gaming system includes data network, a host gaming device interfaced to the data network, and at least one remote player device interfaced to the data network. The remote player device is configured to receive game information provided by the host gaming device. The remote player interface of the gaming system may include a video display device in communication with the remote player device and a remote control device in communication with the remote player device. The remote control device is configured to control operation of a game.

[0031] An embodiment of method of remotely accessing a gaming device may include establishing a gaming session on the host gaming device from a remote player device through a data network, receiving gaming related information from the host gaming device through the data network, presenting gaming related information to a player via a video display device, receiving at least one control signal generated by a remote control device for controlling the gaming session, and sending the control signal to the host gaming device through the data network.

Brief Description of the Drawings

[0032] **FIG. 1** depicts a simplified block diagram of a gaming system according to one embodiment of the invention.

[0033] **FIG. 2** depicts a simplified block diagram of system elements relating to a host gaming device of **FIG. 1** according to one embodiment of the invention.

[0034] **FIG. 3** depicts a simplified block diagram of system elements relating to a remote player device of **FIG. 1** according to one embodiment of the invention.

[0035] **FIG. 4** is a flowchart depicting the sequence of events for acknowledging command messages in a gaming system as embodied in **FIG. 1.**

[0036] **FIG. 5** is a flowchart depicting the sequence of events for establishing a remote gaming session, playing a game, and terminating the remote gaming session in a gaming system as embodied in **FIG. 1.**

[0037] **FIG. 6** is a flowchart depicting the sequence of events for transferring funds from a player's source of funds in the gaming system of **FIG. 1.**

[0038] **FIG. 7** is a flowchart depicting the sequence of events for a host gaming device of **FIG. 2** to connect to a network using security certificates and a certificate authority.

[0039] **FIG. 8** is a flowchart depicting the sequence of events for a gaming device of **FIG. 2** to build and deliver an encrypted block of data representing the complete state of the gaming device.

[0040] **FIG. 9** is a flowchart depicting the sequence of events for retrieving a block of data representing the state of a gaming device from a database and loading the block into a gaming device as performed by a gaming system embodiment as in **FIG. 1**.

[0041] **FIG. 10** is a more detailed block diagram of a gaming system as depicted in **FIG. 1**.

[0042] **FIG. 11** is a detailed block network diagram of a portion of a gaming system as depicted in **FIG. 10**.

Detailed Description of the Preferred Embodiment

[0043] The following detailed description is directed to certain specific embodiments of the invention. However, the invention can be embodied in a multitude of different ways as defined and covered by the claims. In this description, reference is made to the drawings wherein like parts are designated with like numerals throughout.

[0044] In a traditional casino environment, gaming devices are generally located on a gaming floor. Gaming devices are subject to regulation by gaming regulatory agencies. Regulations may limit the locations where gaming devices may be placed and by limit users of gaming devices to those of legal age to gamble in the respective jurisdiction. Regulatory agencies for a given jurisdiction may also limit the number of licensed gaming devices provided to a licensee. Where gaming devices are physically located on a casino gaming floor, verification of whether a device is being used in its licensed location within the jurisdiction may be determined by physical inspection of the gaming floor. Further, monitoring of the gaming floor in casinos ensures that players are of legal age as set by the jurisdiction.

[0045] An embodiment of a gaming system according to the present invention allows a licensed host gaming device to be used by one or more remote player devices geographically separated from the host gaming device, but still located within the jurisdiction of a gaming authority. **FIG. 1** depicts a simplified block diagram of an embodiment of a gaming system **100** according to the invention. One or more host gaming devices **160, 161, 162** are licensed gaming devices. Although three host gaming devices are shown on **FIG. 1**, the gaming system **100** may employ any number of host gaming devices ranging from one to thousands. For convenience of discussion, set forth below is a description of certain aspects of the host gaming device **160**. It is to be appreciated that the other gaming devices may contain the following or different aspects.

[0046] A host gaming device may be any device, comprised of electronic, mechanical, or a combination of electronic and mechanical components, which is used for gaming and which affects the result of a wager by determining win or loss. A host gaming device **160** is connected to a data network **150**. In the embodiment depicted in **FIG. 1**, the data network of gaming system **100** is comprised of three logical segments. Gaming network **150** connects each host gaming device **160** and related elements such as the database **170** and central gaming controller **180**. Remote network **120** connects remote player devices **110, 111, 112** to the system. Backbone network **140** provides interconnection between the gaming network **150** and the remote network **120**.

[0047] The database **170** may be computer server running database software, or any other commercially available database solution. In one embodiment, as depicted, the database **170**, is a casino database. In other embodiments, the database may also contain other data related, or unrelated to the casino operation.

[0048] Remote network **120** connects remote player devices **110, 111, 112** to the system. Each remote player device **110** allows a user to play a game executing on a host gaming device **160**. For convenience of discussion, set forth below is a description of certain aspects of the remote player device **110**. It is to be appreciated that the other remote player devices may contain the following or different aspects. Although three remote player devices are shown on **FIG. 1**, the gaming system **100** may employ any number of remote player devices ranging from one to thousands.

[0049] The remote network **120** may be any form of computer network, as discussed below. In one particular embodiment, the remote network **120** is part of a network provided by a cable television system. **FIG. 10** depicts an embodiment of a gaming system where the remote network **120** is provided through a digital home communications terminal (DHCT) **1000**, such as a set-top box.

[0050] Each host gaming device **160** may be located in any location approved by a gaming agency, such as a casino gaming floor. A host gaming device **160** provides a legally regulated random number generator. Once generation of random number has been performed, a game result is determined. Any further interaction through the game's user interface is for the benefit of a user. For example, in one embodiment of a gaming system, the host gaming device may be a slot machine. After payment is made, through a coin, token, credit device, etc, the player pulls a lever arm to execute play. In a mechanical game, for example, a slot machine, a game result may be determined by the interaction of spinning wheels. In a host gaming device **160** of an embodiment of the present invention, however, pulling the arm triggers generation of a random number which determines the game result. Thus any spinning wheels or its electronic equivalent is

purely for entertainment of the user. A host gaming device **160** plays at least one game of chance, including, but not limited to, Slots, Blackjack, Poker, Keno, Bingo, or Lotteries.

[0051] **FIG. 2** depicts a more detailed block diagram of an embodiment of a gaming system **100** showing additional gaming system elements coupled to the host gaming device **160**. The host gaming device **160** may include local controls **220** such as an arm. The host gaming device **160** may have a display **210** to present the results of a game to a user. Further, the gaming device **160** may have a smart card reader **280**. Functions of the smart card reader **280** may include receiving payment for a game, or identifying a user for promotional or loyalty programs. A biometric identity device **290**, such as a fingerprint scanner, may be used for similar functions by the gaming system.

[0052] Networks **120, 140, 150** may include any type of electronically connected group of computers including, for instance, the following networks: Internet, Intranet, Local Area Networks (LAN) or Wide Area Networks (WAN). In addition, the connectivity to the network may be, for example, remote modem, Ethernet (IEEE 802.3), Token Ring (IEEE 802.5), Fiber Distributed Datalink Interface (FDDI) Asynchronous Transfer Mode (ATM), Wireless Ethernet (IEEE 802.11), or Bluetooth (IEEE 802.15.1). Note that computing devices may be desktop, server, portable, hand-held, set-top, or any other desired type of configuration. As used herein, the network includes network variations such as the public Internet, a private network within the Internet, a secure network within the Internet, a private network, a public network, a value-added network, an intranet, and the like. In embodiments of the present invention where the Internet is the backbone network **140**, gaming network **150** and remote network **120** may form a virtual private network (VPN) transported over the Internet.

[0053] In preferred embodiments, the remote network **120** may be a closed-loop network, such as the cable network depicted in **FIG. 10**. A closed-loop network **120** may have a limited geographic scope which allows the geographic location of a remote player device **110** to be identified. For example, a given cable network may be limited to a specific hotel. Each hotel room may be provided with a remote player device **110** which may then be identified with that location. In other embodiments, the remote network **120** may be a mobile telephone network which is capable of identifying a caller's geographic location.

[0054] As depicted in the simplified block diagram of **FIG. 3**, a remote player interface **300** may comprise a remote player device **110**, a display **310** for presenting game information and a control **320** to provide user game control for the remote player device **160**. In one embodiment, a remote player interface **110** may also comprise a remote control **395** to provide game controls. In preferred embodiments of the remote control, the connection **394** between the remote control **395** and the remote player device **160** may be any type of wireless connection,

including infra-red based protocols, or a RF wireless protocol such as Bluetooth (802.15.1). The remote control **395** may also be connected to the remote player device **160** through a wired connection such as Universal Serial Bus (USB), serial, or equivalent connection. The remote control **395** may also include controls customized for gaming. A handheld computer may also comprise a remote control **395**.

[0055] The display **310** may be a television, a personal computer, or a handheld computer device. A fixed or wireless telephone handset may comprise a display **310** and controls **320** of a remote player interface. In some embodiments the controls **320** may be integrated with display **310**, as for instance, in a touch screen.

[0056] In one embodiment, the game information may be a random number which represents the result of the game, information related to gaming device jackpots, or player credits. In another embodiment, the gaming information may be multimedia, sound and images, including, in one embodiment, video, representing the execution of a game. In another embodiment, game information may also be software for execution on a remote player device **110** or on any element of a remote player interface **300**, such as a remote control **395**, which interactively presents the game through the remote player interface **300**.

[0057] To enable regulatory conformance of the gaming system, gaming device users must be geographically within an approved jurisdiction and of legal age in the jurisdiction. In a regulated gaming environment, such as a gaming floor, physical control of the premises allows enforcement of this requirement. For remote player devices **110** not operated in the regulated gaming environment of a gaming floor, the age of the user of a remote player device **110** must be verified before game information is provided by a host gaming device **160**. Credentials may be received from a user using a variety of security devices and compared to records, such as in a database **170** to confirm identity and thus age of the user.

[0058] To ensure compliance with regulatory requirements, a gaming system **100** may identify the geographic location of a remote player device **110**. As discussed above, a network **120** may be a closed-loop network **120** whose devices are thereby identified in geographic location by the location of that network. Other embodiments may employ a GPS system on the remote player device **110** to provide the geographic location of the device **110**. In other embodiments, the remote network **120** may be a mobile communications network which provides the geographic location of network clients, such as a remote player device **110**.

[0059] In one embodiment, a security device may be a smart card reader **380** that is coupled to the remote player device **110**. In embodiments using a smart card reader, a user inserts a smart card into the reader which provides credentials sufficient to verify the age of the user. In

one such embodiment, indicia present on the smart card reader are compared to records in a casino database **170** to verify the age of the user.

[0060] In other embodiments, a remote player device **110** may be coupled to a biometric identity device **390**, such as a fingerprint scanner. In one embodiment, information received from the biometric identity device **390** may be compared to records in a casino database **170** to verify the age of the user. In other embodiments a biometric identity device **390** may be retinal scanner or facial recognition device.

[0061] In some embodiments, the controls **320** may include an input device (not pictured in **FIG. 3**) coupled to a remote player device **110** to receive a password or PIN as a security device. The password or PIN may be compared to information, such as records in a casino database **170** to verify the identity, and thus the age, of the remote player device user. For example, the input device may be a keyboard, rollerball, pen and stylus, mouse, or voice recognition system. The input device may also be a touch screen associated with an output device. The user may respond to prompts on the display by touching the screen. The user may enter textual or graphic information through the input device. The controls **320** may be coupled to a display **310** in the form of a personal computer, a television, a television with a set-top box, a handheld computer, or a telephone, fixed or mobile, handset.

[0062] Embodiments of a remote player device **110** may be a television, a cable interactive set-top box, a remote control, a personal computer, or a mobile or fixed telephone handset. Another embodiment may comprise a handheld computer coupled to a fixed or preferably wireless network. Also, a host gaming device **160** may also be a remote player device **110**.

[0063] In one embodiment, a remote gaming device **110** may be in a location approved by a gaming agency with controls **320** and display **310** which match the appearance of a stand-alone gaming device. For example, a remote gaming device **110** may be appear to be a slot machine with an arm control **320**, a mechanical or electronic "slots" display **310**. In other embodiments, remote gaming devices **110**, regardless of location, may have controls and displays which match the appearance of a host gaming device **160**. This may include control devices coupled to personal computers or set-top boxes which may be customized for one or more games.

[0064] Indicia of identity and age received from a smart card reader **380**, biometric identity device **390**, or user entry of a password may also be compared to records stored on the remote player device **110**. For example, a remote player device **110** in a hotel room may be programmed by hotel staff to store identification information for eligible guests in the room containing the gaming device without the identification information being included in the casino database **170**. In these embodiments, access to the remote player device thus may itself be an indicium of legal age to the central gaming controller **180** or host gaming device **160**.

[0065] A central gaming controller **180** may manage the interaction of remote player devices and host gaming devices. The central gaming controller **180** may comprise one or more server computers or may be integrated with a host gaming device. In the embodiment depicted in **FIG. 10**, the application server **1027** and request processing servers **1023** comprise the central gaming controller **180**.

[0066] One embodiment of a gaming system **100** comprises a single remote player on a remote player device **110** establishing a gaming session on a host gaming device **160** with no local player using the host gaming device **160**. In this embodiment, the local controls **220** of a host gaming device **160** become disabled for local play during the remote gaming session. Correspondingly, a host gaming device **160** in this embodiment also becomes unavailable for remote play while a player uses the local controls **220** to use the host gaming device **160**.

[0067] Another embodiment comprises a single player using the local controls **220** of a host gaming device **160** and a single remote player on remote player device **110** concurrently. Thus in this embodiment, the local game controls **220** on the host gaming device **160** are not disabled during the remote gaming session.

[0068] Another embodiment of the gaming system **100** comprises a single local player of the host gaming device **160** and multiple remote players on a plurality of remote player devices **110** having concurrent gaming sessions. A similar embodiment comprises multiple concurrent remote players and no local players on the host gaming device **160** because the local controls **220** may be disabled during the remote gaming sessions.

[0069] Another embodiment of a gaming system **100** comprises one or more remote player devices **110** which are physically located in a location approved by a gaming agency and networked to a host gaming device **160** that hosts both local and remote player sessions. Players physically located in the casino may occupy a remote player device **110** and play the games provided by the host gaming device **160**. Concurrently, gaming sessions to one or more remote player devices **110** physically located outside the casino may be provided. Thus, in this embodiment, players may concurrently play using the host gaming device **160**, a physically remote player device **110**, or a remote player device **110** in a location approved by a gaming agency.

[0070] Another embodiment of the invention comprises one or more remote player devices **110**, physically located in a location approved by a gaming agency and at least one host gaming device **160**. In this embodiment, player sessions may only be established on a host gaming device **160** from a remote player device **110** if that remote player device **110** is physically located in a location approved by a gaming agency, such as a casino gaming floor. Players may also play the host gaming device **160** using local controls **220** concurrently with remote player sessions.

Thus, in this embodiment, players may concurrently play using the host gaming device **160**, or a remote player device **110** that is located in a location approved by a gaming agency.

[0071] In each of the above disclosed embodiments, the remote player devices **110** that may concurrently receive game information from a host gaming device **160** may be limited to a predetermined number that is determined by a regulatory gaming agency for the jurisdiction.

[0072] A remote player device **110** that is physically located in the casino in a location approved by a gaming agency, such as a casino gaming floor, may differ from a remote player device physically located outside the casino floor. In one embodiment, a remote player device **110** located in a location approved by a gaming agency resembles the appearance of a stand-alone gaming device and may thus be similar in appearance and operation to the host gaming device **160**.

[0073] In one embodiment, a remote player device **110** requests game data from the host gaming device **160** by sending a request for a game to a central gaming controller **180**. The central gaming controller **180** then transmits the request for a game to the host gaming device **160**. The host gaming device **160** receives the request and provides game data to the central gaming controller **180** that passes to the remote player device **110**. That information is then translated into a game by the remote player device **110** and displayed or performed to the player. The remote player device **110** may contain on-board hardware and software that may be required to present a game. The regulated portion of hardware and software required to execute a game, such as a random number generator, is on the host gaming device **160** and the information transmitted to the remote player device **110** each time a game is requested.

[0074] Gaming devices according to an embodiment of the invention may use mixed-protocol delivery systems for game content and game results. Game information and results comprising image and sound data may be delivered by packet based network protocols such as IP datagrams, by connection-oriented network protocols, or by a combination of both. Streaming media protocols may also be employed. During a given gaming session, these communication methods may be used interchangeably or concurrently.

[0075] In one embodiment, communication over the data networks **120**, **140**, or **150**, may use IP datagrams to package image and sound data comprising a host gaming device interface and display, encrypts it, and delivers it to the remote player device.

[0076] Internet Protocol (IP) is a network layer protocol used by many corporations, governments, and the Internet worldwide. IP is a connectionless network layer protocol that performs addressing, routing and control functions for transmitting and receiving datagrams over a network. The network layer routes packets from source to destination. An IP datagram is a data packet comprising a header part and a data part. The header part includes a fixed-length header

segment and a variable-length optional segment. The data part includes the information being transmitted over the network. As a connectionless protocol, IP does not require a predefined path associated with a logical network connection. Hence, IP does not control data path usage. If a network device or line becomes unavailable, IP provides the mechanism needed to route datagrams around the affected area.

[0077] The remote player interacts with a game through a remote player interface **300**. A remote player device **110** may send commands back to the central gaming controller **180** as, in one embodiment, IP datagrams. The IP datagrams are interpreted by the central gaming controller **180** and used to proxy user interface interaction between the gaming device and the remote player. Game results may also be packaged as IP datagrams and delivered to the remote player through this method.

[0078] Alternative embodiments may use connection-oriented protocols such as TCP, or a combination of connection oriented protocols and connectionless packet protocols such as IP. Transmission Control Protocol (TCP) is a transport layer protocol used to provide a reliable, connection-oriented, transport layer link among computer systems. The network layer provides services to the transport layer. Using a two-way handshaking scheme, TCP provides the mechanism for establishing, maintaining, and terminating logical connections among computer systems. TCP transport layer uses IP as its network layer protocol. Additionally, TCP provides protocol ports to distinguish multiple programs executing on a single device by including the destination and source port number with each message. TCP performs functions such as transmission of byte streams, data flow definitions, data acknowledgments, lost or corrupt data re-transmissions, and multiplexing multiple connections through a single network connection. Finally, TCP is responsible for encapsulating information into a datagram structure.

[0079] Static content comprising the game interface or other elements of the game may be delivered to the remote player device **110** and stored on the remote player device. This delivery of content may use a mixed-protocol as described above. A static image may be a fixed image or an animation activated by the remote control device. Such images may further be overlaid with additional game content such as images and sound that is delivered dynamically during game play.

[0080] In an embodiment of the invention, a central gaming controller **180** converts image and sound data comprising the gaming device interface and display from the remote machine into a data stream (for example but not limited to MPEG-2), encrypts it, and delivers it to the remote player device **110**. The remote player interacts with the game using the remote player interface **300** to send commands back to the central gaming controller as IP datagrams. The IP datagrams may be interpreted by the central gaming controller **180** and used to proxy user interface

interaction between the gaming device **160** and the remote player device **110**. Game results may also be packaged as a data stream and delivered to the remote player through this method.

[0081] **FIG. 4** is a flowchart depicting a method employed when a command message is acknowledged by a central gaming controller **180** according to one embodiment of a gaming system **100**. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Note that in some embodiments, not all messages received by the central gaming controller **180** need be acknowledged. Starting at step **401**, a command message is sent to the central gaming controller **180** by a host on the network. The host may be remote player device **110** used for remote play, or other authorized network devices. Next, at step **405**, a qualified request message is received by the central gaming controller **180**. Moving to step **410**, the message is then recorded in a database. The database may be a casino database **170**. Proceeding to step **415**, the message is processed and a response prepared. Next at step **420**, the response is recorded in the database. Moving to step **425**, the response is sent back to the requesting device. At step **430**, a test to determine whether an acknowledgment of the message has been received is made. Continuing at step **435**, if the timeout value has passed control continues to step **440**, if the timeout period has not expired control returns to step **430**. Moving to step **440**, whether the message has not been acknowledged by the originating host is tested. If acknowledgement has been received, control proceeds to **445**, if not control proceeds to step **455**. At step **445**, the message status is recorded as "RECEIVED" and the process moves to the end state. Returning to step **455**, where the process flow continues following an unacknowledged message, the system sends a status request message to the sending host. Next, at step **460**, if the originating device responds to the message then flow continues to step **465**, otherwise control moves to step **480**. Moving to step **465**, a diagnostic message is sent to query whether the originating device is ready to receive the original message. Next at step **470**, if the originating host responds that it is ready to receive the original message, then control transfers to step **425** but if the originating host fails to respond then control moves to step **480**. Moving to step **480**, the status of the originating host is set to offline until such time as the originating host can respond or reinitializes, and the process moves to the end state.

[0082] **FIG. 5** is a flowchart depicting a method used when a request for a remote gaming session is received, when playing a game, and when terminating the remote gaming session. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at **510**, a request for a remote gaming session is received as a request for a secured encrypted connection to the central gaming controller **180**. Included in the request are the remote players security credentials in the form of a security certificate, for example, X.509 certificate. Next at **515**, the security credentials are authenticated.

This authentication may be performed by submitting the security certificate to a certificate authority for authentication. Moving to **520** if the player is not authenticated, control reverts to **515**. Continuing to step **525**, the central gaming controller **180** establishes a secure encrypted connection with the remote player device **110**. Next, at step **530**, if required the player transfers funds to use during the remote gaming session. Continuing to step **535**, the player then chooses a host gaming device **160** to play. Next, at step **540**, in one embodiment, when a host gaming device **160** is chosen for remote access play the local controls of the host gaming device **160** is disabled to prevent local play. Moving on to step **545**, a remote play session is opened on the host gaming device **160**. Continuing at step **550**, after a remote gaming session is established on the host gaming device, the central gaming controller **180** sends a message to the host gaming device **160** instructing it to displace representations of its user controls, graphics and sounds to the remote player interface **300**. The central gaming controller **180** directs the host gaming device **160** controls over the secured encrypted connection and manages the remote gaming session. Next at step **555**, the remote player may transfer funds from a player account to the host gaming device **160** for wagering on the host gaming device **160**. Moving to step **560**, a wager is made. Next at, **656** a game is played. Continuing to step **570**, the central gaming controller **180** delivers the results of the game to the remote player interface **300**. Next at step **571**, the remote player may repeat the sequence from step **560**. Next at step **575**, if there are any credits on the host gaming device **160** when the player terminates the remote gaming session, the central gaming controller **180** automatically transfers those credits back to the players account. Moving to step **580**, the central gaming controller **180** terminates the remote gaming session with the host gaming device **160**. Continuing to step **585**, the central gaming controller **180**, enables local play on the host gaming device **160**, control is then transferred to the end state.

[0083] **FIG. 7** is a flowchart depicting a method for a host gaming device **160** to become connected to a network using security certificates and a certificate authority. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at **705**, a host gaming device **160** starts the process of connecting to a network as part of its initialization mode. Continuing to step **720**, at a point during initialization, the host gaming device **160** submits a security certificate to a certificate authority for authentication. Moving to step **725**, the certificate authority authenticates the certificate. Next at step **730**, if the certificate is authenticated control moves to step **740**, otherwise control moves to step **735**. Continuing on to step **740**, the host gaming device **160** is permitted onto the network and the process moves to its end state. Returning to step **735**, if the certificate is not authenticated then a log entry is generated and the host gaming device **160** is not permitted onto the network.

[0084] Embodiments according to the invention may also use instant messaging and/or email messaging systems. Typical instant messaging systems permit computer users to type text messages and add file attachments into a host program and have the host program automatically deliver the text through a virtual direct connection to a target computer. Public email systems are those available for general use, as over the internet. Examples of public instant messaging systems in use today include but are not limited to chat programs like IRC, MSN Messenger, AOL Instant Messaging and a host of others. Private systems are restricted to a casino or gaming system. Typical email messaging systems permit messages and file attachments to be entered into a host program and addressed to a specific recipient on a network. These messages may not be delivered directly to the addressee, but are sent to a storage area where the recipient may retrieve the message at a time of their own choosing.

[0085] Gaming devices **160** and remote player devices **110** routinely exchange information with a central gaming controller **180** for, typically, but not limited to, account and game tracking functions. In one embodiment of the invention, devices may send and receive data over public and/or private email-type messaging systems. The message body of any particular message may vary, using a proprietary or non-proprietary format, and may be encrypted or in human-readable format. Messages may be sent at a time determined by the message originator, typically, but not exclusively, in response to an event. The recipient of the message may be any device capable of consuming the message. The message recipient may be responsible for checking the prescribed message storage area for messages addressed to it. The message recipient may reply to a received message or may generate a new message to a specific recipient, a group of recipients, or all recipients connected to the system. Remote player devices **110** may periodically check for new messages in the system and process them.

[0086] According to one embodiment of the invention, gaming devices **160** may send and receive data over public and/or private instant messaging systems. The message body of any particular message may vary, using a proprietary or non-proprietary format, and may be encrypted or in human-readable format. Messages may be sent at a time determined by the message originator, typically, but not exclusively, in response to an event. The recipient of the message may be any device capable of consuming the message. Both the gaming device **160** and the message recipient may queue incoming and outgoing messages. Queuing messages permits devices involved in instant message communications to accept new messages while processing received messages and to generate outgoing messages for delivery as system resources permit.

[0087] In another embodiment according to the invention, devices may send and receive data over public and/or private email-type messaging systems. The message body of any particular message may vary, using a proprietary or non-proprietary format, and may be encrypted or in human-readable format. Messages may be sent at a time determined by the message

originator, typically, but not exclusively, in response to an event. The recipient of the message may be any device capable of consuming the message. The message recipient may be responsible for checking the prescribed message storage area for messages addressed to it. The message recipient may reply to a received message or may generate a new message to a specific recipient, a group of recipients, or all recipients connected to the system. Gaming system devices **110** and **160** may periodically check for new messages in the system and process them.

[0088] Embodiments according to the invention may present promotional messages during remote play sessions. Messages sent may comprise instant messages for promotional information, notification of events, or other pieces of information that can be communicated electronically. Promotional messages may also include jackpot and bonus information. A promotional message server may be used to construct and send promotional messages. In one embodiment, a computer server, comprising a central gaming controller **180**, may also comprise the promotional message server.

[0089] A user interface may be provided to construct message templates. These templates are then used to construct a deliverable message. Embodiments of a message template may comprise a timeout value that indicates how long the message is to be displayed, the frequency with which the message displays in relationship to other scheduled messages, a limitation value that prevents the message from being displayed too often and an expiration date after which the message is no longer used in the system. Custom graphics and display modes may also be specified for a message template, such as icons, animations, and various scrolling methods.

[0090] A remote player device **110** may present a promotional message for an amount of time determined from the contents of the promotional message. The promotional message may be presented to a user in conjunction with gaming information. The presentation may contain icons, animations, and various scrolling methods. In addition multimedia such as sound and video may be utilized.

[0091] The promotional message server may also provide a dynamic data insertion function to insert player information such as the player's name or birthday into a message prior to delivery. Dynamic data insertion may be accomplished through the use of specialized tags within the message body. When encountered, the tag characters within the message are replaced with data from a related data source. The specific tag's character sequence is associated with a specific subset of the data in the data source, such as a player's name in a data source of player information. Processing comprises reading the data source and its subsets, parsing the specialized tags from the message template, indexing the data source and replacing the tag characters with data from the data source to create a deliverable message for each item in the data source. This sequence continues until all the data in the data source has been included in messages. The messages may be delivered

as they are created or queued until all items in the data source have been used to create messages, then all messages may be sent at the same time.

[0092] In one embodiment, a gaming system **100** may comprise a card reader installed in a gaming device **280** or remote player device **380**. Promotional messages may be based on information obtained about a player that is either stored on a card inserted into the card reader or by using identifying information from the card to access the casino's proprietary database systems **170**.

[0093] One embodiment of the promotional message server may also provide a dynamic grouping function in which a subset of players currently gaming is selected and collected into a group. Casino operators may address a message template to this dynamic subset of current players and send a specific message or messages exclusively to that subset. These messages may be constructed using the dynamic data function. The dynamic grouping function may use criteria specified by the casino and available in the casino's proprietary database systems **170** and criteria generated by live gaming activity to establish a profile that players must meet to be selected. The criteria may comprise loyalty points the player has earned, a player's birthday, length of current gaming session, or other data that is collected by the casino on players and gaming activity.

[0094] The dynamic grouping function may be scheduled to run at time intervals determined by the casino. Each time the interval is reached the promotional gaming server searches for current players that meet the established criteria and builds a dynamic group then sends the assigned message to that group of players exclusively. The gaming devices **160**, remote player device **110**, card readers installed in gaming devices **280** and remote player device **380**, and casino proprietary database systems **170** may provide data to search for players that meet the specified criteria and assemble them into a dynamic group.

[0095] In one embodiment of the invention, the casino may advertise a casino sponsored event. The casino may use a user interface display to construct the message and schedule its delivery start time, duration of the message e.g. number of hours, days, weeks, or months that the message will run, and specific values that weight the message's delivery interval and frequency amongst other promotional messages scheduled in the system. The style of message may also be specified, including but not limited to flashing, scrolling, scroll direction, and the use of custom graphics. The casino operator may also specify the criteria players must meet to receive the message. Once the casino operator accepts the promotional message configuration, the promotional message server may deliver the message across a network to remote player devices **110** or host gaming systems **160**.

[0096] An embodiment of a gaming system **100** may provide for the electronic transfer of funds to a gaming device for the purpose of making wagers. When a player chooses a gaming device **160** to play remotely, funds are electronically transferred to the gaming device and

appear as credits on the gaming device **160**. The player then uses those credits to make wagers on game outcome. When the player is finished, the system transfers any remaining credits on the gaming device back to the source of funds or to an alternate storage. Limitations on the amount of funds transferred may be set for a minimum or maximum amount transferred, a minimum or maximum amount transferred within a given time period, or a minimum or maximum amount transferred for the life of the account, or a combination of any of these. The limitation may also vary between accounts, permitting one account to have a different limitation on transfers than another. When the limitation set is reached, further transactions are prevented until the limitation is resolved. The limitation may be set voluntarily by the player, by the casino, or by a gaming authority. Limitations may be set for all players within a specific jurisdiction or for selected players only. The source of funds used by a player for remote access play may be maintained in a database located on a computer that is directly or indirectly connected to the casino network **150**.

[0097] **FIG. 6** is a flowchart depicting an embodiment of the invention whereby a player transfers funds from a bank account to a player account for the purpose of wagering on games. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at step **601**, a remote player device **110** initiates an electronic funds transfer. Continuing to step **605**, the central gaming controller **180** verifies the remote players banking information. Next at step **610**, if the banking information is valid, control transfers to step **620**, otherwise control moves to step **615**. Continuing at step **620**, the remote player device **110** prompts the player to enter the amount of the transfer. Moving to step **615**, the central gaming controller **180** verifies fund availability. Next at step **630**, if funds are not available control moves to step **615**. Otherwise, control moves to step **635**, where, in a one embodiment, the central gaming controller **180** may consult a casino database **170** and determine whether the remote players total gaming activity exceed limits placed on that activity. Next at step **640**, if the limit is reached control moves to step **615**. Otherwise, continuing at step **645**, the transfer is completed. Returning to step **615**, if the players banking information is not correct, funds are not available or a transfer limit is reached, then the transaction is canceled and control transferred to the end state.

[0098] An embodiment of a gaming system **100** may record the interaction between remote players and host gaming devices **160** during remote gaming sessions for the purpose of resuming games in-progress after a communications failure. If at anytime the connection between the remote player and a gaming device becomes unavailable, the system has a sufficient record of player positions to restart the game as at the time just prior to the failure. Thus an embodiment of a gaming system may record, transfer, and reinstate on a like device an encrypted block of data representing the precise state of a particular gaming device **160** at the time that the data block is requested. The encrypted block of data is generated by the gaming device **160** and transferred

using a communication protocol. The encrypted block of data may be used to continue a game in-progress that was interrupted by a gaming device **160** failure or other system failure. In addition, the payer's wager and credit data along with gaming payout data may be included in the data block. The data may also be transported to another gaming device **160** for the purpose of completing an interrupted game or resuming a gaming session. The destination gaming device **160** receives the encrypted block of data, decrypts it, and loads the game state into its own systems, allowing a game in-progress to complete or a game session to continue.

[0099] **FIG. 8** is a flowchart depicting a method for a gaming device **160** to build and deliver an encrypted block of data representing the complete state of the gaming device. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at **805**, a central gaming controller **180** sends a message to a host gaming device **160** to initiate the build of the encrypted data block. Continuing to step **10**, the gaming device responds with an acknowledgement. Next, at step **815**, the gaming device **160** begins the build process. When finished with the build and encryption process, at step **820**, the gaming device saves the data block to non-volatile memory in the gaming device. Continuing to step **825**, the gaming device **160** sets an indication that may be queried by the central gaming controller **180** as to the status of the build/encryption process. Moving to step **830**, the central gaming controller **180** checks the gaming device's status. Next at step **835**, if the build/encryption process is complete, control continues to step **840**, otherwise control returns to step **830**. Moving to step **840**, the central gaming controller **180** retrieves the data block from the gaming device **160**. Next, at step **845**, when the central gaming controller **180** has retrieved the data block it saves the data block to a database. Continuing to step **850**, the central gaming controller then checks the validity of the saved data block. If the data block is not verified then the central gaming controller initiates another retrieval by returning control to step **840**.

[0100] **FIG. 9** is a flowchart depicting a method for retrieving an encrypted block of data representing the state of a gaming device from a database and loading the encrypted block into a gaming device. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at step **905**, the central gaming controller **180** retrieves a saved encrypted data block from the database. Next at **910**, the controller **180** verifies the integrity of the data block. Continuing to **915**, if the data block is verified, control continues to step **925**, if not control moves to step **920**. Returning to the flow of control at **925**, the central gaming controller **180** notifies a target gaming device **160** of an intent to upload the data block. Next, at step **930**, the target gaming device **160** responds with a message indicating whether it is available for the upload. Moving to step **935**, if the target device is ready control moves to step **940**, if not control is diverted to step **920**. Returning back to step **940**, the encrypted data

block is uploaded to the target gaming device **160**. Next at step **945**, the target gaming device **160** verifies the encrypted data block. Moving on to step **950**, if the data block was verified, the gaming device moves on to step **955**, if not verified, control moves to step **920**. Continuing on to step **955**, the gaming device **160** initializes its state to the new state defined by the received data block and the process moves to the end state. Returning back to step **920**, which is reached on error conditions, an error log entry is generated and the requesting process notified.

[0101] **FIG. 10** is a block diagram depicting one embodiment of a gaming system according to the present invention wherein the host gaming devices **160** are available for remote play over a network that connects to a cable modem termination system. The cable modem termination system **1005** is located at the head-end of a cable television provider who makes broadband network connectivity available as a service to its customers. Cable television customers who subscribe to broadband or digital television services access the remote network **120** through a digital home communications terminal (DHCT) **1000**. The remote player device **110** may be a stand-alone cable modem or a set-top box that includes a cable modem and a digital television broadcast decoder. The DHCT **1000** may, in some embodiments include the remote player device **110**. The remote player interface **300** may be any device or combination of devices that remote players operate to interact with the remote player device **110**, for example, a television with remote control or a personal computer. To connect to the central gaming controller **180**, a remote player uses the remote player device **110** to send messages, using, in one embodiment, IP datagrams, through the DHCT and the cable modem termination system **1005**. The cable modem termination system **1005** uses a network router **1004** to route the IP datagrams over a network connection **140** to the central gaming controller **180**. The backbone network connection **140** can be any type of network connection such as a dedicated T1 or fiber optic over which network traffic can be exchanged. In preferred embodiments the backbone network **140** is part of a closed loop network. However, in other embodiments, a public network such as the Internet may form at least a portion of the backbone network. Encryption of the data may be performed, either at the endpoints such as remote player device **110**, at a host gaming device **160**, at a central gaming controller **180**, over network **120**, or only over network **140**.

[0102] Network traffic from the remote network **120** and backbone network **140** travels over a number of virtual local area networks (VLAN) configured using a multilayer network switch **1022**. Segmenting the internal network into VLANs creates security zones whereby only permitted network traffic appears on a given VLAN.

[0103] IP datagrams are received over the backbone network **140** through network router **1020** and firewall **1021**. Network router **1020** filters IP datagrams that are not coded with the configured port for access to the gaming network **150**. If an IP datagram passes the network

router **1020** it then must pass the firewall **1021** in order for the IP datagram to be processed by the request processing server(s) **1023** which comprise a portion of a central gaming controller **180** in this embodiment.

[0104] The firewall **1021** has two network interfaces **1050, 1051**; the external-facing network interface **1050** is connected to the router **1020** and the internal-facing network interface **1051** is connected to the multilayer network switch **1022**. In this configuration the firewall **1021** acts as a type of network switch that may perform additional security checks on the IP datagram, then move the datagram to the internal-facing network interface **1051** where the multilayer network switch **1022** moves the datagram to the VLAN where request processing server(s) **1023** are located.

[0105] Each request processing server **1023** has two network interfaces **1052, 1053**, both connected to the multilayer network switch **1022**. Each network interface **1052, 1053** may be configured on a different VLAN of the multilayer network switch **1022**. The multilayer network switch **1022** moves IP datagrams between the firewalls **1021** internal-facing network interface **1051** and the request processing server(s) **1023** external-facing network interface **1052**. This embodiment provides a layer of protection for the host gaming devices **160** in the event that the request processing server(s) **1023** are compromised.

[0106] When an IP datagram arrives at a request processing servers **1023** external-facing network interface **1052**, the request processing server **1023** interprets the IP datagram and issues commands over its internal-facing network interface **1053** to the application server **1027**. The request processing server **1023** may reject invalid commands or make other determinations as to the appropriateness of a request that prevent the request from being passed on to the application server **1027**. Likewise, the request processing server **1023** may request data from the application server for use in building its own response to the request, which may or may not require an acknowledgement from the remote player device **110** as described below.

[0107] Command messages received by the application server **1027** may be recorded in a database using the database server **1025**. The application server **1027** then executes the command, which may include any function relevant to the operation of the host gaming device **160** and may or may not return data to the request processing server **1023** for delivery to the remote access player. In one embodiment, the database server **1025** may comprise the casino database **170**. In other embodiments the database server **1025** and the application server **1027** may comprise the casino database **170**.

[0108] Some commands may require the remote player device **110** to acknowledge the receipt of information sent from the central gaming controller **180**. For commands that require acknowledgement, the central gaming controller **180** queues the status of the messages that are sent to the remote player device **110**. The status of messages sent but not acknowledged is stored in a

database as "open" using the database server **1025**. When the remote player device **110** receives the message it sends an acknowledgment message back to the central gaming controller, which in turn marks the message in the database as "closed"; indicating that the message has reached its destination and has been acknowledged. If the message is not acknowledged within a specified timeout, the message is resent. **FIG. 4** depicts the sequence of events for the receipt, queuing and response loop for qualifying messages.

[0109] Recording of messages between the remote player device **110** and a host gaming device **160** by the central gaming controller **180** allows each game or transaction, on both the host gaming device **160** and remote player device **110**, to be recorded. This allows each host gaming device or remote player device to be individually auditable using standard accounting practices in the gaming jurisdiction where the game is located. In one embodiment, a third party, such as a gaming authority may be sent the records of games and transactions online by the gaming system **100**.

[0110] When the application server **1027** receives a command request that requires communication with gaming devices **160, 161, 162** it connects to those devices using terminal server **1035**. Terminal server **1035** provides Ethernet connectivity to the RS232 serial interface **1054** of the game. Through that interface the remote player device **110** communicates to the gaming devices **160, 161, 162** using a communications protocol supplied by the gaming machine manufacturer. The protocol includes commands that permit the remote operation of the gaming devices **160, 161, 162** and the reporting of game results so that the application server **1027** can control remote play.

[0111] **FIG. 11** depicts a more detailed network diagram of one embodiment of network **150** and elements of a gaming system **100** connected to network **150**. This includes a host gaming device **160**, and a database **160**. As in the embodiment of **FIG. 10**, a central gaming controller **180** may be comprised of request processing servers **1027** and an application server **1023** connected to one or more VLANs of network **150**.

[0112] While the above detailed description has shown, described, and pointed out novel features of the invention as applied to various embodiments, it will be understood that various omissions, substitutions, and changes in the form and details of the device or process illustrated may be made by those skilled in the art without departing from the spirit of the invention. The scope of the invention is indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

WHAT IS CLAIMED IS:

1. A gaming system comprising:

a data network, wherein the data network is comprised of at least one logical segment, wherein at least one logical segment is a closed-loop network;

a host gaming device connected to the data network, the gaming device configured to execute at least one game wherein the host gaming device in a location approved by a gaming agency;

a plurality of remote player devices connected to the closed-loop network; and

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device and on each of the plurality of remote player devices,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device, and

wherein the host gaming device is configured to provide game information to a predetermined number of permitted remote player devices.

2. A gaming system comprising:

a data network;

a host gaming device connected to the data network, the gaming device configured to execute at least one game; and

a plurality of remote player devices connected to the data network,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device,

wherein the host gaming device is configured to provide game information to a predetermined number of permitted remote player devices, and

wherein at least one of the plurality of remote player devices is permitted based upon, at least in part, the geographic location of the remote player device.

3. The system of Claim 2, wherein the predetermined number is determined by a gaming agency.

4. The system of Claim 2, wherein at least one of the plurality of remote player devices is permitted based upon, at least in part, an age of a user of the remote player device.

5. The system of Claim 2, wherein the data network is, at least in part, the Internet.

6. The system of Claim 2, wherein the data network is comprised of at least one logical segment.

7. The system of Claim 6, wherein at least one logical segment is a closed-loop network.

8. The system of Claim 6, wherein the host gaming device is configured to identify the geographic location of a remote player device based, at least in part, on a logical segment corresponding to the remote player device.

9. The system of Claim 2, wherein the host gaming device is configured to identify the geographic location of a remote player device based, at least in part, on information provided by a mobile communications network.

10. The system of Claim 2, wherein the host gaming device is configured to identify the geographic location of a remote player device based, at least in part, on information provided by a GPS device.

11. The system of Claim 2, wherein the data network is, at least in part, the casino intranet.

12. The system of Claim 2, wherein the data network is, at least in part, the hotel intranet.

13. The system of Claim 2, wherein the data network is, at least in part, a wireless network.

14. The system of Claim 2, wherein the host gaming device is in a location approved by a gaming agency.

15. The system of Claim 2, wherein the host gaming device includes at least one game control configured to provide local use.

16. The system of Claim 15, wherein the host gaming device is configured to disable local use when the host gaming device is providing game information to a remote player device.

17. The system of Claim 2, wherein each of the remote player devices is in a location approved by a gaming agency.

18. The system of Claim 2, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

19. The system of Claim 2, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

20. The system of Claim 2, wherein the gaming information is, at least in part, software.

21. The system of Claim 2, wherein at least one remote player device is coupled to a credential device configured to receive information relating to a user of the remote player device.

22. The system of Claim 21, wherein the information relating to the user is an age of the user.

23. The system of Claim 21, wherein the information relating to a user is a password that is input by the user.

24. The system of Claim 21, wherein the credential device is an input device configured to receive a password from the user.

25. The system of Claim 21, wherein the credential device is a smart card reader.

26. The system of Claim 21, wherein the credential device is a biometric device.

27. The system of Claim 28, wherein the biometric device is a fingerprint reader.

28. The system of Claim 21, further comprising: a database configured to provide information associated with each of a plurality of users of the gaming system.

29. The system of Claim 28, wherein the information associated with a user includes a password.

30. The system of Claim 28, wherein the information associated with a user includes an age of the user.

31. The system of Claim 28, wherein the information associated with a user includes information relating to a fingerprint of the user.

32. The system of Claim 2, wherein the host gaming device is configured to encrypt the game information.

33. The system of Claim 2, wherein the game information is provided via a public email system.

34. The system of Claim 2, wherein the game information is provided via a private email system.

35. The system of Claim 2, wherein the game information is provided through a public messaging system.

36. The system of Claim 2, wherein the game information is provided through a private messaging system.

37. A gaming system comprising:

a data network;

a host gaming device in a location approved by a gaming agency connected to the data network, the gaming device configured to execute at least one game; and

a plurality of remote player devices connected to the data network.

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device, and

wherein the host gaming device is configured to disable local use of the gaming device when providing game information to the remote player devices.

38. The system of Claim 37, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

39. The system of Claim 37, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

40. The system of Claim 37, wherein the host gaming device is configured to allow no more than a predetermined number of remote player devices to concurrently receive game information provided by the host gaming device.

41. A gaming system comprising:

gaming means for executing at least one game, the game providing game information during execution;

local access means for providing local access to the game information for a user in a location approved by a gaming agency;

player means for receiving game information, presenting game information and providing at least one game control;

means for providing the game information over a data network to a predetermined number of receiving means;

means for determining the location of the receiving means; and

means for disabling the local access means.

42. The system of Claim 41, further comprising:

a means for creating an auditable record of gaming transactions on the gaming means.

43. The system of Claim 41, further comprising:

a means for creating an auditable record of gaming transactions on the playing means.

44. The system of Claim 41, wherein the predetermined number is determined by a gaming agency.

45. The system of Claim 41, further comprising:

means for receiving information associated with a user of the gaming system.

46. The system of Claim 45, wherein the information associated with the user includes the age of the user.

47. The system of Claim 45, wherein the means for receiving information associated with a user is a smart card reader.

48. The system of Claim 45, wherein the means for receiving information associated with a user is a biometric identity device.

49. The system of Claim 45, wherein the means for receiving information associated with a user is a keyboard configured to receive a password.

50. The system of Claim 45, wherein the user information includes, at least, a credential for authentication of the user.

51. The system of Claim 50, further comprising:

means for authenticating the credential coupled to means for limiting access to the gaming system.

52. A method of remotely accessing a host gaming device on a remote player device comprising:

establishing access to the host gaming device from the remote player device through a data network;

receiving gaming related information from the host gaming device through the data network;

presenting the gaming related information to a player;

receiving at least one control signal from the player;

sending the control signal to the host gaming device through the data network; and

disabling local use of the host gaming device.

53. The method of Claim 52, further comprising:

recording each gaming transaction occurring on the remote player device.

54. The method of Claim 52, further comprising:

providing a geographic location of the remote player device.

55. The method of Claim 52, further comprising:

providing information relating to a user of the remote player device to the gaming device.

56. The method of Claim 55, wherein the information relating to a user includes, at least, the age of the user.

57. The method of Claim 52, further comprising:

allowing no more than a predetermined number of remote player devices to concurrently establish a gaming session on the gaming device.

58. A method of providing remote access to a host gaming device comprising:

verifying a geographic location of a remote player device;

establishing a gaming session on a host gaming device from a remote player device through a data network;

receiving at least one control signal from the remote player device through the data network;

sending gaming related information from the gaming device through the data network;

59. The method of Claim 58, further comprising:

recording each gaming transaction occurring on the host gaming device.

60. The method of Claim 58, further comprising:

receiving information relating to a user of the remote player device on the gaming device.

61. The method of Claim 60, wherein the information relating to a user includes, at least, the age of the user.

62. The method of Claim 58, further comprising:

disabling local access to the gaming device.

63. The method of Claim 58, further comprising:

allowing no more than a predetermined number of remote player devices to concurrently establish a gaming session on the gaming device.

64. A method of resuming an interrupted gaming session on a first host gaming device comprising:

generating a gaming state of the gaming session on the first gaming device;

encrypting the gaming state;

transporting the encrypted gaming state from the first gaming device;

transporting the encrypted gaming state to a second gaming device;

decrypting the gaming state on the second gaming device; and

loading the game state into a second gaming device to resume the gaming session.

65. A gaming system comprising:

a data network;

a first host gaming device connected to the data network, the gaming device configured to:

execute at least one game,

generate a gaming state based on execution of at least one game;

encrypt the gaming state; and

send the encrypted gaming state over the data network;

a second host gaming device connected to the data network, the gaming device configured to:

receive the encrypted gaming state over the data network;

decrypt the gaming state;

resume executing at least one game from the gaming state; and

a plurality of remote player devices connected to the data network,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device.

66. The system of Claim 65, wherein the remote player devices are each configured to receive an encrypted gaming state from a first gaming device over the data network and to send the encrypted gaming state to the second gaming device.

67. The system of Claim 66, wherein the first gaming device is the second gaming device.

68. The system of Claim 65, wherein the second gaming device is configured to receive an encrypted gaming state from a first gaming device over the data network.

69. The system of Claim 65, wherein the gaming state includes user payment information.

70. The system of Claim 65, wherein the gaming state includes gaming machine payout information.

71. The system of Claim 65, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

72. The system of Claim 65, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

73. A gaming system comprising:

means for executing at least one game;

means for generating a gaming state based on execution of at least one game;

means for encrypting the gaming state;

means for sending the encrypted gaming state;

means for receiving the encrypted gaming state;

means for decrypting the gaming state; and

means for resuming executing at least one game from the gaming state.

74. The system of Claim 73, wherein the gaming state includes user payment information.

75. The system of Claim 73, wherein the gaming state includes gaming machine payout information.

76. The system of Claim 73, further comprising:

a means for creating an auditable record of gaming transactions on the host gaming device.

77. The system of Claim 73, further comprising:

a means for creating an auditable record of gaming transactions on each of the plurality of remote player devices.

78. A method of authenticating a user of a host gaming device comprising:

receiving a security certificate from the smart card;

sending the security certificate to a certificate authority for authentication;

receiving an authentication reply from the authority; and

playing a game in response to the authentication reply.

79. A method of authenticating a user of a remote player device comprising:

receiving an indicia of identity for a user;

sending the indicia of identity to an authenticator device;

receiving an authentication reply from the authenticator device; and

authorizing use of a host gaming device based on the indicia of identity

80. The method of Claim 79, wherein the indicia of identity for a user is provided by a biometric identity device.

81. The method of Claim 79, wherein the indicia of identity for a user is provided by a password input by the user.

82. The method of Claim 79, wherein the indicia of identity for a user is provided by a smart card.

83. A gaming system comprising:

a data network;

a host gaming device interfaced to the data network;

a plurality of remote player devices interfaced to the data network; and

a security device configured to provide player credentials to at least one remote player device,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device,

wherein the host gaming device is configured to provide game information to a predetermined number of permitted remote player devices, and

wherein at least one of the plurality of remote player devices is permitted based upon, at least in part, on player credentials provided by the security device.

84. The system of Claim 83, wherein the security device is a smart card reader.

85. The system of Claim 83, wherein the security device is a biometric device.

86. The system of Claim 83, wherein the security device is an input device.

87. The system of Claim 86, wherein the player credentials are, at least in part, a password.

88. The system of Claim 83, wherein the remote player device is authorized to receive game information provided by the host gaming device based, in part, on the player credentials.

89. The system of Claim 83, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

90. The system of Claim 83, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

91. A method of remotely accessing a gaming device comprising:

establishing a gaming session on a gaming device for a remote player device through a data network;

sending gaming related information from the gaming device through the data network;

receiving at least one control signal from the remote player device through the data network.

creating an auditable gaming session record representing each gaming transaction of a gaming session on the host gaming device;

creating an auditable gaming session record representing each gaming transaction of a gaming session on the remote gaming device; and

sending the record to a third party through the data network.

92. The method of Claim 91 wherein the third party is a gaming authority.

93. A gaming system comprising:

a data network comprised of a plurality of logical segments wherein a security policy controls the flow of data between logical segments;

a host gaming device connected to the data network, the gaming device configured to execute at least one game; and

a plurality of remote player devices connected to the data network,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device, and

wherein the plurality of remote player devices are each configured to control a gaming session established on the gaming device subject to the security policy wherein the security policy is based, at least in part, on the geographic location of a logical segment.

94. The system of Claim 93, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

95. The system of Claim 93, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

96. A gaming system comprising:

a data network;

a promotional message server configured to provide customized promotional messages wherein each message is customized with information associated with a user of the gaming system;

a host gaming device interfaced to the data network; and

a plurality of remote player devices interfaced to the data network,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device and to receive and present promotional messages.

97. The system of Claim 96, wherein the remote player devices are in a location approved by a gaming agency.

98. The system of Claim 96, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

99. The system of Claim 96, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

100. The system of Claim 96, wherein promotional message are comprised of bonus information.

101. The system of Claim 96, wherein promotional message are comprised of jackpot information.

102. The system of Claim 96, further comprising: at least one database configured to provide information associated with a plurality of users of the gaming system.

103. The system of Claim 96, wherein each of the plurality of remote game devices is associated with a user.

104. The system of Claim 96, further comprising a smart card reader configured to provide information associated with a user of the gaming system.

105. The system of Claim 102, wherein the database is configured to provide information which forms, at least in part, the content of the promotional message.

106. The system of Claim 96, wherein each of the plurality of remote player devices is configured to receive and present the promotional message in conjunction with game information provided by the host gaming device.

107. The system of Claim 106, wherein each of the plurality of remote player devices is configured to present the promotional message for an amount of time.

108. The system of Claim 106, wherein the amount of time is based, at least, in part on information associated with the promotional message.

109. The system of Claim 102, wherein the database is configured to provide information which comprises, at least in part, the content of the promotional message.

110. The system of Claim 96, wherein the promotional messages are transported via an instant messaging system.

111. The system of Claim 96, wherein the promotional messages are transported via an email system.

112. A method of displaying information on a remote player device comprising:

receiving a promotional message on a remote player device;

presenting the promotional message in conjunction with gaming information for an amount of time; and

removing the promotional message from the remote player device.

113. The method of Claim 112, further comprising

calculating the amount of time based, at least in part, on information associated with the promotional message.

114. A gaming system comprising:

means for data communication;

means for executing at least one game;

means for providing game information over the data network to a predetermined number of receiving means; and

a plurality of means for receiving game information over the data communication means, each coupled to a means for receiving customized promotional messages.

115. The method of Claim 114, further comprising:

means for presenting customized promotional messages in conjunction with game information.

116. The method of Claim 114, further comprising:

means for sending promotional messages.

117. The method of Claim 114, further comprising:

means for providing data used to select which players receive customized promotional messages.

118. The method of Claim 114, further comprising:

means for providing data which forms, at least in part, the content of promotional messages.

119. The system of Claim 114, further comprising:

a means for creating an auditable record of gaming transactions on the host gaming device.

120. The system of Claim 114, further comprising:

a means for creating an auditable record of gaming transactions on each of the plurality of remote player devices.

121. A gaming system comprising:

a data network;

a host gaming device interfaced to the data network;

at least one remote player device interfaced to the data network;

a video display device in communication with the remote player device; and

a remote control device in communication with the remote player device,

wherein the remote player device is configured to receive game information provided by the host gaming device and the remote control device is configured to control operation of a game.

122. The system of Claim 121, wherein the video display device is a television.

123. The system of Claim 121, wherein the video display device is a computer.

124. The system of Claim 121, wherein the video display device is a control device.

125. The system of Claim 121, wherein the remote player device is coupled to a cable television system.

126. The system of Claim 121, wherein the data network is, at least in part, the Internet.

127. The system of Claim 121, wherein the data network is, at least in part, the casino intranet.

128. The system of Claim 121, wherein the data network is, at least in part, the hotel intranet.

129. The system of Claim 121, wherein the data network is, at least in part, a wireless network.

130. The system of Claim 121, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

131. The system of Claim 121, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

132. A method of remotely accessing a host gaming device comprising:

establishing a gaming session on the host gaming device from a remote player device through a data network;

receiving gaming related information from the host gaming device through the data network;

presenting gaming related information to a player via a video display device;

receiving at least one control signal generated by a remote control device for controlling the gaming session; and

sending the control signal to the host gaming device through the data network.

133. The method of Claim 132, further comprising:

recording each gaming transaction occurring on the remote player device.

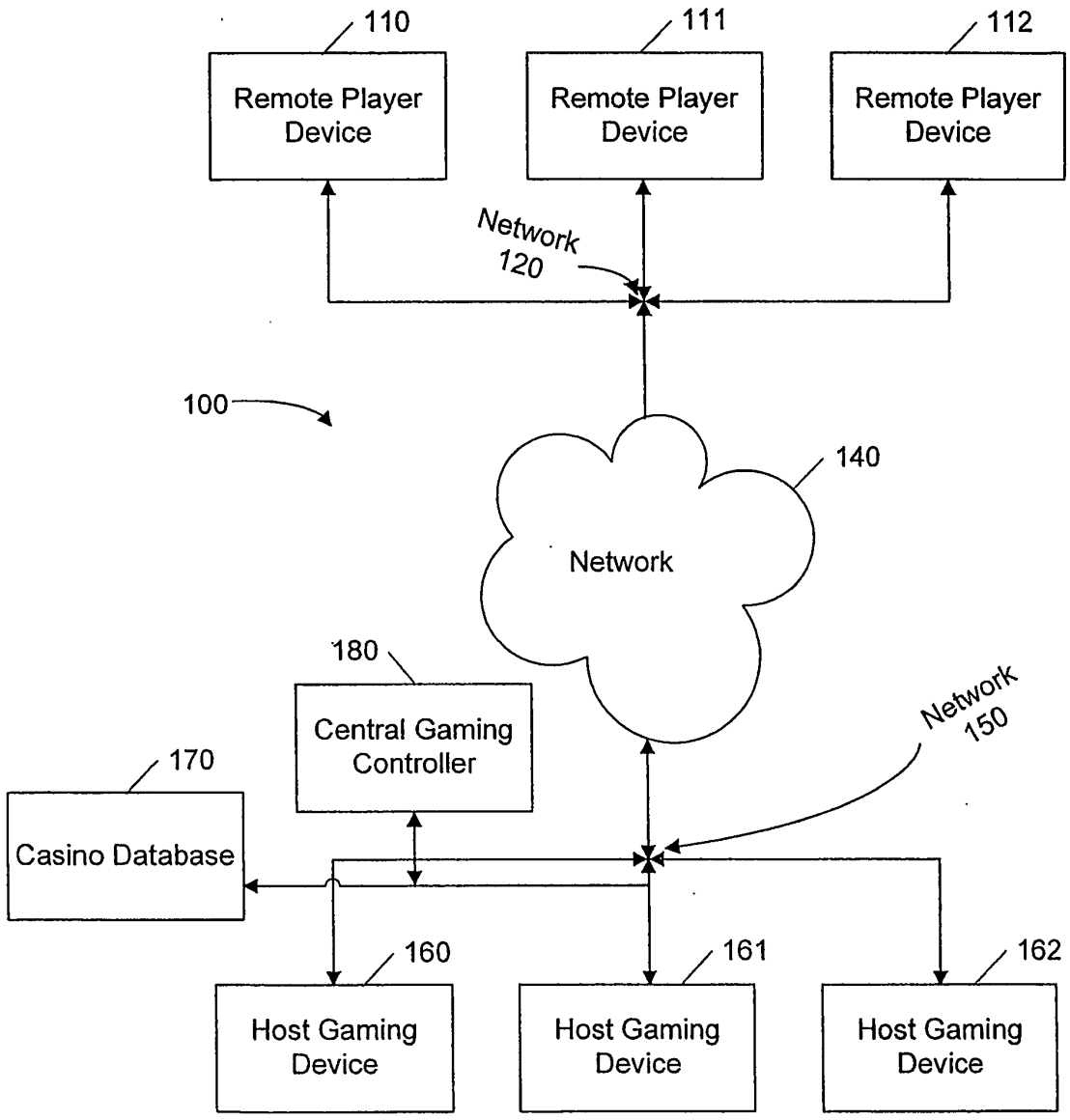

110
Remote Player Device
111
Remote Player Device
112
Remote Player Device
Network 120
100
140
Network
180
Central Gaming Controller
Network 150
170
Casino Database
160
Host Gaming Device
161
Host Gaming Device
162
Host Gaming Device

FIG. 1

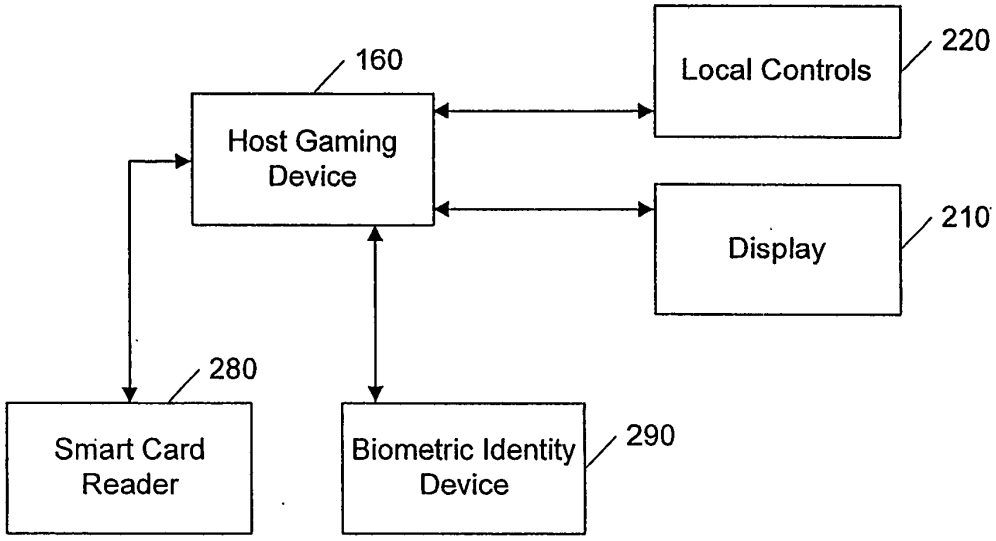

160
Host Gaming Device
Local Controls
220
Display
210
280
Smart Card Reader
Biometric Identity Device
290

FIG. 2

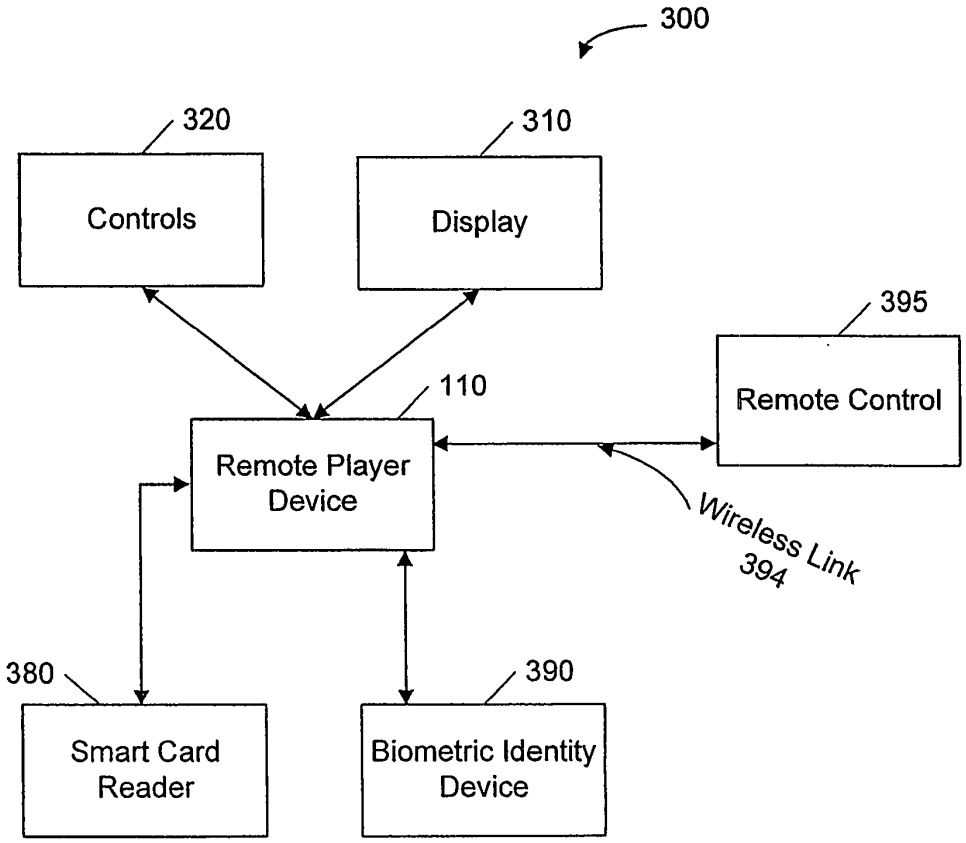

300
320
Controls
310
Display
395
Remote Control
110
Remote Player Device
Wireless Link 394
380
Smart Card Reader
390
Biometric Identity Device

FIG. 3

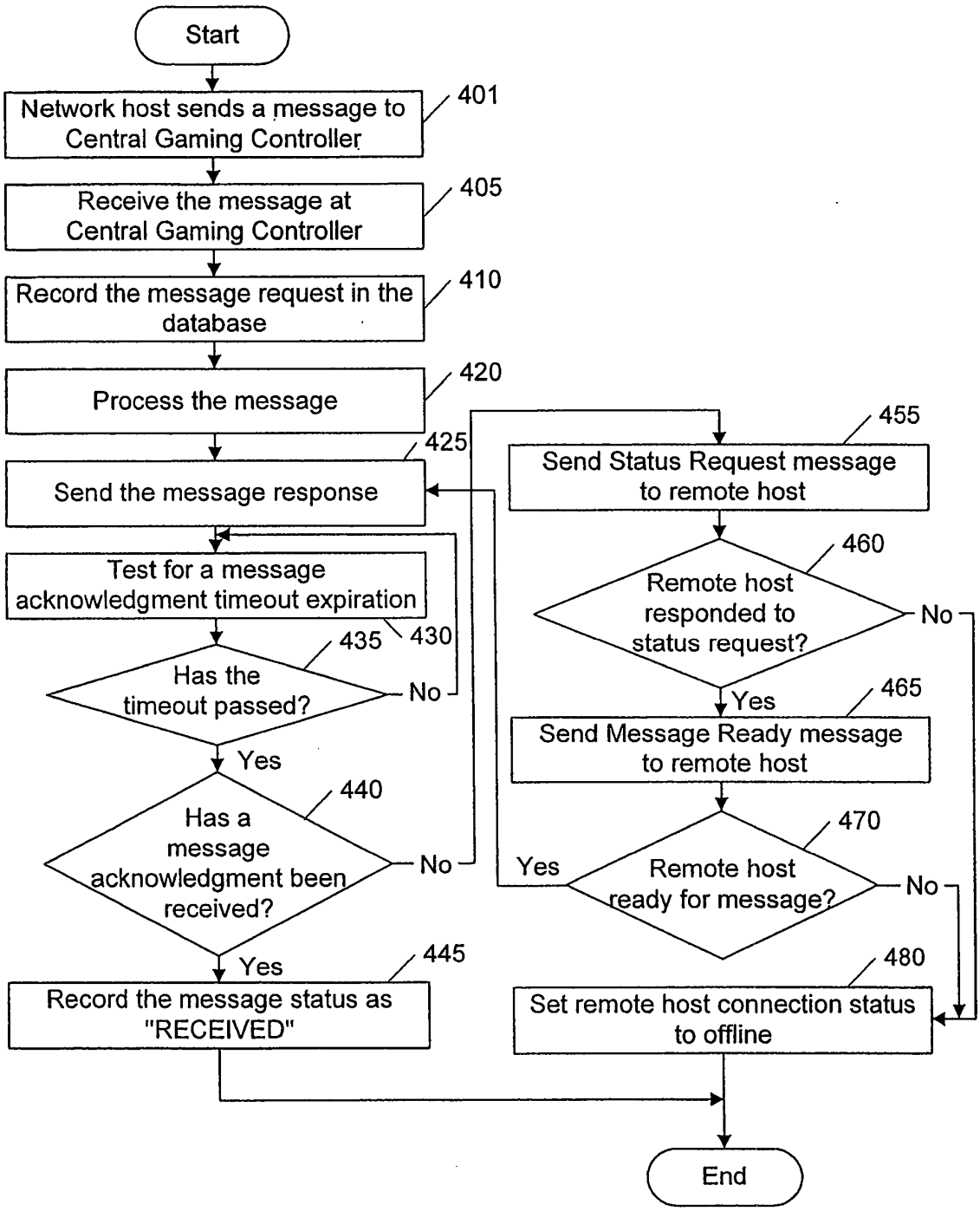

Start
Network host sends a message to Central Gaming Controller
401
Receive the message at Central Gaming Controller
405
Record the message request in the database
410
Process the message
420
Send the message response
425
Test for a message acknowledgment timeout expiration
430
Has the timeout passed?
435
No
Yes
Has a message acknowledgment been received?
440
No
Yes
Record the message status as "RECEIVED"
445
Send Status Request message to remote host
455
Remote host responded to status request?
460
No
Yes
Send Message Ready message to remote host
465
Remote host ready for message?
470
Yes
No
Set remote host connection status to offline
480
End

FIG. 4

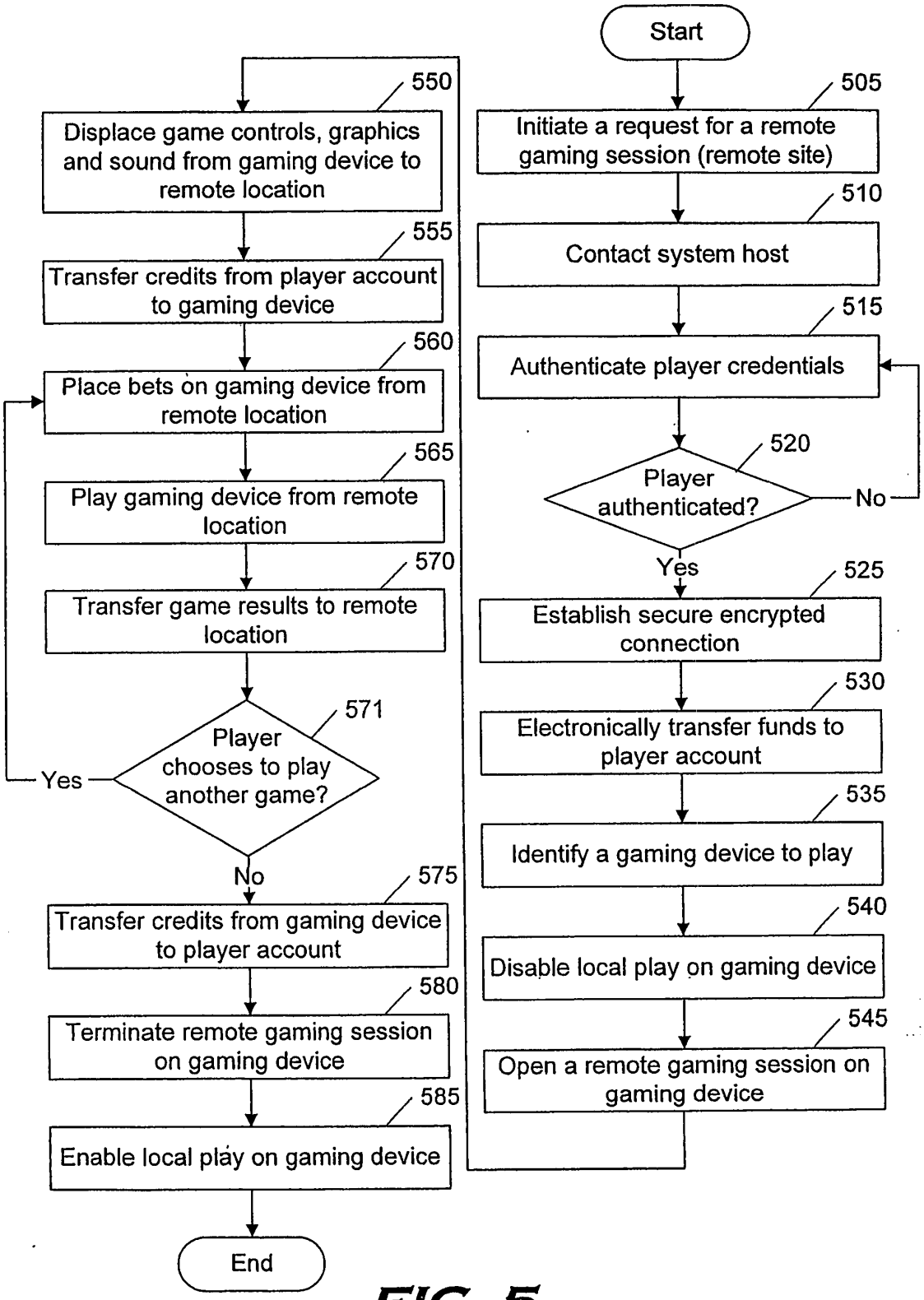

Start
505
Initiate a request for a remote gaming session (remote site)
510
Contact system host
515
Authenticate player credentials
520
Player authenticated?
No
Yes
525
Establish secure encrypted connection
530
Electronically transfer funds to player account
535
Identify a gaming device to play
540
Disable local play on gaming device
545
Open a remote gaming session on gaming device
550
Displace game controls, graphics and sound from gaming device to remote location
555
Transfer credits from player account to gaming device
560
Place bets on gaming device from remote location
565
Play gaming device from remote location
570
Transfer game results to remote location
571
Player chooses to play another game?
Yes
No
575
Transfer credits from gaming device to player account
580
Terminate remote gaming session on gaming device
585
Enable local play on gaming device
End

FIG. 5

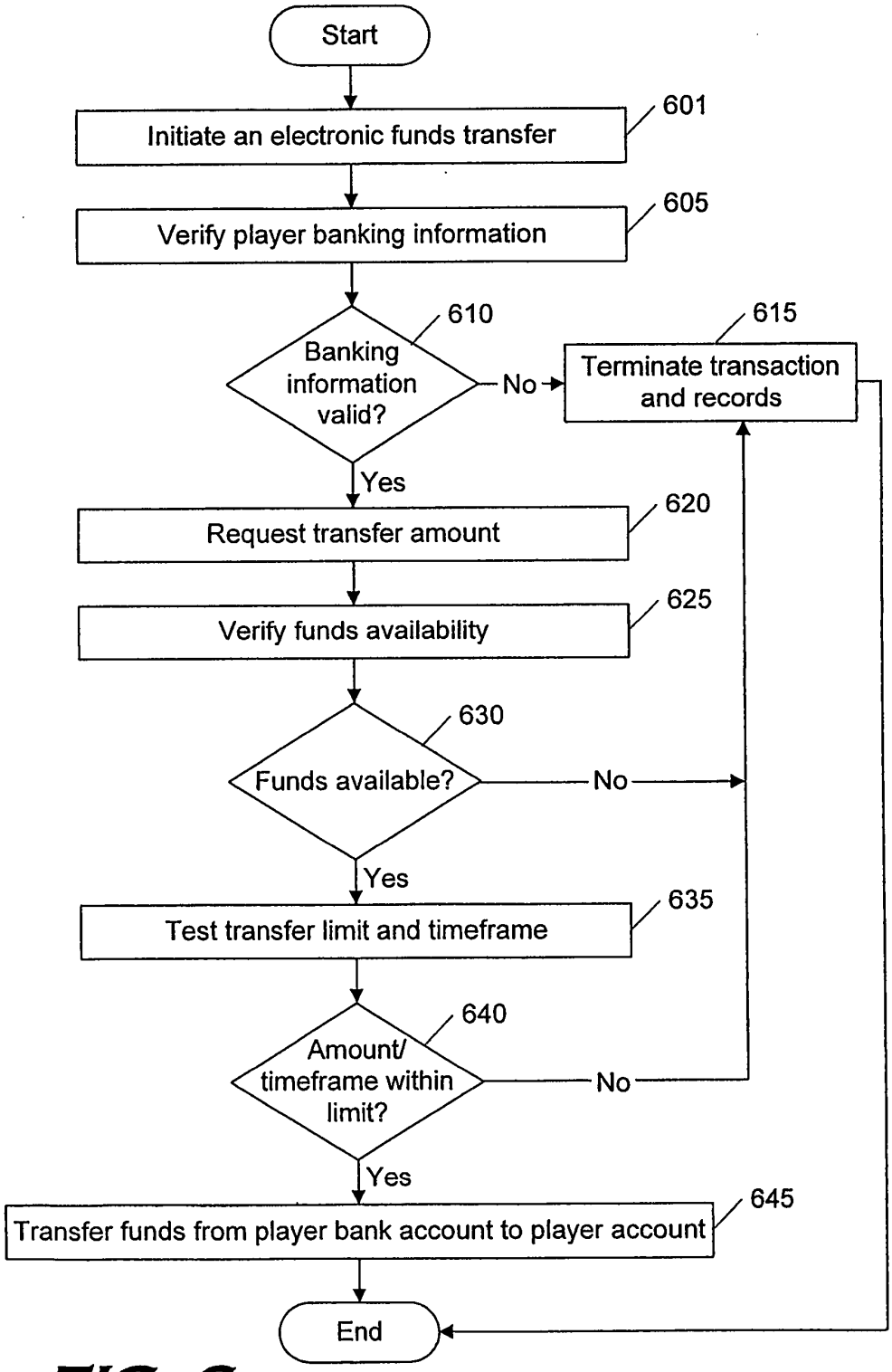

Start
Initiate an electronic funds transfer
601
Verify player banking information
605
Banking information valid?
610
No
Terminate transaction and records
615
Yes
Request transfer amount
620
Verify funds availability
625
Funds available?
630
No
Yes
Test transfer limit and timeframe
635
Amount/ timeframe within limit?
640
No
Yes
Transfer funds from player bank account to player account
645
End

FIG. 6

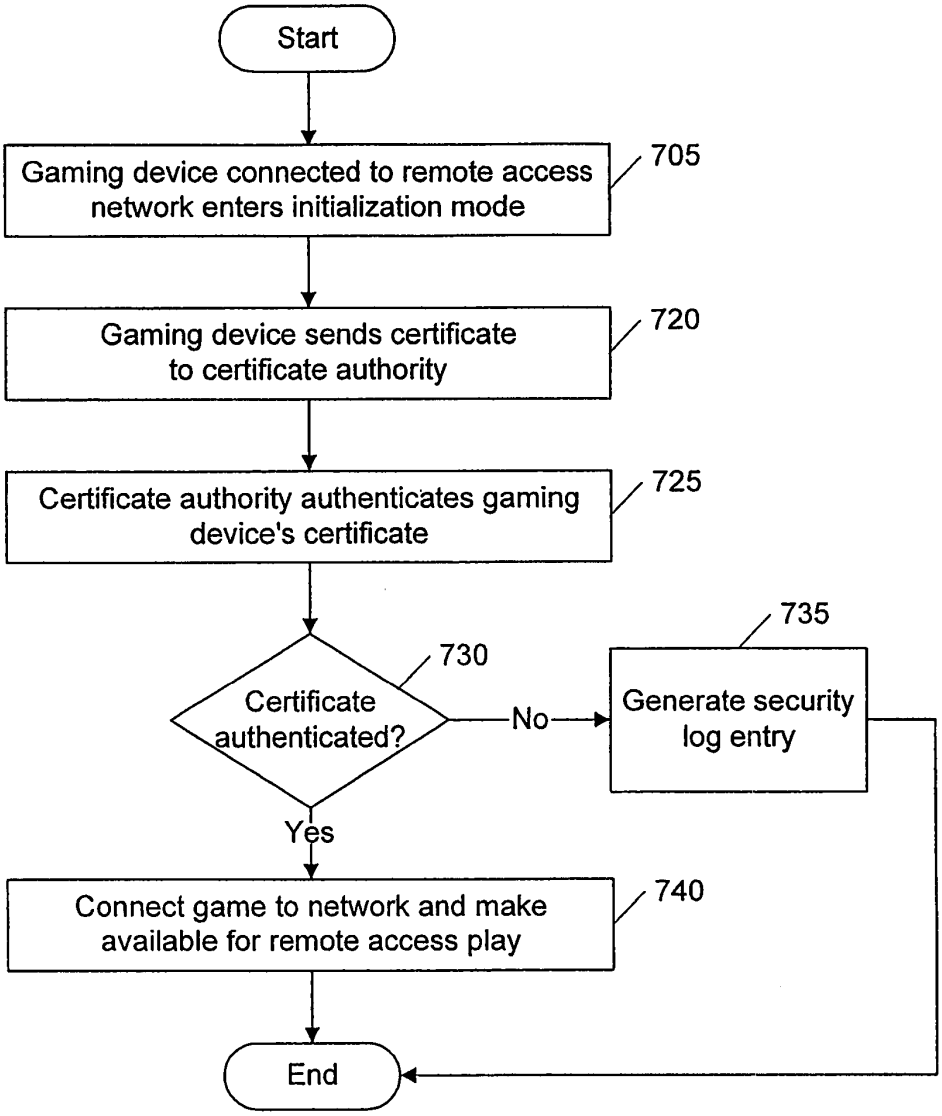

Start
Gaming device connected to remote access network enters initialization mode
705
Gaming device sends certificate to certificate authority
720
Certificate authority authenticates gaming device's certificate
725
Certificate authenticated?
730
No
Generate security log entry
735
Yes
Connect game to network and make available for remote access play
740
End

FIG. 7

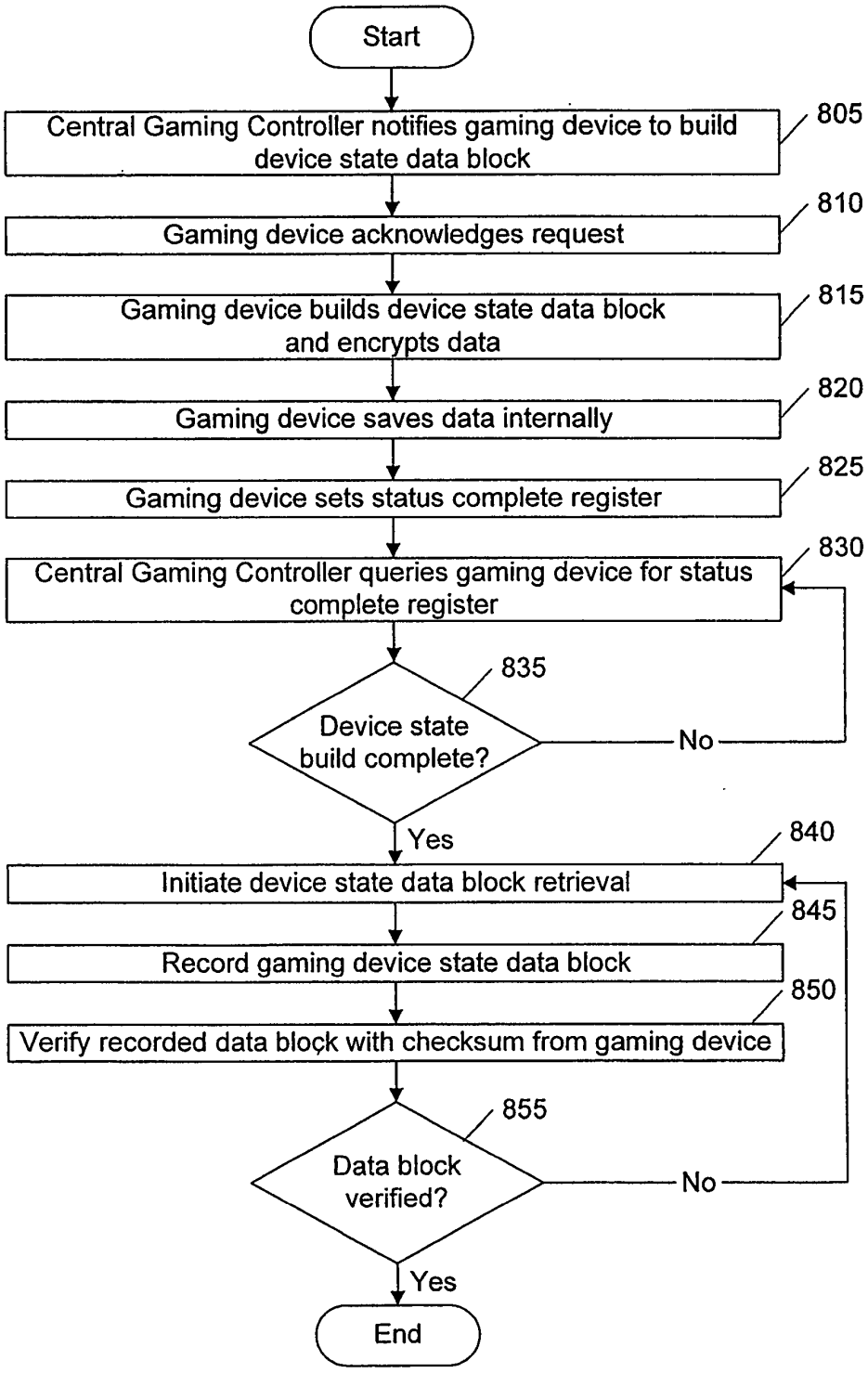

Start
Central Gaming Controller notifies gaming device to build device state data block
805
Gaming device acknowledges request
810
Gaming device builds device state data block and encrypts data
815
Gaming device saves data internally
820
Gaming device sets status complete register
825
Central Gaming Controller queries gaming device for status complete register
830
835
Device state build complete?
No
Yes
840
Initiate device state data block retrieval
845
Record gaming device state data block
850
Verify recorded data block with checksum from gaming device
855
Data block verified?
No
Yes
End

FIG. 8

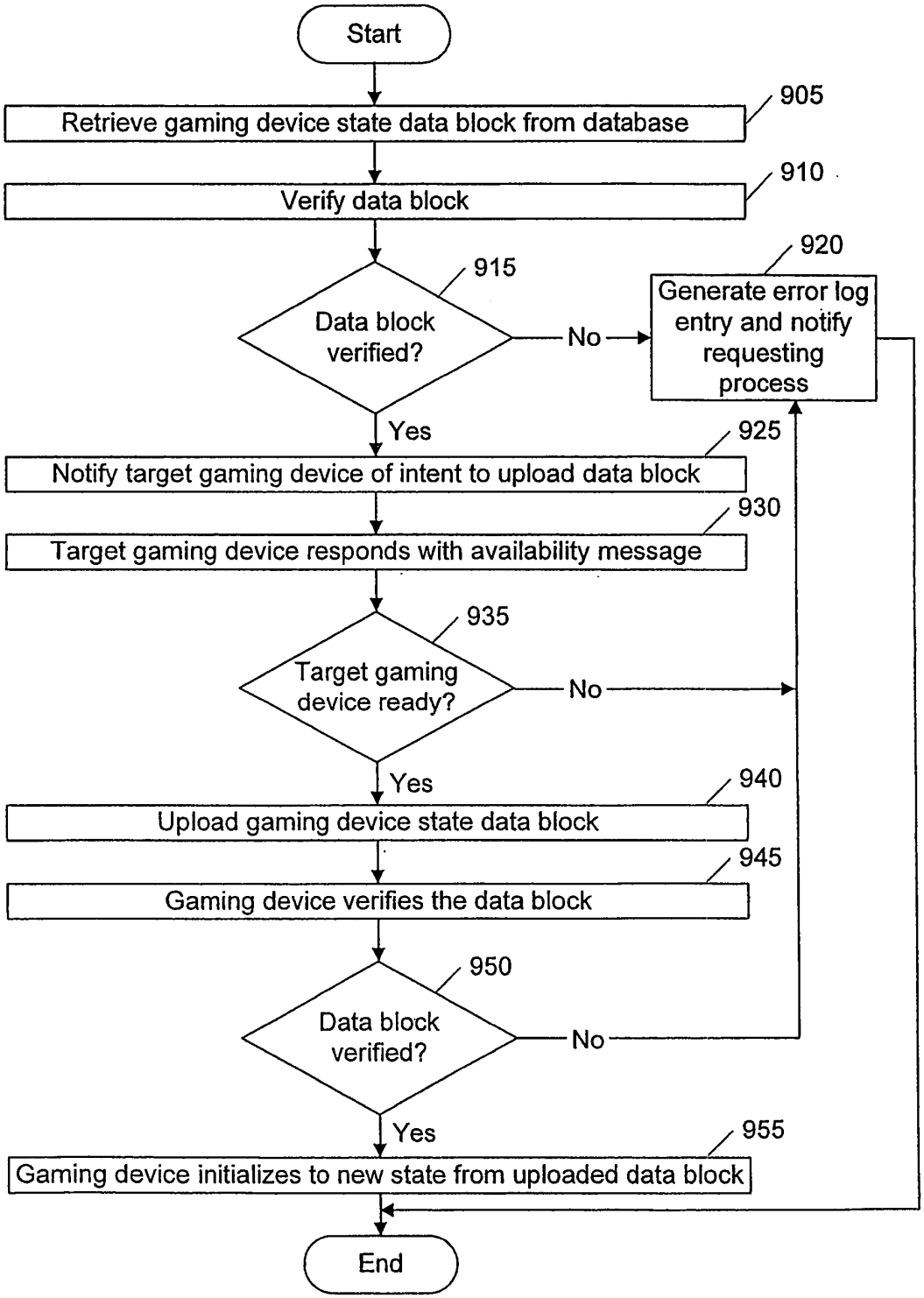

Start
Retrieve gaming device state data block from database
905
Verify data block
910
Data block verified?
915
No
Generate error log entry and notify requesting process
920
Yes
Notify target gaming device of intent to upload data block
925
Target gaming device responds with availability message
930
Target gaming device ready?
935
No
Yes
Upload gaming device state data block
940
Gaming device verifies the data block
945
Data block verified?
950
No
Yes
Gaming device initializes to new state from uploaded data block
955
End

FIG. 9

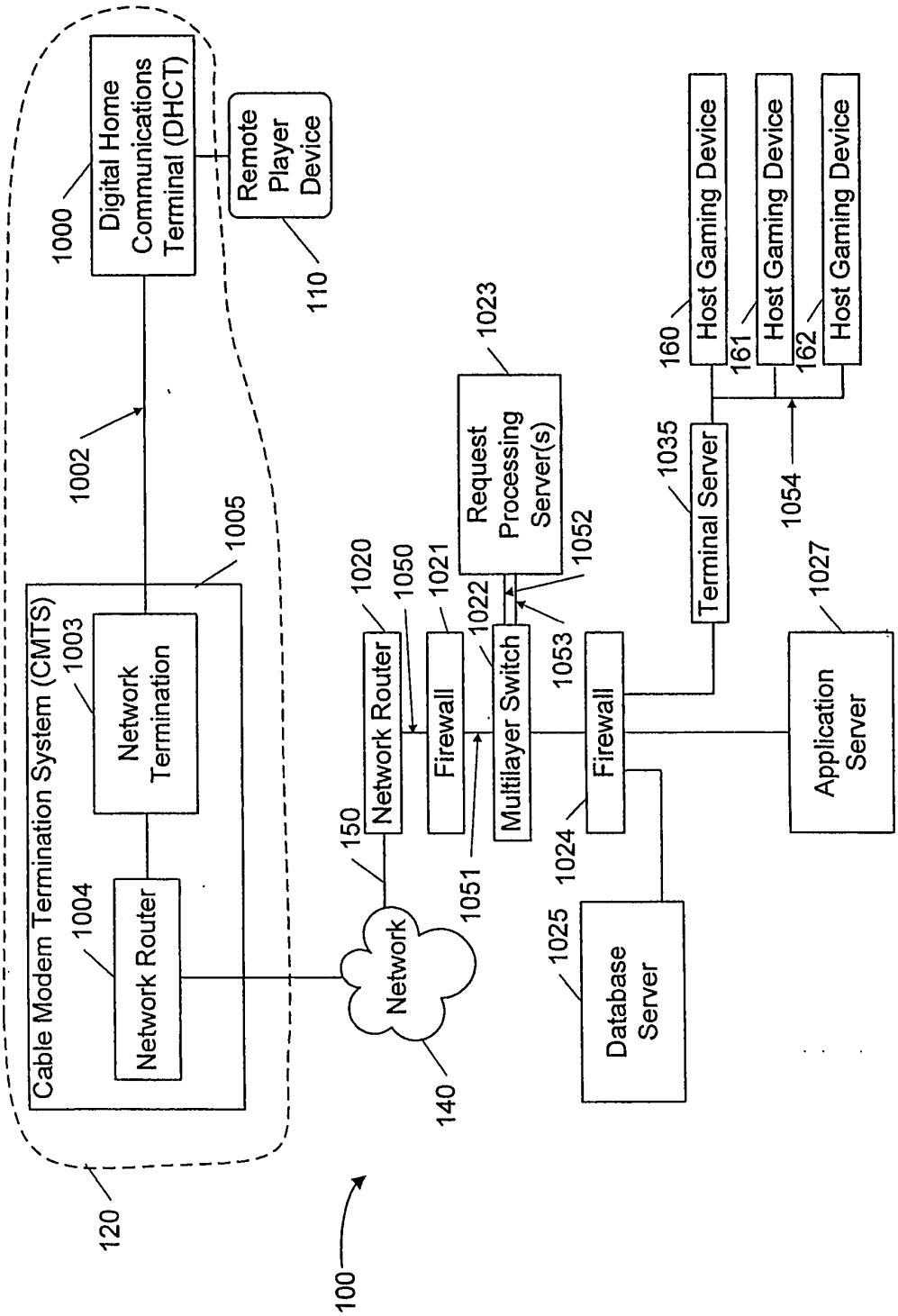

Digital Home Communications Terminal (DHCT)
1000
Remote Player Device
110
1002
1005
Cable Modem Termination System (CMTS)
1003
Network Termination
1004
Network Router
120
100
150
Network Router
1020
1050
Firewall
1021
1051
Network
140
Request Processing Server(s)
1023
1052
Multilayer Switch
1022
1053
Firewall
1024
Database Server
1025
Terminal Server
1035
1054
Application Server
1027
Host Gaming Device
160
Host Gaming Device
161
Host Gaming Device
162

FIG. 10

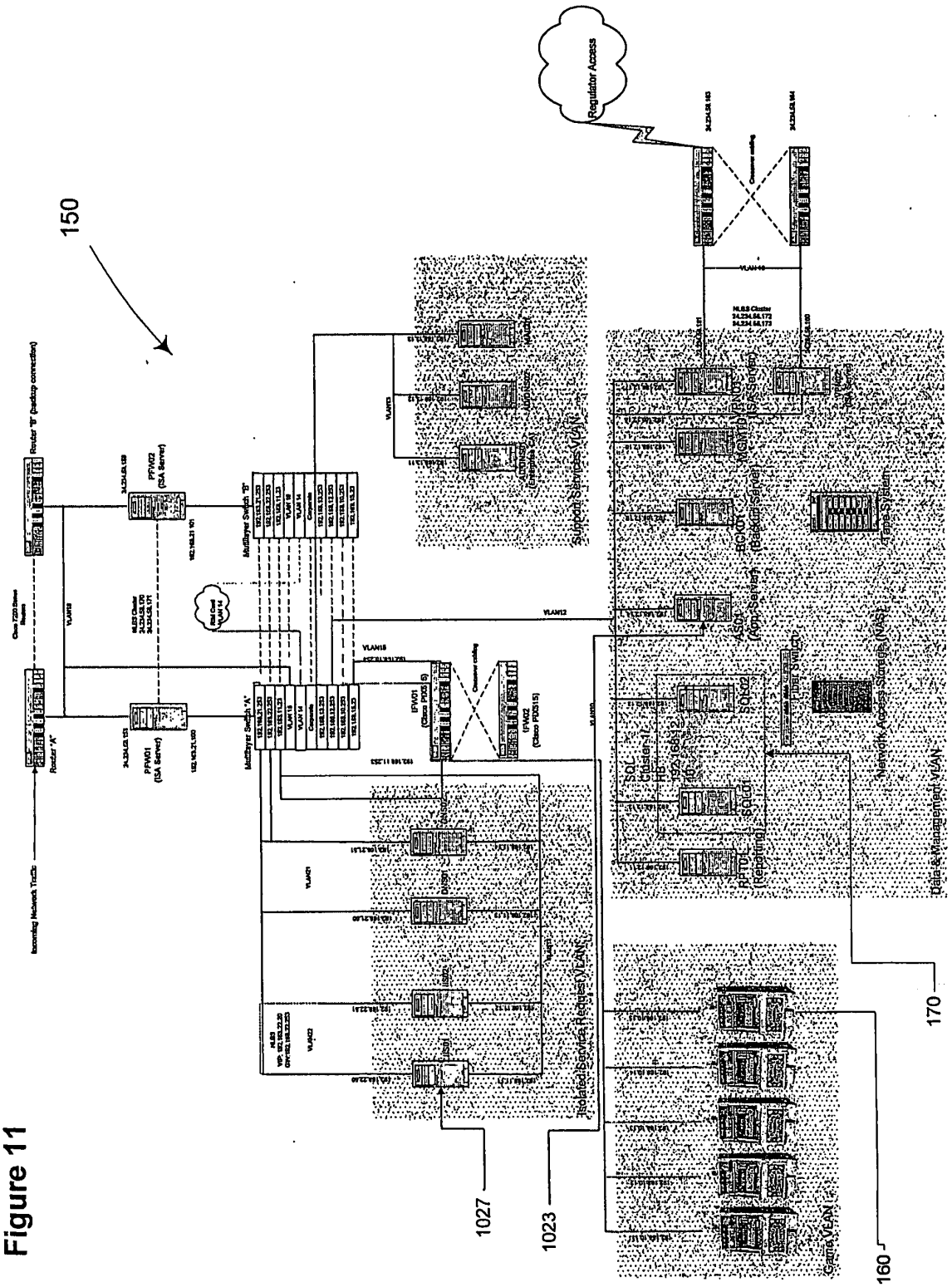

150
Regulator Access
Support Services VLAN
Reduced Service Request VLAN
Data & Management VLAN
Game VLAN
1027
1023
160
170

Figure 11

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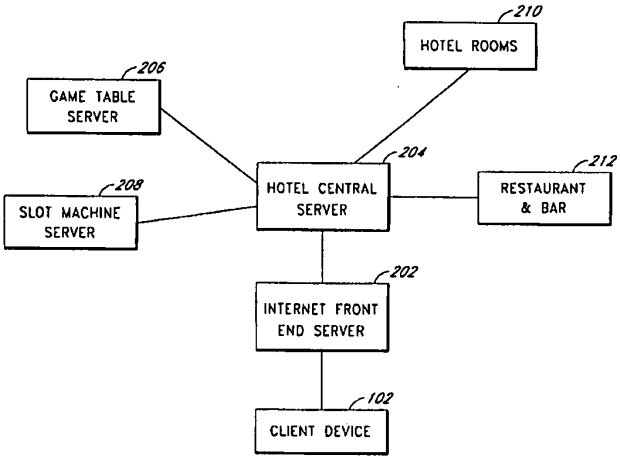
(54) Title: METHODS AND SYSTEMS OF PROVIDING REAL TIME ON-LINE CASINO GAMES



(57) Abstract: Methods and systems of providing real time on-line casino games are disclosed. A remote (408) connects to an on-line server that hosts a game center (108, 110, 112, 114). A flexible security program allows a web site to select one or more user information fields as required verification fields for entering the web site. A card scanner (434) at a game table scans a card and reads a code embedded in the card that indicates the type of the card. Cameras at the game table capture the video images of the game table (402). The video images and the type of the card are transmitted by the server to the remote player (408). Playing instructions from the remote player (408) are transmitted to the game table (402) and displayed by a remote instruction system at the game table (402). Slot machine statistics such as amount and frequency of recent winnings are provided to help players select a favorite slot machine to play.

WO 01/91866 A1

METHODS AND SYSTEMS OF PROVIDING REAL TIME ON-LINE CASINO GAMES

Background of the Invention

Field of the Invention

This invention relates to methods and systems of providing real time on-line casino games.

Description of the Related Art

On-line casinos have been established to allow remote players to enter a web site and play simulated casino games. Since the casino games are simulated by computer, the remote players do not have the realistic experience of playing at a real casino with real dealers and interacting with other players. The remote players cannot rely on a real dealer to deal real cards, but must rely on a computer algorithm to generate virtual cards. Players cannot be assured that the virtual cards are generated fairly.

To provide a more realistic experience to remote players, and to alleviate their concern of a computer generating virtual cards to disfavor the players, video images at a game table of a real casino can be transmitted to remote players. Because remote players can see the video images of the game being played, they will find the experience more realistic. However, video images captured by typical cameras may not be able to reliably and automatically capture images of the cards being dealt. In addition, transmitting video images may not be suitable for a remote player with limited bandwidth connection. Although a human operator can determine and enter information such as the types of cards dealt or the types of dices rolled to be transmitted to a remote player, such a process may be time consuming and vulnerable to human error. Therefore, it is desirable to read cards reliably and to automatically determine the type of every card being dealt, and to transmit such information in a space-saving non-video format to remote players.

Almost all casinos have slot machines. Many players believe that selecting the "right" slot machine can improve one's chance of winning. Many players believe that the ideal slot machine is one that has been played a lot recently but has not awarded large winnings. Since a large amount has been entered into the slot machine but the slot machine has not returned a large winning, it is believed that this slot machine is primed to return a large winning. Other players believe that a slot machine that has frequently awarded winnings in a recent period is an ideal machine. Therefore, many players spend time to observe slot machines before they select one to play. However, making such observations requires time and patience. For remote players, it is difficult, if not impossible, to observe slot machines at a casino. Therefore it is desirable to provide player with statistics on slot machines, such as the amount of money entered into the slot machine within certain time intervals, the amount of winning returned by the slot machines within certain time intervals, the amount and the time of the last large winning, and so forth. Statistics on real slot machines as well as computer simulated slot machines can both be stored and made available.

Credit cards are often used to make on-line purchases. Using credit cards carries security risks, because once a victim's name, card number and expiration date are obtained, a third person can use the victim's credit card account to make purchases. A smart card provides security against credit card fraud. Commercial embodiments of smart cards include the Blue Card from American Express. To use a smart card to make a purchase at a web site, a user typically inserts the smart card into a smart card drive connected to the user's personal computer. For example, a Blue Card user can insert the card into a compatible card drive that connects to an USB port of the user's personal computer. A user can also swipe the smart card at a smart card reader connected to a game center. The smart card reader can be located at an ATM machine, a remote gaming kiosk at a shopping mall, a game table local console at the game center, and so forth. After inserting or swiping the smart card, the user is usually prompted to enter a pin number for identification. A chip in the smart card stores information about the user. The web site retrieves user information stored on the smart card. The web site may optionally retrieve additional information about the user at a database, for example a database maintained by a credit card company. Since the user needs both the smart card and a pin number to use the smart card, smart cards are safer than credit cards. To alleviate the cost of buying and installing smart card drives, smart disks allow smart card information to be stored on the smart disks and to be read by floppy disk drives.

Although smart cards and smart disks are safer than credit cards, they do not provide flexibility and security at the same time. For applications that only require a low level of information, requiring users to enter pin numbers may be too inconvenient to the users. For applications that require a high level of information, requiring users to enter pin numbers may not provide enough security, since pin numbers are typically only four digits in length and can be cracked through trial and error, especially if an automated process is used to try different pin number combinations. If users are required to enter a pin number of greater length, the users will be further inconvenienced when they use the smart card/smart disk to access applications that do not require strict security. What is desired is a flexible solution that provides sufficient security for different types of applications without adding inconvenience to the users.

Summary of the Invention

One aspect of the invention relates to a game table for a remote player to participate in a card game, the game table including a card scanner configured to scan a card and to determine a type of the card, the card having an embedded code that indicates the type of the card, the card scanner being connected to a server, the server being configured to transmit the type of the scanned card to the remote player, one or more cameras connected to the server, the cameras being configured to capture video images of the game table, the server being further configured to transmit the captured video images to the remote player, and a remote instruction system configured to receive playing instructions from the remote player through the server, and to display the received playing instructions at the game table in visual or audio form.

Another aspect of the invention relates to a method of enabling a remote player to select a slot machine to play, the method including storing statistics of a first slot machine and statistics of a second slot machine, displaying

to the player at least a summary of the stored statistics of the first slot machine, displaying to the player at least a summary of the stored statistics of the second slot machine, and prompting the player to select a slot machine from a plurality of slot machines, the plurality of slot machines including the first slot machine and the second slot machine.

Another aspect of the invention relates to a method of creating security requirements at a web site, the method including displaying a plurality of available verification fields to an administrator of the web site, prompting the administrator to select one or more verification fields from the plurality of available verification fields, and prompting a user to enter data into the selected verification fields when the user requests entry into the web site.

Another aspect of the invention relates to a method of enabling a remote player to participate in a game at a physical game center, the method including prompting the remote player to connect to a server that hosts the physical game center, verifying that the remote player is permitted by his/her jurisdiction to play at the game center,, verifying that the remote player is financially qualified to play at the game center, identifying a financial account of the remote player, prompting the remote player to enter playing instructions, receiving the entered playing instructions at the game center, playing a game at the game center according to the received playing instructions, transmitting a status of the played game to the remote player, optionally transmitting video images of the played game to the remote player, and updating a balance of the identified financial account of the remote player.

Another aspect of the invention relates to a method of a player playing a game at a remote physical game center, the method including connecting to a server that hosts the game center, entering verification information to satisfy legal requirements, entering playing instructions to a game to be played or being played at the game center, receiving a status of the played game from the server, and optionally receiving video images of the played game from the server.

Another aspect of the invention relates to a method for enabling a remote player to participate in a game played in a casino remotely located from said remote player and providing the remote player with a realistic game experience that substantially captures the visual and audio feel and excitement of the casino. The method includes transmitting images to the remote player of a game in progress, transmitting to the remote player sounds of the game and voices of a dealer and on-site players, identifying a financial account of the remote player, prompting the remote player when it is the remote player's turn to play to enter playing instructions during the game, receiving at the casino the entered playing instructions from the remote player while the game is being played, receiving from the remote player an amount of wager specified by the remote player, communicating to the remote player the ongoing status of the game in substantially real time, and communicating to the remote player an amount of balance retained by the remote player.

Brief Description of the Drawings

FIGURE 1 is a diagram showing one embodiment of users connecting to game centers.

FIGURE 2 is a diagram showing one embodiment of users connecting to a hotel game center.

FIGURE 3 is a flowchart showing one embodiment of the verification process.

FIGURE 4 is a diagram showing one embodiment of a game table.

FIGURE 5 is a diagram showing one embodiment of a system for delivering data to remote players.

FIGURE 6 is a flowchart showing one embodiment of a process of allowing a user to play a slot machine.

FIGURE 7, comprising FIGURE 7A and FIGURE 7B, is a flowchart showing one embodiment of a remote player playing process.

FIGURE 8 is a flowchart showing one embodiment of a process of a remote player playing a game of chess against another player.

FIGURE 9 is a diagram showing one embodiment of a client device display.

Detailed Description of the Preferred Embodiment

Overview

FIGURE 1 is a diagram showing one embodiment of users connecting to game centers. Users use client devices 102 to connect by wire or wirelessly to an on-line central gaming server 104 through a network. The client devices 102 may include personal computers, network appliances, mobile phones, televisions, video game consoles, custom gaming devices, a gaming console on a passenger airline or a cruise ship, and so forth. Video game consoles include devices such as Sony Playstation, Nintendo Gameboy, Microsoft X Box, and so forth. Custom gaming devices include devices custom designed for playing one or more casino games. For example, one custom gaming device may include buttons of "hit", "stay", "double", "split", and "buy insurance", etc., corresponding to instructions in playing a Black Jack game. Another custom gaming device may include selection buttons for the user to select playing instructions displayed on a screen of the device. The network can be the Internet or an Intranet. The game server 104 verifies that the user is legally allowed and financially able to play. In one embodiment, the verification is performed by a verification server 106. The verification server 106 can be connected to a financial institution such as a bank or a credit bureau. In another embodiment, the verification is performed by the central gaming server 104. More details of the verification process are described below in connection with FIGURE 3.

The central gaming server 104 is connected to game centers, including a virtual casino 108, a first casino 110, a second casino 112, and a cruise ship gaming facility 114. In one embodiment, a virtual casino 108 is a casino with real dealers and real game tables but only accepts remote players. In another embodiment, a virtual casino 108 is a computer-simulated casino, it has no real dealers or real game tables. Each game center may be hosted by secondary servers that are connected to the central gaming server 104. The dealers receive playing instructions from remote players and play the games at the game tables according to the instructions. The first casino 110 and the second casino 112 are casinos with physically present players but also equipped to allow playing by remote users. A casino can also include a chain of casino establishments linked by a network. A cruise ship gaming facility 114 can be connected wirelessly to the central gaming server 104.

Through the central gaming server 104, a user selects a game center 108, 110, 112, or 114 to play. In another embodiment, the user directly connects to a game center server without accessing the central gaming server

104. The user identifies from the client device 102 a game to be played at the game center. The identified game that includes the user is then started at the game center. The game of blackjack is described in the specification as an example. Throughout the game, game information such as the cards dealt to the user, to the dealer, and to other players at the table, and/or video images of the table, the dealer, the other players and the surrounding environment are transmitted by the central gaming server 104 or a game center server from the game center to the user's client device 102. User instructions such as hit, hold, split, double, or purchase insurance are transmitted through the central gaming server 104 or a game center server to the game center. User instructions may also include instruction to tip the dealer. A dealer at the game center then follows the user's instructions in playing the game. More details of transmitting game information are described below in connection with FIGURE 4.

FIGURE 2 is a diagram showing one embodiment of users connecting to a hotel game center. A user connects from the client device 102 to an Internet front end server 202. In one embodiment, the Internet front end server 202 is maintained or monitored by a government agency to ensure fairness. The Internet front end server 202 verifies the user and connects the user to the hotel central server 204, which is connected to a game table server 206 and a slot machine server 208. In another embodiment, the Internet front end server 202 uses an additional verification server connected to a third party such as a financial institution to verify the user. The user can then choose to play a table game such as Black Jack, Caribbean Studs, Roulette, and so forth, or play a slot machine. The game table server 206 facilitates the remote playing of the table games. The slot machine server 208 facilitates the remote playing of the slot machine games. In another embodiment, the user can also choose to play other types of games, for example trivia games such as Jeopardy, Who Wants to be a Millionaire, and so forth, board games such as Chess and Monopoly, computer games and wagering on future outcomes such as sporting events. The hotel central server 204 also connects to hotel rooms 210 and restaurants and bars 212. Hotel patrons can access the hotel central server 204 to play table games or slot machines from their hotel rooms, using devices connected to the hotel central server 204, such as televisions with remote controls, video game appliances, or custom gaming devices. Patrons at restaurants and bars 212 can also access the hotel central server 204 to play table games or slot machines, using devices connected to the hotel central server 204, such as televisions, video game appliances, or custom gaming devices.

Verification

FIGURE 3 is a flowchart showing one embodiment of the verification process. A start block 302 proceeds to block 304. At block 304, a server prompts a user to insert the user's smart card into a smart card drive connected to the client device 102. In another embodiment, instead of inserting the card into a smart card drive, the user inserts a smart disk that stores the user's smart card information into a floppy disk drive. In yet another embodiment, the user swipes the smart card on a smart card reader connected to the game center. Block 304 proceeds to block 306. At block 306, the server prompts the user to enter a pin number associated with the smart card. Block 306 proceeds to block 308. At block 308, the server prompts the user to enter additional verification information, such as the user's

address, social security number, or other personal information. In one embodiment with a low level of information requirement, the server does not prompt the user for additional verification information. Block 308 proceeds to block 310. At block 310, the server compares the user-entered information including the pin number and the additional verification information against the data stored on the smart card. In another embodiment, the server compares the user-entered information against user data stored at a database, such as the database of a credit card company or a casino. If the user-entered information does not match the data stored on the smart card or data stored at the database, then block 310 proceeds to block 312. In one embodiment of block 312, the server prompts the user to enter verification information again. In another embodiment of block 312, the server denies the user request for game play. The server may take additional steps such as notifying organizations such as the user's credit card company, the company that issued the smart card, and/or the game center.

Still referring to FIGURE 3, if the user-entered information matches the user data stored on the smart card or the database, then block 310 proceeds to block 314. At block 314, the server examines the user demographics information stored in the smart card or stored at the database, such as the age of the user and the jurisdiction of the user against a legal database stored at the server or connected to the server. The legal database stores information on whether a jurisdiction permits its residents or citizens to participate in on-line gaming, and the age over which its residents or citizens are permitted to participate in on-line gaming. The legal database can store additional information about each jurisdiction, such as the jurisdiction's regulations on different types of on-line gaming. For example, a jurisdiction may have different rules regarding on-line gaming for non-profit purposes as compared to on-line gaming for profit. For another example, a jurisdiction may permit its residents or citizens to only play in game centers organized or monitored by its government. For yet another example, a jurisdiction may limit its residents or citizens to playing with a certain credit limit or playing certain types of games. The information obtained from the legal database can be used by the server to make jurisdiction-specific accommodations, for example, to only offer certain games permitted by the jurisdiction to its residents or citizens, and to limit the type and amount of credit that can be used by its residents or citizens in gaming. If the examination determines that the user is not permitted by its jurisdiction to join the game center, then block 314 proceeds to block 312, where the server informs the user and denies the user request to join.

Still referring to FIGURE 3, if the user demographics information clears the legal database, then block 314 proceeds to block 316. At block 316, the server examines the user against information stored on the smart card, information stored at a financial database of the game center, or information stored at a financial database of a third party financial organization such as a bank or a credit card company. In one embodiment, the server examines the user information against a financial database of people who are financial risks. In another embodiment, the server checks the user's financial information stored on the smart card and/or stored at the financial database, such as the user's available credit, to ensure that the user has sufficient funds to join game play. In one embodiment, the user is prompted to designate an account, such as a smart card account, a digital cash (or e-wallet) account, a credit card account, or a debit card account as the account from which wager amounts will be drawn and winnings will be transferred to.

In one embodiment in which the server checks user information against a financial database, the server preferably terminates connection with the financial database after it obtains required information from the financial database. In one embodiment, the server re-establishes connection with the financial database after the user has finished playing and is ready to exit the game center, and updates the user's account balance or other user information at the financial database. If the user is deemed not financially qualified to play, then block 316 proceeds to block 312 to deny the user request to join. Otherwise block 316 proceeds to block 318, where the server grants the user's request to join the game center. The server can also make adjustments based on the information of the user. For example, having known the country of the user, the server can recommend games that are popular within that country to the user, or display a user interface in the language of the country. Block 318 proceeds to an end block 320.

The user is optionally prompted to designate a playing limit, so that when the user's playing loss or playing loss plus the current wager has reached the playing limit, the user is reminded of the playing limit and asked to exit the game center. In one implementation, the user is allowed to increase the playing limit when the limit has been reached. In one embodiment, the user is optionally prompted to designate a playing limit in terms of playing frequency or playing time. For example, the user can limit his/her playing limit to a maximum of five hours within a seven-day period, or no more than once within a day. When the user's playing time or playing frequency exceeds the limit, the user is asked to exit the game center. In one implementation, the user is allowed to increase the playing limit when the limit has been reached. The playing limit option can be used to prevent excessive gaming and/or excessive gaming loss. The playing limit can be stored on a database connected to the server or a smart card or smart disk of the player. In one embodiment, the playing limit is enforced by all the game centers hosted by the server, so that the player cannot move to another game center to circumvent the playing limit.

Smart Card Program Providing Multiple Levels of Security

A smart card program can be installed by web sites that use smart cards or smart disks to verify users. The smart card program specifies multiple levels of security. In one embodiment, three levels of information requirements are specified. The first level requires reading the smart card by a smart card drive or smart card reader, or reading the smart disk by a floppy disk drive. It does not require the user to enter a pin number. The second level requires reading the smart card/smart disk and the entering of a pin number. The third level requires reading the smart card/smart disk, the entering of a pin number, and the entering of additional verification information, for example the user's social security number, address, full name, and/or date of birth. Information such as the user's pin number, address, full name, date of birth, and purchase history can be stored on the smart card or at a user database of a credit card company or game center. In one embodiment, a web site verifies user-entered information against information stored on the smart card. In another embodiment, a web site uses the user identification information entered by the user or stored on the smart card to find a user's records at the user database. The web site then verifies user-entered information against the user's information stored at the user database.

After the smart card program is installed on a web site, the level of information required for the web site or for each sub-site of the web site is determined. For example, for reading a member-only newspaper article, the first level of information may be applied to allow ease of access by members. For logging into a personal email account, the second level of information may be applied to provide the right balance of security and ease of access. For buying an expensive item on-line, the third level of information may be applied to ensure security. A web site can be categorized into multiple sub-sites, for example a member-only sub-site and a public area sub-site. Each sub-site includes one or more web pages of the web site.

In one embodiment, a web site administrator installs the smart card program and selects from a list of verification fields the fields to be used for each level of information. For example, the user's date of birth can be selected as the required entry field for the second level of information, and the user's zip code and pin number can be selected as the required entry fields for the third level of information. In theory, every field of information that is stored on the smart card/smart disk can be used as a verification field. If the web site connects to a database for verification, every field of user information stored on the database can also be used as a verification field. Using the smart card program, the web site administrator can specify a security level for each sub-site or each web page of the web site.

Game Table Devices

FIGURE 4 is a diagram showing one embodiment of a game table. In the example illustrated by FIGURE 4, a Black Jack game is played by a dealer 404, a physical player 406, and a remote player at the game table 402. The remote player is represented by the remote instruction system 408. In one embodiment, the remote instruction system 408 includes a screen, which displays the remote user's playing instructions. In another embodiment, the remote instruction system 408 includes multiple display buttons titled "hit", "stay", "double", "split", "buy insurance", and so forth. Corresponding display buttons are activated according to the remote user's playing instructions.

In one embodiment, the player instruction system 408 also displays video images of the remote player. Video images of the remote player are captured by a camera connected to the remote player's client device 102. Displaying video images of the remote player provides the dealer 404 and the physical player 406 with more comfort toward the remote player. It also deters fraudulent and underage players. In another embodiment, a remote player transmits a photo file from the client device 102 to the player instruction system 408 as his/her identification. A remote player can also select an image representation as an avatar of himself/herself.

In one embodiment, the player instruction system 408 includes a speaker, which plays audio signals of playing instructions from the remote player. In one implementation, the playing instructions are transmitted from the client device 102 to the game center in non-audio format as text or numerical information. Transmitting playing instructions in non-audio format reduces the bandwidth and storage space requirements. The playing instructions are then converted into audio format to be played by the play instruction system 408. Since the number of playing instructions for a game is limited, a limited number of corresponding audio files can be played to represent the playing

instructions. In another implementation, the player instruction system 408 receives playing instructions in audio format but in a foreign language spoken by the remote player. The player instruction system 408 then automatically translates the playing instructions into the default language used by the game center. Since the vocabulary associated with game play instructions is very limited, a translation module with limited memory and high processing speed can be provided to provide fast and accurate translation. The translation can also be performed by a server, which then transmits the translated audio to the player instructions system 408.

The dealer 404 deals cards out of a card shoe 432. Each card is embedded with a code, which is scanned by a card scanner 434. The card scanner 434 can be placed inside the card shoe 432, on the game table 402, or above the game table 402. The card scanner 434 determines the type of the card. The card information is then transmitted to the remote user. More details of card scanning are described below in the section titled "card scanning methods and devices."

A number of cameras can be used to capture video images to be transmitted to the remote player. For example, an overhead camera 412, a dealer camera 414 facing the dealer 404, and a physical player camera 416 facing the physical player 406, can be used to capture video images. A plurality of cameras can be placed such that each camera aims at a seat of the game table 402. The cameras can be turned on when the dealer or a physical player occupies the seat. A microphone 422 can be used to record audio signals at the game table 402 to be transmitted to the remote user. The microphone 422 can be used to record the voices of the dealer 404 and physical players 406, and sounds of the game such as the sound of cards being dealt or a wheel being spun. In one embodiment, video phones are used to transmit images and audio signals between the remote player 408 and the game table 402. The video phone at the game table 402 can be aimed to capture images of the cards dealt to the remote player 408. More details of providing video images are described below in the section titled "providing video images to the player."

In one embodiment, each physical player 406 uses a local console 410 at the game table to play the game. In one embodiment, the local console 410 and the remote instructions system 408 are interchangeable, because each includes the features of the other. Therefore each device occupies a fixed location at the game table 402, and functions as a local console 410 or a remote instructions system 408 depending on whether a physical player or a remote player is using the device. The local console 410 allows the physical player 406 to enter play instructions such as "hit", "stand", and so forth. The physical player 406 enters play instructions, for example by pressing buttons on the local console 410, clicking a mouse of the local console 410, or by speaking voice commands to the local console 410. The local console 410 can be integrated into the game table 402. For example, the buttons, display screen, or microphone of the local console 410 can be placed on the game table 402. In one embodiment, the entered instructions are transmitted to the server, which transmits the information to the remote player. Therefore the remote player can be informed of the plays of physical players at the game table 402.

Requiring physical players 406 to enter instructions into local consoles 410 has another advantage. Since hand signals representing instructions such as "hit" and "stand" are subject to interpretation, physical players in occasion have challenged dealer's interpretation of their hand signals as incorrect. Requiring physical players 406 to

use local consoles 410 reduces the need for dealer interpretation and the possibility of player challenge. In one embodiment, the local console 410 is also configured to allow the physical player 406 to participate in conversation with remote players at the game table 402, for example by using a chat room or an instant messaging service. Each game table 402 can be organized as a chat room. Game tables 402 that play the same type of game can also be organized as a chat room. To provide better visual representation, a three-dimensional chat room can be used by remote and physical players. Players can be represented by three-dimensional avatars that can change motions or expressions. The local console 410 can also be equipped with a credit card reader or a smart card reader to accept the physical player 406's credit card or smart card, so that the physical player 406 can use his/her credit card or smart card account to play the game.

In another embodiment, the plays of physical players 406 are captured by cameras 412 and 416 and/or the microphone 422. The video and/or audio data is then transmitted from the server to the client devices 102 of the remote players, to inform the remote players of the plays of the physical players 406.

Card Scanning Methods and Devices

Cards are often dealt quickly by a dealer 404 from a card shoe 432 to the game table 402, making capturing video images of the cards difficult. In addition, a remote user may contest that because the video image is unclear, he/she had mistaken the displayed video image of one card as another card. For remote players with limited bandwidth connection, transmitting video images of cards may result in delay. It is therefore advantageous to scan cards to quickly and reliably determine the type of card dealt without controversy, and to transmit such information to remote players in a space-saving non-video format.

In one embodiment, each card is embedded with a code that indicates the type of the card, such as Spade of Seven, Ace of Heart, and so forth. The code is preferably unreadable by humans. In one embodiment, a code is printed on the face up side of a card, so that a human can only see the code when he/she holds the card face up.

In one embodiment, the humanly unreadable code is embedded in a low-cost miniature chip. Commercial embodiments of a miniature chip cost as low as several cents. The code embedded in the chip is read by a chip reader, for example a chip reader that reads the code by transmitting a radio signal to the chip and receiving a returned radio signal that identifies the embedded code. In another embodiment, the code can also be embedded in a bar code, and a bar code scanner scans the bar code as the card is removed from the card shoe 432. In yet another embodiment, the code is embedded as an invisible bar code in the card, and an infrared scanner scans the code as the card is removed from the card shoe 432. Making the bar code invisible not only further prevents player fraud, but also improves aesthetics of the cards. The scanning device connects to the server. The server transmits the card-type information to the client device 102. The client device 102 receives the card-type information and advantageously uses a display application such as a Java applet to display the card in a graphic form to the user.

Referring to FIGURE 4, in operation at a game table 402, a server determines the number of physical and remote players that participate in the game. The number of physical players 406 can be determined and entered into

the server by the dealer 404 of the game table 402. The number of physical players 406 can also be determined by using video images of the cameras at the game table 402, or by counting the number of active local consoles 410 at the game table 402. As a card is removed from the card shoe 432 and scanned by a card scanner 434, the destination of the card (i.e., dealt to the dealer 404, dealt to a remote player, or dealt to a physical player 406) is immediately determined, because the number of players have been determined and the order of dealing cards (clock wise or counter clockwise at the game table 402) is fixed. The server then displays to the remote players the cards dealt to each party at the game table 402. In embodiments in which a player typically only read his/her own cards, for example in Caribbean Studs, single-deck Black Jack, Pai-gow, and Let It Ride, the server then only displays to a remote player the cards dealt to him/her. After a game ends, the type of cards dealt to other players can be transmitted to the remote player to ensure him/her that the game has been played fairly. In one embodiment, the dealer flips every dealt card on the game table 402 to be face up, the video images of the flipped cards and/or the scanned card type information of the flipped cards are transmitted to remote players.

In some games at least a dice is rolled. For example, in the game of Craps, two dices are rolled. In one embodiment, a human operator records the resulting number(s) of the dice(s) on a recording device connected to the server. For example, the human operator enters a number from one through six for each rolled dice on the recording device, or selects a button from the buttons "one" through "six" of the recording device for each rolled dice. In another embodiment, an overhead camera captures an image of the rolled dice(s). For each rolled dice, a pattern recognition program analyzes the image of the rolled dice to determine the resulting number of the dice. Since only up to six possible outcomes are associated with each dice, and since each of the six possible outcome images are relatively simple, a pattern recognition program can be programmed to quickly and reliably determine the result of the rolled dices.

In another embodiment, information such as cards dealt and dices rolled are captured as video images by cameras at the game table 402 and sent to the remote player. However, doing so requires relatively high clarity video images. Therefore large bandwidth is required for connecting the player to the network, and the player may experience a delay time in seeing the images. In yet another embodiment, the scanned card/dice information and the video images of cards/dices are both displayed to the remote player. Therefore the player can use the scanned information for clear viewing and quick playing. The video images provide realistic feelings to the player of being physically present at the game table.

Providing Video Images to the Player

Video cameras are placed at the game center to capture video images to be streamed to the client device 102. Audio data can also be recorded by microphones and streamed to client devices 102. The microphones can be placed at game tables 402 or on dealers 404.

In one embodiment, when a remote player starts playing at a particular game table 402, the video images captured by the overhead camera 412 at the game table 402 is streamed to the player's client device 102. Since most

game centers already have overhead cameras installed for monitoring purposes, the existing overhead cameras simply need to be connected to a server to stream video images to remote player.

In another embodiment, a plurality of cameras are placed at each game table 402. For example, one camera 412 is directed at the game table 402, another camera 414 is directed at the dealer 404, other cameras 416 are each directed at a physical player 406 at the game table 402. The video images captured by the plurality of cameras are streamed to the user's client device 102. The video images captured by the plurality of cameras can be displayed at one combined picture, or as multiple pictures each within an individual window. The remote user 408 at the client device 102 is therefore able to have a realistic experience, because the user is able to watch the images of the dealer 404 and the physical players 406 at the game table 402. A camera can also be used to capture images of multiple physical players 406 at the game table 402. For example, a camera can be programmed to aim at a physical player 406 or the dealer 404, and then switch aim to a different physical player 406 after every three seconds. A motion sensitive camera or a voice sensitive camera can also be used to aim at the physical player 406 or the dealer 404 that spoke or moved.

As described above in connection with FIGURE 4, remote players can capture video images of themselves by using cameras connected to their client devices 102. The video images are then transmitted to the server. When multiple remote players 408 are playing at the same game table 402, video images of the remote players 408 can be used to enhance interaction between the remote players 408. In one embodiment, video images of the remote player 408 is displayed at its remote instruction system 408, and captured by a camera that is aimed at the remote instruction system 408. The video images captured by the camera can then be transmitted to other remote players 408. In another embodiment, the server receives the original video images of remote players 408 and transfers them directly to the client devices 102 of the other remote players 408 at the same game table 402. Additional interaction features, such as chat rooms or instant message services, can also be provided. Instead of video images, a remote player 408 can also use a photo to represent his/her presence at the game table 402.

In addition to video images and photos, a holographic image can be displayed at a game table 402 to represent the presence of a remote player 408. A holographic image is a three-dimensional image formed by the interference between a coherent laser beam and the light scattered by the object being imaged. The image can be viewed when illuminated by the same light that formed the image. In one embodiment, holographic images of the dealer 404, the cards being dealt, the physical players 406 and/or the game table 402 are recorded at the game center and transmitted to the remote player's client device 102. The client device 102 then reproduces the holographic images. In another embodiment, a remote player 408 is prompted at his/her client device 102 to select a default holographic image from a list of default holographic images. The list of default holographic images represents different types of persons, for example persons of different gender, age, and ethnicity combinations. The default image selected by the player is then displayed at the game table 402 to represent the remote player 408. By using default holographic images, the remote player 408 does not need to record a holographic image of himself or herself. The remote player 408 also does not need to transmit his/her image data from the client device 102 to the server. Only the

remote player's selection of an image needs to be transmitted. According to the received user selection, the selected default holographic image is then displayed at the game table 402. In yet another embodiment, a holographic system at the remote player's location records a holographic image of at least a portion of the remote player 408, for example the remote player's head. A holographic image can be recorded by illuminating the target with laser. The image record is then transmitted to the server and used to reproduce a three-dimensional holographic image of the remote player 408 at the game table 402.

Streaming video images requires substantial bandwidth. In one embodiment, a server adjusts delivery rate depending on the bandwidth of the client device 102. For example, if a client device 102 is connected to the server by a T-1 line, the server then streams video images to the client device 102 at a high rate, such as equal to the camera refresh rate of the cameras at the game table 402. If a client device 102 is connected by a 28.8Kb modem, then the server streams video images to the client device 102 at a lower rate. In another embodiment, the remote player is allowed to adjust video image delivery rate. A higher delivery rate provides a more realistic experience, but a lower delivery rate typically still provide sufficient information for game play. In one embodiment in which video images from a plurality of cameras can be streamed to the user, the remote player is allowed to select video images from only some of the plurality of cameras to be streamed or displayed. For example, instead of video images of the dealer 404 and other physical players 406, the remote player 408 may choose to have only video images of the game table 402 streamed or displayed. The remote player 408 may choose to have video images transmitted only after a card is dealt.

FIGURE 5 is a diagram showing one embodiment of a system for delivering data to remote players 408. The original media server 502 is connected to a cache server 504, which is connected to multiple local servers 506. Each local server 506 stores at least a portion of the original media server 502's data. When a client device 102 requests data, the cache server 504 selects a particular local server 506 to deliver data to the client device 102. In one embodiment, the local server 506 with the shortest physical distance to the client device 102 is selected. In another embodiment, the local server 506 with the shortest network distance to the client device 102 is selected. In yet another embodiment, the local server 506 with the least network congestion to the client device 102 is selected. Commercial embodiments of cached delivery and delivering data to the "edge" of the network have been provided by companies such as Netcache, Inktomi, Akamai, and so forth.

Commercial software-on-demand applications such as Extent's EXEtender allow software to be transmitted to the client device 102 without installation. For example, in one embodiment in which the client device 102 is a personal computer, software for providing a remote player-game center game interface is transmitted from a server to the memory of the personal computer for execution, without the need for installing the software on the hard drive of the personal computer. Therefore software can be executed almost instantaneously, without the time consuming installation process and the need for storing the software on the hard drive. The likelihood of unauthorized copying is also reduced. Software can be streamed to the client device, so that at any particular moment only a necessary portion of the software is streamed to the client device 102. Therefore client devices 102 with limited storage space can execute large software programs.

Providing Slot Machine Statistics to the Player

The statistics associated with a real or virtual slot machine can be displayed to the player. The statistics can include the last time the slot machine awarded a winning to a player, the last time the slot machine awarded a large winning (such as above $100) to a player, the amount of winnings, the total amount of winnings awarded by the slot machine in certain time intervals, the total amount of money entered into the slot machine in certain time intervals, the result of the last 100 plays, and so forth. Although the statistics are advantageously stored and displayed to players automatically, statistics can also be entered by operators who observe playing slot machines. Although human data entry may be labor intensive, it can be limited to, for example, recording statistics only for high roller slot machines that require large amounts to play, or only recording certain statistics such as the occurrence of large winnings. The slot machines of the game center can be linked together, or linked to slot machines of other game centers, to increase the potential jackpot amount. The slot machine statistics provide the players with information and incentive to play. The player is enabled to select a slot machine to play after reviewing the statistics. The statistics data can also be used to comply with government regulations, to monitor the fairness of the slot machine operation, and to provide tax, auditing and reporting information to the game center or investors.

FIGURE 6 is a flowchart showing one embodiment of a process of allowing a player to play a slot machine. A start block 602 proceeds to block 604. At block 604, the server displays statistics associated with each slot machine to the player. In one embodiment, the slot machines are virtual slot machines, i.e., computer simulated slot machines. The statistics of each virtual slot machine are stored after every play. The statistics are sent from the server to the player's client device 102. In another embodiment, the slot machines are physical slot machines in the game center. The statistics of each slot machine are sent from a statistics storage medium through the server to the player's client device 102. In one implementation of this embodiment, the slot machines for on-line play are located in an on-line play area not available to physical players of the game center. In another implementation, the slot machines of the game center can be shared by physical players and virtual players. A display panel on a physical slot machine or next to a physical slot machine displays statistics of the slot machine to the physical players.

Block 604 proceeds to block 606. At block 606, the server prompts the player to select a slot machine to play. In another embodiment, the server prompts the player to select a slot machine from slot machines that are available to be played. In yet another embodiment, a record is kept storing the identifier of a slot machine as the personal favorite slot machine of the player. For example, the slot machine last played by the player on a previous visit to the game center can be identified as the player's favorite machine. A slot machine that awarded the most recent winnings to the player on a previous visit can also be identified as the player's favorite machine. Block 606 proceeds to block 608. At block 608, the server determines if the selected slot machine is available to be played. The slot machine is not available if it is currently being played by another virtual or physical player, or if it is being taken off-line for maintenance. If the slot machine is not available, then block 608 returns to block 606 to prompt the player to select another slot machine. Otherwise block 608 proceeds to block 610.

Still referring to FIGURE 6, at block 610, the server receives playing instructions on playing the next hand at the selected slot machine. Playing instructions may include instruction to "spin the wheel", instruction to double the bet, instruction to triple the bet, and so forth. Block 610 proceeds to block 612. At block 612, a determination is made as to whether the use has finished playing. If the player has finished playing, for example if the player has entered a "finish" instruction at block 610, or if the player has not entered playing instructions within a specified time limit, then block 612 proceeds to an end block 618. Otherwise block 612 proceeds to block 614.

At block 614, the slot machine plays the received player instructions. In one embodiment, the received player instructions are automatically sent to the slot machine to be played. In another embodiment, a human operator plays the slot machine according to received player instructions. Although using human operators may be labor intensive, it may provide more of a realistic feeling to remote players. Using human operators can be limited to high roller slot machines to reduce the number of human operators required. Depending on the result of the play, either a winning is awarded to the player or no winning is awarded. Block 614 proceeds to block 616. At block 616, the statistics of the slot machine is updated to reflect the current progress. For example, winnings paid out by the slot machine and amounts entered into the slot machine are recorded with corresponding date and time. For a physical slot machine, its statistics is stored in a storage medium located within the slot machine or connected to the slot machine. The storage medium can be a volatile memory or a static memory. The statistics of multiple slot machines can be stored in the same storage medium as separate units of data. A display panel can be used to retrieve statistics from the storage medium and to display to physical players at the game center. In one embodiment in which multiple slot machines are connected by a slot machine server, the statistics for the each of the connected slot machines is stored in a database of the server. A virtual slot machine is simulated by a simulation computer. The virtual slot machine's statistics is stored in a database. The database is stored in a storage medium located within or connected to the simulation computer. Block 616 returns to block 610 to receive the player playing instructions on playing the next hand of the slot machine.

Remote Player Playing Process

FIGURE 7 is a flowchart showing one embodiment of a remote player playing process. FIGURE 7 is separated into figures 7A and 7B for ease of illustration. Referring to FIGURE 7A, a start block 702 proceeds to block 704. At block 704, the client device 102 connects to a server serving a game center, and the remote player is prompted to provide verification information to the server. Details of one embodiment of a verification process have been described above in connection with FIGURE 3. After the server verifies the player and grants the player's request to enter, block 704 proceeds to block 706. In one embodiment, based on the player's information such as country of origin, age, and/or gender, etc., a custom interface is presented to the player. For example, for a player that is identified as Chinese, a Chinese language interface can be presented to the player. For another example, based on the player's previously played games at the game center, or based on the most popular games played by other players from the same country and/or of the same age and gender, one or more games can be identified as the games mostly likely

to be played by the remote player. These games can be displayed in prominent positions in the interface presented to the player. At block 706, the client device 102 receives from the server and displays video images of the game center. In one embodiment in which multiple game centers are connected to the server, the player is prompted to select a game center.

Block 706 proceeds to block 708, where the player is prompted to buy chips. After the player specifies the amount of chips to buy, the amount of chips remaining to the player is advantageously displayed on the client device 102 at all times, to remind the player of the amount of chips left. The amount of remaining chips is updated through the player playing process, depending on the player's winnings and loss.

In one embodiment, the player is prompted to buy chips when the player selects a game table to play. The purchase request is transmitted to the server, which transmits the request to the dealer at the selected game table. The server reduces the player's account balance by the purchase amount, and the dealer places the chips at the game table next to the player instructions system 408 that represents the player. When the player exits the game and the game table, the server increases the player's account balance by the amount of chips remaining at the game table, and the dealer removes the chips from the table. In another implementation, when the player exits the game and the game table, the server does not update the player's account balance, but keeps a record of the amount of remaining chips of the player. Therefore the player is able to virtually "carry the chips" to other game tables or other game centers that honor the same chips. When the player is ready to exit the game center or the server, the server "redeems" the player's remaining chips by increasing the player's account balance by the chip amount. The player is also provided with the option to keep the remaining chips at the player's game center account to be used next time at the game center. To encourage the player to keep the remaining chips with the game center, the game center can provide incentives to the player, such as awarding interests to the player on the remaining chips or adding free chips to the player's remaining chips.

In another embodiment, the player is prompted to enter a wagering amount for every wagering opportunity (such as every hand of cards) in a game. The wagering amount is transmitted to the server, which verifies the amount against the player's account balance. If the player has sufficient funds to make the wager, then the wager request is granted. Otherwise the wager request is denied and the player may be prompted to enter a lower wagering request. If the player's jurisdiction has specified a wagering amount limit or a casino credit limit for players, the server also verifies that the player's wager does not exceed his/her jurisdiction's limit.

Still referring to FIGURE 7A, block 708 proceeds to block 710. At block 710, the player is prompted to select a game area in which a game is played, such as a game table in which a Black Jack game is played, a room in which Keno is played, a Wheel of Fortune wheel, or a slot machine. In one embodiment, the player is prompted to select a game table from the displayed images of the game center. In another embodiment, the player is prompted to select a game type such as Black Jack or slot machine, and is automatically assigned an available game table or slot machine that plays the selected game type. In a Wheel of Fortune game, a dealer spins the wheel and waits for the wheel to come to a final stop at a wheel landing area. The game of Black Jack is described below as an example.

Block 710 proceeds to block 712. At block 712, the client device 102 receives and displays images of the selected game table. Details of providing images of a game table to remote players have been described above in the section titled "providing video images to the player."

Block 712 proceeds to block 714. At block 714, a determination is made as to whether the player has started playing a game at the selected game table. If the player is already in the process of playing a game, block 714 proceeds to block 720. Otherwise block 714 proceeds to block 716. At block 716, the player is prompted to indicate that he/she is ready to participate in the next game. The player indication is transmitted to the dealer at the game table. The remote instructions system 408 is then activated at the game table to represent the player. Block 716 proceeds to block 718. At block 718, a game module is advantageously activated at the client device 102 or transmitted from the server to the client device 102. The game module includes instructions related to the game and allows the player to play the game according to the rules. The game module can be transmitted to the client device using a software-on-demand application described above. Block 718 proceeds to block 720.

At block 720, the cards dealt by the dealer are displayed at the client device 102. In one embodiment described above in the section titled "card scanning methods and devices," a code embedded in each of the cards dealt by the dealer is scanned. The server then transmits the type of the card as text data or numerical data to the client device 102. A display application such as an applet is advantageously utilized to display a card at the client device 102 according to the received card type information. The display application may be downloaded from the server to the client device 102. Block 720 proceeds to block 722. At block 722, the player is prompted to enter instructions, such as "hit", "stay", "double", "split", and so forth. In one embodiment, the player speaks a voice command into a microphone connected to the client device 102. The client device 102 receives the voice command and uses a voice recognition program to recognize the instructions. The recognized instructions are then transmitted to the game table. In one implementation, the player trains the voice recognition program prior to starting the game. The player speaks a voice command, advantageously in his/her native language, and identifies to the voice recognition program the instruction that the voice command represents. After one or more iterations of training, the voice recognition program is able to recognize the player's voice commands. The player can also interact with the dealer, physical players and other remote players by entering and transmitting audio comments, by entering and transmitting video images of himself/herself, by entering and transmitting chat messages or instant messages, and so forth. Block 722 proceeds to block 724. At block 724, the player instructions are transmitted to the server, which transmits the player instructions to the remote instructions system 408 at the game table. Other data such as audio data, video image data, chat messages, instant messages, and so forth can also be transmitted. The dealer then executes the received player instructions. Block 724 proceeds to block 730.

Failure situations can occur during a game. For example, the communication link between a remote player and the server may be interrupted or disconnected by the remote player or by network error. A remote player may fail to enter playing instructions within a specified time limit during a game. Rules are set to determine that a failure has occurred. For example, a network monitoring program can be used to determine whether the network communication

between the remote player and the server is functioning properly. A time limit such as ten seconds can be specified as the time limit under which the remote player must enter playing instructions. If a failure is determined to have occurred, contingency rules are used to continue the game at the game table 402. In one embodiment, a failed remote player is considered as having entered a "surrender" instruction for the current game. A "surrender" instruction orders the dealer to stop playing the player's hand, collect part of the player's wager for the game center, and return the other part of the player's wager to the player. The game center and the player usually each takes half of the player's wager. In another embodiment, a failed remote player is considered to be entering contingency instructions for the remainder of the game. Contingency instructions are computer-generated instructions to be played in the absence of player instructions. For example, contingency instructions such as "hit on 16 or less, stay on 17 or more" can be used as the failed remote player's instructions in a Black Jack game. In one implementation, the remote player can select, modify, or create contingency instructions for himself/herself prior to a game. For example, a conservative remote player may prefer contingency instructions such as "stay on 16 or more." For another example, a player may select, modify, or create contingency instructions such as "split two 8's." In the event of a failure, the server retrieves the remote player's contingency instructions to continue the current game.

Remote players can also back-bet on a game. A remote player selects a game table 402 and receives video images and/or audio signals of the game table 402. In one embodiment, car type information of each direct player and dealer at the game table 402 is transmitted to the remote player. In another embodiment, the remote player selects a direct player at the game table 402 and receives card type information of the selected direct player. A direct player is a remote or physical player that directly plays at the game table 402. An indirect player is a player that back-bets on a game at the game table 402. The indirect player transmits an instruction indicating he/she wishes to back-bet, a direct player selection, and a wager amount from the client device 102 to the server. If the indirect player back-bets on a game such as Black Jack or Roulette, then the indirect player does not enter further playing instructions. The direct player enters playing instructions or the dealer rolls the dices, and the indirect player's winning or loss is determined accordingly. If the indirect player back-bets on a game such as Caribbean Studs, the indirect player can choose to copy the direct player's playing instructions or enter instructions of his/her own. The indirect player's winning or loss is determined by the indirect player's playing instructions. Since the number of back-betting remote players at a game table 402 is not limited by physical space near the game table 402, and since a server instead of a dealer can receive back-betting instructions and determine results, a potentially unlimited number of remote players can back-bet at a limited number of game tables 402.

Referring to FIGURE 7B, at block 730, a determination is made as to whether the player is exiting the game table. A player can indicate that he/she will not play the next game at the table by entering, for example, a "exit game table" instruction at the client device 102. In one embodiment, the player is determined to be exiting the game center if he/she has not placed a new wager within a specified time frame. If the determination is negative, i.e., if the player wishes to keep playing at the game table, then block 730 returns to block 712 to keep playing. Otherwise block 730 proceeds to block 732. At block 732, a determination is made as to whether the player is ready to exit the game

center. A player can enter an instruction at the client device 102 to indicate he/she is ready to leave the game center. If the player is not ready to exit the game center, then block 732 returns to block 706. Otherwise block 732 proceeds to block 734. At block 734, the chips remaining with the player is redeemed. The server redeems the chips by increasing the player's account balance by the amount of the chips. In one embodiment in which the player did not purchase chips to play, the amount of winning or loss of the player is calculated, and the player's financial account is updated accordingly. When the player exits the game center, the server connects to a database of the game center or a database of a third party financial organization, and updates the player's financial account. In other embodiments, the player's financial account at the database can also be updated after the player exits a game table, after a game at the game table, or after each play. Block 734 proceeds to an end block 736. In another embodiment, the player may exit a game center but enter another game center hosted by the server to continue playing.

Player Rewards Program

The playing information of remote players can be recorded by a server and stored into a user playing history database. The stored playing information can be used in a player rewards program. The playing information can include the name of the player, the identifier of the player, the amount of winning made by the player, the amount of money spent by the player, date and time of playing, the types of games played by the player, and so forth. Multiple casino chains or multiple casino locations within the same casino chain can share the same rewards program. In addition to being used for a player reward program, the information can also be used for other purposes, for example in making recommendations of product and services to the player, in determining the amount of casino credit to provide the player, and in determining whether to grant the player a VIP or preferred guest status. The information can also be used to comply with government reporting regulations and to ensure qualify of customer service.

In one embodiment, every time a remote player plays at a casino, the server checks the user against the user playing history database. If the amount of money spent by the player has reached a certain triggering amount, then the server announces a winning reward to the player. The server then prompts the player to designate an account to receive the winning, or transfers the winning amount to a default account of the player. In another embodiment, a fixed percentage of rebate is automatically credited to the player every time the player plays at the casino. Incentives can also be provided to the player in the form of extra play opportunities, such as prompting the player to "play a free hand!" at the expense of the game center, or informing the player that "the casino doubles this wager for you!" The playing information stored in the database can also be used to conduct drawings to award large prizes to one or more players. The drawings can be random, or partially correlated to the playing information, such as the amount of money a player has spent and the player's playing frequency. The player reward program can also replace or compliment the existing bonus program at a hotel or casino. For example, the money a player has spent on gaming can be used to earn bonus points toward free stays at the hotel. The money a player has spent at other services of the casino can earn cash points to be spent on gaming at the casino.

In another embodiment, physical players at the casino can also join in the player rewards program. For example, referring to FIGURE 4, physical players can enter personal identification information on local consoles 410 at the game table 420. The rewards currently available to the physical player can be displayed on the local console 410. For example, as the player continues playing, the player can view on the local console 410 the increasing amount of bonus points or entitled prize winning. For remote players, the rewards information can be displayed on their client devices 102.

Computerized Monitoring

A monitoring program can be used to replace or compliment human "pit bosses". The monitoring program is designed to watch for irregularities, such as a physical player or remote player winning abnormally large amounts of money or winning constantly. In one embodiment, the monitoring program uses pattern recognition to analyze video images from cameras at the game table. For example, the monitoring program can be trained to distinguish normal dealer and physical player motions from abnormal dealer and physical player motions. If the video image of a dealer shows abnormal motions, such as the dealer reaching into his/her pocket, the monitoring program alerts a human security supervisor.

The monitoring program also acts as a coach or supervisor to the human dealer. Using information such as the types of cards dealt, the monitoring program can instruct the dealer on actions such as whether to hit or stand on the dealer's hand. When the monitoring program detects a card dealt to the dealer as an "Ace", the monitoring program reminds the dealer to ask players if they wish to buy insurance. The monitoring program can issue warnings if the dealer makes an error, for example continuing to deal a card to the dealer after dealer's hand exceeds 17. A training device such as a device similar to the local console 410 can be placed next to the dealer 404 on the game table 402, to provide real time instructions to train an inexperienced dealer 404. The training device displays the playing instruction such as "hit" or "stand" regarding the dealer's hand, and displays the total count of every player's cards. The training device also displays the amount of money to be paid to or collected from each player after a game.

Since information such as the wining and losing amount on each player and dealer at every game table can be collected by the server, statistical data on winnings and losing can be used to provide tax, auditing and reporting data to the game center, to government regulatory bodies, and to players. The game center can use statistical data to analyze the popularity and profitability of various game types and game centers.

To prevent players, especially remote players from counting cards, cards can be shuffled frequently, such as every game, every other game, or every five games. A card shuffler can be used to shuffle cards, so that the dealer need not shuffle the cards. A large number of decks of cards, such as four, six, or eight decks of cards can be used. A continuous card shuffler can be integrated with the card shoe to shuffle cards after every game. After every game, the dealer retrieves the dealt cards and places them into the continuous card shuffler, which shuffles all cards in the shuffler. The dealer then deals cards from the shuffler. Since the cards are shuffled after every game, only a small number of decks of cards need to be used.

Other Games

In addition to games in which players play against the game center, remote players can use the on-line system at a game center to play among themselves. The game center provides the on-line communication system and optionally the game table and the dealer. The game center charges the players a flat fee, a percentage of the total wager, or a percentage of the winnings. The game center obtains the financial account information from each player and ensures that each player has the sufficient fund that he/she wagers. The game center serves as an escrow service to ensure that the losing players cannot refuse to pay the winning players.

For example, remote players can join an on-line game center to play the game of poker. Referring to FIGURE 4, the remote players select a game table 402 to play. A real dealer 404 at the game table 402 deals cards face down to the remote players, each represented by a remote instructions system 408. Each card is scanned, and the card information is transmitted to the remote player for whom the card is dealt. The remote players can interact through video, audio, chat room messages, instant messages, and so forth. The playing instructions, video images, audio signals, messages, and so forth are transmitted from the originating remote players through the server to the destination remote players.

For another example, remote players can join an on-line game center to play a board game such as chess or monopoly. FIGURE 8 is a flowchart showing one embodiment of a process of a remote player playing a game of chess against a remote or physical player. A start block 802 proceeds to block 804, where a remote player enters a chess room of the game center. The remote player is verified to ensure that he/she is permitted by law and financially capable of playing a wagered game. Details of one embodiment of a verification process have been described above in connection with FIGURE 3. The chess room can be a computer simulated room or a real room with real chess boards. In one embodiment, a real chess board is located on a game table, such as the game table 402 illustrated in FIGURE 4, to enable a physical player to play against a remote player. A human referee moves the chess pieces on the real chess board according to playing instructions from the remote player. In another embodiment, a chess board is displayed on a computer screen located on a game table, such as the game table 402 shown in FIGURE 4. The physical player or remote player issues instructions to move the pieces on the chess board on the computer screen.

Still referring to FIGURE 8, block 804 proceeds to block 806, where the remote player broadcasts his/her intent to find an opponent to play. The remote player's message can be broadcast to the entire chess room or the entire game center. The remote player may also limit the message receiver to his/her friends identified by player name or player identifier. Additional information, such as the remote player's rating, win/loss record at the chess room, video image, photo image, and so forth, can also be broadcast. Block 806 proceeds to block 808, where the remote player waits for an opponent's response, evaluates the opponent, and accepts or rejects the opponent. The remote player may evaluate the opponent by reviewing the opponent's information transmitted to the remote player, such as the opponent's name, rating, win/loss record, video image, photo image, and so forth. The opponent can be another remote player, or a physical player at the chess room. The remote player may also interact with the opponent using

video images, audio conversation, chat messages, instant messages, and so forth. A physical player can interact with the remote player using an on-line device, for example the local console 410 illustrated in FIGURE 4. If the remote player rejects the opponent, then the remote player continues waiting and evaluating other opponents until one opponent is accepted. Block 808 then proceeds to block 810.

At block 810, the remote player and his/her opponent determines a wager amount for each party. The parties may communicate using video images, audio conversation, chat messages, instant messages, and so forth. The parties may agree to enter unequal wager amounts. For example, party A, who is believed to be the stronger player, wagers (thus stands to lose) $100, while party B, who is believed to be the weaker player, wagers (thus stands to lose) $50. The server verifies that each party has sufficient funds to cover the wager. The parties also determine who starts first, for example by mutual agreement or by rolling a real or computer-generated dice. Block 810 proceeds to block 812, where the remote player starts the game and transmits his/her move to the opponent. Other information, such as his/her video images, photo images, chat messages, instant messages, audio comments, etc., can also be transmitted to the opponent. Block 812 proceeds to block 814, where the remote player receives the opponent's move and other information such as video images of the remote opponent, or video images of the game table where the physical opponent is located. In one embodiment in which the other player starts the first move of the game, the orders of block 812 and block 814 are reversed.

Still referring to FIGURE 8, block 814 proceeds to block 816, where a determination is made as to whether the game has ended. The game ends when the parties agree to a draw, or when one party resigns. If the game has not ended, then block 816 returns to block 812 to continue playing. Otherwise block 816 proceeds to block 818, where the losing party pays out his/her wager to be collected by the winning party. The server transfers the wagered amount from the losing party's account to the winning party's account. The server also collects a flat fee or a percentage of the wager from the losing party or both parties. Block 818 proceeds to an end block 820.

For yet another example, remote players can join an on-line game center to play a computer game, such as a combat game, a role playing game, a strategy game, or a sports game. A plurality of player, for example dozens or hundreds of players, can play in the same game. In one embodiment, each player pays a wager amount to play the game, and the server transfers the losing players' wager amounts to the account(s) of the winning player(s). The server also transfers a flat fee or a percentage of the wager amounts to the game center.

Remote players can also join an on-line game center to place bets on a future outcome such as a sporting event. The betting events need not be limited to sporting events, but can be any events whose outcome can be reliably determined. In one embodiment, the remote players bet against each other, with the game center taking a percentage of the total wager or the winning. For example, remote players each enter a wager to predict the winner of the next World Cup Soccer tournament. The images of the events such as sporting events can be transmitted to the players, using the above-described devices. For example, the video images of a boxing match held at a casino can be transmitted to the players who have bet on the match. The television images of a sporting event can also be transmitted to players who bet on the event.

In another embodiment of betting on a future outcome, the game center sells or auctions the virtual ownership of a sports team, a race horse, a race car, or an athlete to one or more players at a price. The price is deducted from the financial accounts of the purchasing players and credited to the game center. The purchasing players become virtual owners. Different teams, horses, cars, and athletes can be purchased at different prices, depending on their expected chance of success. After a sporting event, the game center pays winning amounts to the virtual owners of the winning teams, horses, cars, and athletes. This embodiment provides to the players a sense of ownership and therefore great incentive.

In addition to real sporting events, a sporting event can be simulated and displayed. For example, based on the team and individual player statistics of NBA teams, such as team win-loss percentage, team average scoring per game, player average rebounds per game, player shooting percentage, and so forth, a computer simulates the plays of a 48-minute basketball game between two NBA players. The simulated game can be displayed as a pre-game show prior to the start of the real game. Physical and remote users can enter wagers to predict the result of the simulated game.

FIGURE 9 is a diagram showing one embodiment of a client device display. A display screen for Black Jack is shown as an example. The display screen 902 on the client device 102 includes a card section 904, an instruction section 906, a wager section 908, and an image section 910. The card section 904 displays graphic representations of the types of cards being dealt to the remote player and the dealer. The instruction section 906 displays the playing instructions available to the player. The remote player enters playing instructions by selecting instructions in section 906 or speaking an audio command. The wager section 908 displays the amount of the player's current wager and the player's remaining balance for game play. The player can specify a wager amount by entering an amount in section 908. Section 910 displays a video image of the game table 902 transmitted from the game center.

This application incorporates by reference in its entirety the Australian provisional application # PQ7841/00 titled "METHOD OF AND SYSTEM FOR PROVIDING AN ON-LINE CASINO GAME" and filed on May 29, 2000.

This invention may be embodied in other specific forms without departing from the essential characteristics as described herein. The embodiments described above are to be considered in all respects as illustrative only and not restrictive in any manner. The scope of the invention is indicated by the following claims rather than by the foregoing description.

WHAT IS CLAIMED IS:

1. A game table for a remote player to participate in a card game, the game table comprising:

a card scanner configured to scan a card and to determine a type of the card, the card having an embedded code that indicates the type of the card, the card scanner being connected to a server, the server being configured to transmit the type of the scanned card to the remote player;

one or more cameras connected to the server, the cameras being configured to capture video images of the game table, the server being further configured to transmit the captured video images to the remote player; and

a remote instruction system configured to receive playing instructions from the remote player through the server, and to display the received playing instructions at the game table in visual or audio form.

2. The game table of Claim 1, wherein the card scanner is configured to scan a card using a radio signal.

3. The game table of Claim 1, wherein the card scanner is configured to scan a card using an infrared signal.

4. The game table of Claim 1, wherein the card scanner is configured to scan a card using a barcode reader.

5. The game table of Claim 1, wherein the cameras comprise an overhead camera configured to capture video images of an overhead view of the game table.

6. The game table of Claim 1, wherein the cameras comprise a dealer camera configured to capture video images of a dealer of the game table.

7. The game table of Claim 1, wherein the cameras comprise a physical player camera configured to capture video images of a physical player of the game table.

8. The game table of Claim 1, further comprising a local console configured to allow a physical player at the game table to enter playing instructions.

9. The game table of Claim 1, further comprises a microphone connected to the server, the microphone being configured to record audio signals at the game table, the server being further configured to transmit the recorded audio signals to the remote player.

10. A physical slot machine configured to display playing statistics, the slot machine comprising:

a storing medium located within the slot machine or connected to the slot machine, the storing medium being configured to store a result for each of a plurality of plays at the slot machine; and

a display device located at the slot machine or connected to the slot machine, the display device being configured to display at least a summary of the stored results.

11. The slot machine of Claim 10, wherein the physical slot machine is connected to another physical slot machine.

12. A method of enabling a remote player to select a slot machine to play, the method comprising:

storing statistics of a first slot machine and statistics of a second slot machine;

displaying to the player at least a summary of the stored statistics of the first slot machine;

displaying to the player at least a summary of the stored statistics of the second slot machine; and

prompting the player to select a slot machine from a plurality of slot machines, the plurality of slot machines including the first slot machine and the second slot machine.

13. The method of Claim 12, wherein each of the plurality of slot machines is a physical slot machine located at a physical game center.

14. The method of Claim 12, wherein each of the plurality of slot machines is a virtual slot machine simulated by a computer program.

15. A method of creating security requirements at a web site, the method comprising:

displaying a plurality of available verification fields to an administrator of the web site;

prompting the administrator to select one or more verification fields from the plurality of available verification fields; and

prompting a user to enter data into the selected verification fields when the user requests entry into the web site.

16. The method of Claim 15, further comprising verifying user entered data to determine whether to allow the user to enter into the web site.

17. The method of Claim 16, wherein verifying user entered data comprises comparing user entered data against user information stored in a user information database connectable to the web site.

18. The method of Claim 16, further comprising prompting the user to insert a smart card into a smart card drive when the user requests entry into the web site.

19. The method of Claim 16, further comprising prompting the user to insert a smart disk into a disk drive when the user requests entry into the web site.

20. The method of Claim 18, wherein verifying user entered data comprises comparing user entered data against data stored on the smart card.

21. The method of Claim 19, wherein verifying user entered data comprises comparing user entered data against data stored on the smart disk.

22. A method of creating security requirements at a web site having a plurality of sub-sites, the method comprising:

displaying a plurality of available verification fields to an administrator of the web site;

for each of the plurality of sub-sites of the web site, prompting the administrator to select one or more verification fields from the plurality of available verification fields; and

prompting a user to enter data into the selected verification fields when the user requests entry into a sub-site of the web site.

23. A method of enabling a remote player to participate in a game at a physical game center, the method comprising:

prompting the remote player to connect to a server that hosts the physical game center;

verifying that the remote player is permitted by his/her jurisdiction to play at the game center;

verifying that the remote player is financially qualified to play at the game center;

identifying a financial account of the remote player;

prompting the remote player to enter playing instructions;

receiving the entered playing instructions at the game center;

playing a game at the game center according to the received playing instructions;

transmitting a status of the played game to the remote player;

optionally transmitting video images of the played game to the remote player; and

updating a balance of the identified financial account of the remote player.

24. The method of Claim 23, wherein verifying that the remote player is permitted by his/her jurisdiction to play comprises comparing the remote player's age against his/her jurisdiction's age limit.

25. The method of Claim 23, wherein verifying that the remote player is financially qualified to play comprises examining the remote player's financial information stored in a smart card of the remote player.

26. The method of Claim 23, wherein verifying that the remote player is financially qualified to play comprises examining the remote player's financial information stored in a smart disk of the remote player.

27. The method of Claim 23, wherein verifying that the remote player is financially qualified to play comprises examining the remote player's financial information stored in a financial database of the game center.

28. The method of Claim 23, wherein verifying that the remote player is financially qualified to play comprises examining the remote player's financial information stored in a financial database of a third party financial organization.

29. The method of Claim 23, wherein identifying a financial account of the remote player comprises identifying a smart card account of the remote player.

30. The method of Claim 23, wherein identifying a financial account of the remote player comprises identifying an e-wallet account of the remote player.

31. The method of Claim 23, wherein identifying a financial account of the remote player comprises identifying a bank account of the remote player.

32. The method of Claim 23, wherein identifying a financial account of the remote player comprises identifying a credit card account of the remote player.

33. The method of Claim 23, further comprising prompting the remote player to select a game to play.

34. The method of Claim 23, further comprising prompting the remote player to select a game area to play.

35. The method of Claim 34, wherein prompting the remote player to select a game area comprises prompting the remote player to select a game table.

36. The method of Claim 34, wherein prompting the remote player to select a game area comprises prompting the remote player to select a slot machine.

37. The method of Claim 23, wherein prompting the remote player to enter playing instructions comprises prompting the remote player to speak audio commands.

38. The method of Claim 23, wherein receiving the entered playing instructions comprises:

receiving the entered playing instructions in a first format at the server;

converting the playing instructions in a first format into playing instructions in a second format; and

transmitting the playing instructions in the second format from the server to the game center.

39. The method of Claim 38, wherein the first format is a non-audio format and the second format is an audio format.

40. The method of Claim 38, wherein the first format is an audio format in a first language and the second format is an audio format in a second language.

41. The method of Claim 23, wherein transmitting a status of the played game comprises transmitting a type of a card of the played game.

42. The method of Claim 23, wherein transmitting a status of the played game comprises transmitting a number of a rolled dice of the played game.

43. The method of Claim 23, wherein transmitting a status of the played game comprises transmitting a type of a wheel landing area of the played game.

44. The method of Claim 23, wherein optionally transmitting video images of the played game comprises optionally streaming the video images to the remote player.

45. The method of Claim 23, wherein playing the game comprises using a human operator to carry out the received playing instructions from the remote player.

46. The method of Claim 23, further comprising connecting the game center to another game center.

47. The method of Claim 23, wherein updating a balance of the identified financial account comprises updating the balance when the remote player is ready to exit the game center.

48. The method of Claim 23, wherein updating a balance of the identified financial account comprises updating the balance when the remote player is ready to exit a game area.

49. The method of Claim 23, wherein updating a balance of the identified financial account comprises updating the balance when the result of a bet entered by the remote player has been determined.

50. A method of a player playing a game at a remote physical game center, the method comprising:

connecting to a server that hosts the game center;

entering verification information to satisfy legal requirements;

entering playing instructions to a game to be played or being played at the game center;

receiving a status of the played game from the server; and

optionally receiving video images of the played game from the server.

51. The method of Claim 50, wherein the game is a slot machine game, the method further comprising receiving statistics of the slot machine.

52. The method of Claim 50, wherein receiving a status of the played game comprises receiving a type of a card of the played game.

53. The method of Claim 52, wherein receiving a type of a card comprises receiving a type of a card scanned by a card scanner connected to the server.

54. The method of Claim 50, wherein receiving a status of the played game comprises receiving a number of a rolled dice of the played game.

55. The method of Claim 50, wherein receiving a status of the played game comprises receiving a type of a wheel landing area of the played game.

56. The method of Claim 50, further comprising receiving player rewards information from the server.

57. A method for enabling a remote player to participate in a game played in a casino remotely located from said remote player and providing the remote player with a realistic game experience that substantially captures the visual feel and excitement of the casino, the method comprising:

transmitting images to said remote player of a game in progress;

identifying a financial account of said remote player;

prompting said remote player when it is said remote player's turn to play to enter playing instructions during the game;

receiving at said casino the entered playing instructions from said remote player while the game is being played;

receiving from said remote player an amount of wager specified by said remote player; and

communicating to said remote player the ongoing status of the game in substantially real time.

58. The method of Claim 57, further comprising transmitting to said remote player sounds of the game and voices of a dealer and on-site players.

59. A method for enabling a remote player to participate in a game played in a casino remotely located from said remote player and providing the remote player with a realistic game experience that substantially captures the visual and audio feel and excitement of the casino, the method comprising:

transmitting images to said remote player of a game in progress;

transmitting to said remote player sounds of the game and voices of a dealer and on-site players;

identifying a financial account of said remote player;

prompting said remote player when it is said remote player's turn to play to enter playing instructions during the game;

receiving at said casino the entered playing instructions from said remote player while the game is being played;

receiving from said remote player an amount of wager specified by said remote player;

communicating to said remote player the ongoing status of the game in substantially real time; and

communicating to said remote player an amount of balance retained by said remote player.

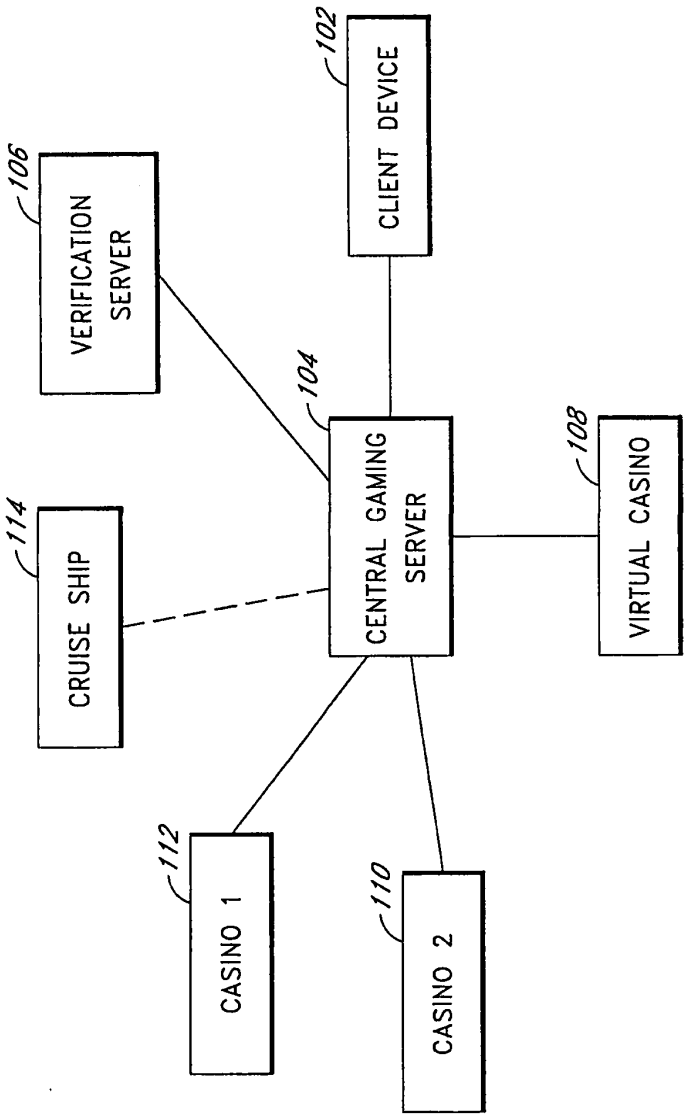

102
CLIENT DEVICE
106
VERIFICATION SERVER
104
CENTRAL GAMING SERVER
108
VIRTUAL CASINO
114
CRUISE SHIP
112
CASINO 1
110
CASINO 2

FIG. 1

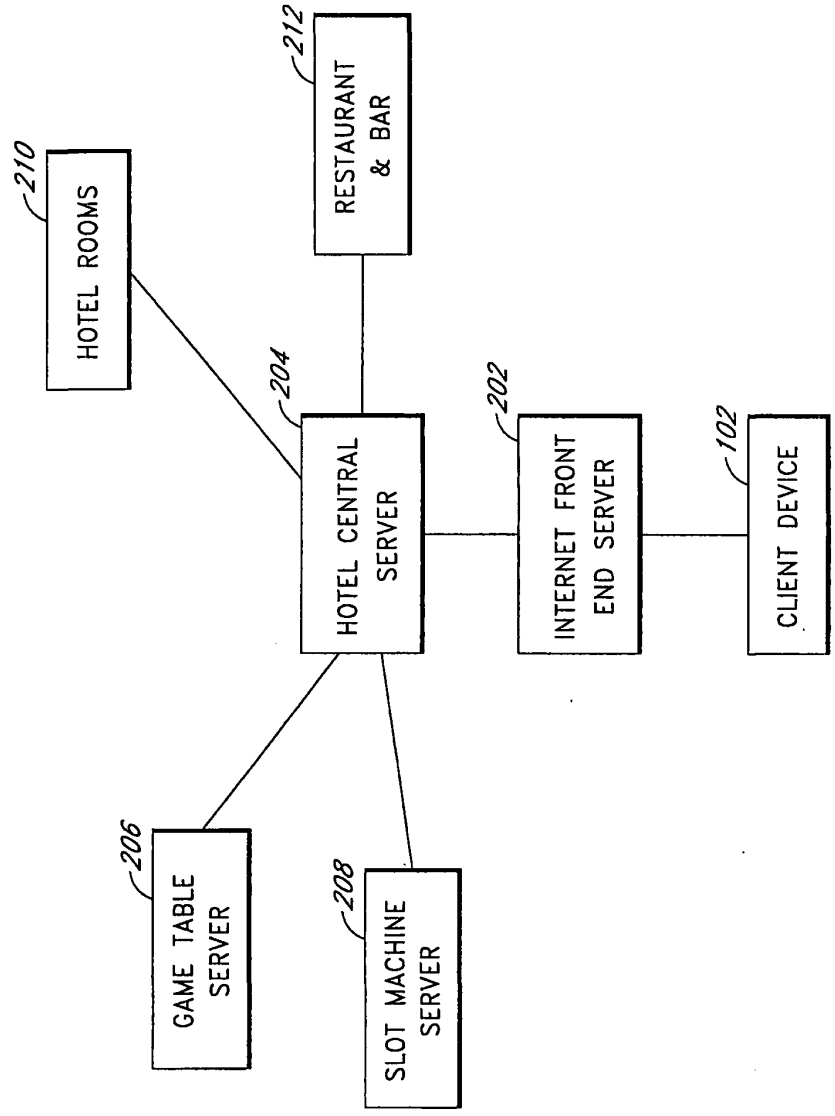

212
RESTAURANT & BAR
210
HOTEL ROOMS
204
HOTEL CENTRAL SERVER
202
INTERNET FRONT END SERVER
102
CLIENT DEVICE
206
GAME TABLE SERVER
208
SLOT MACHINE SERVER

FIG. 2

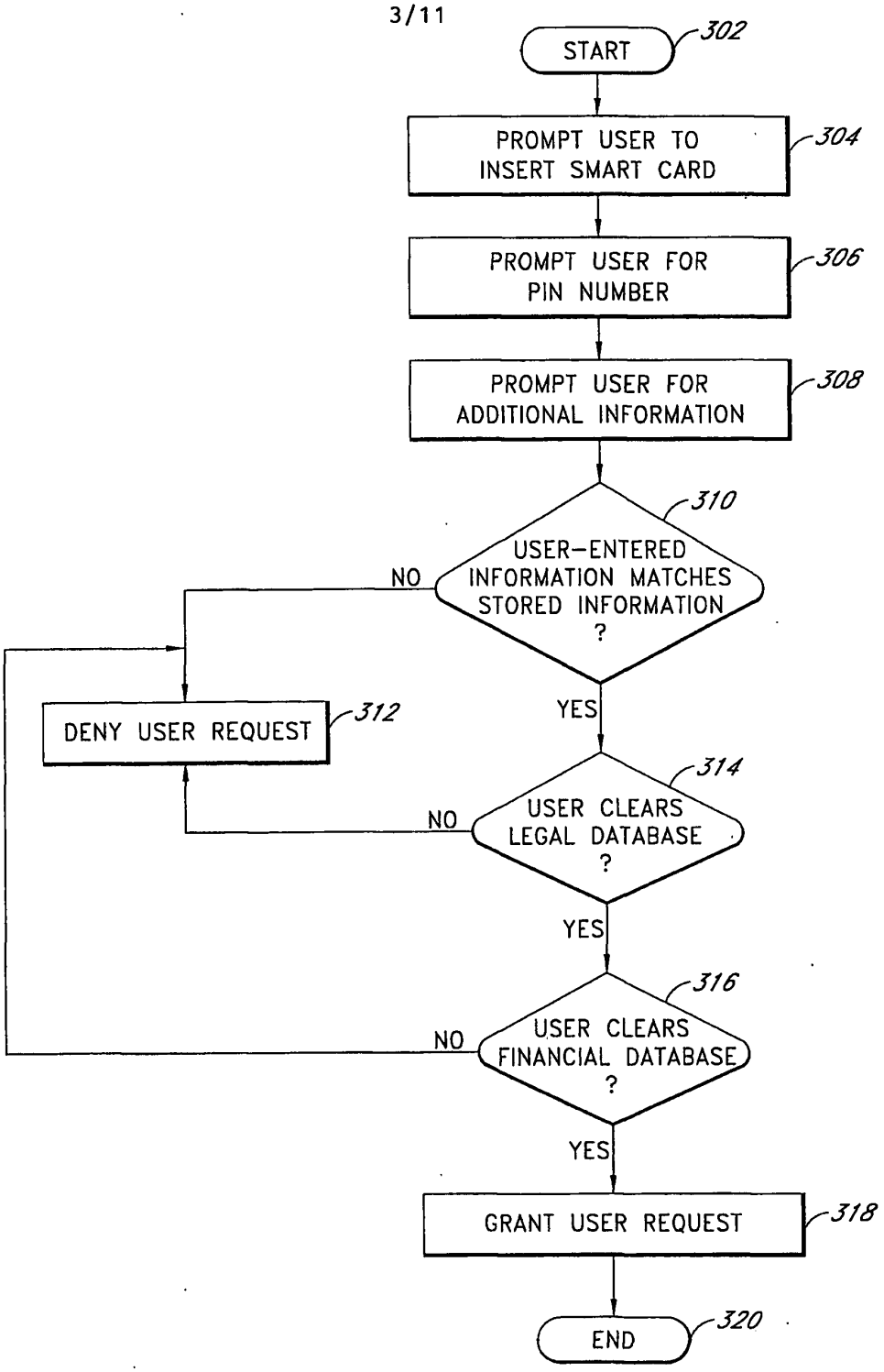
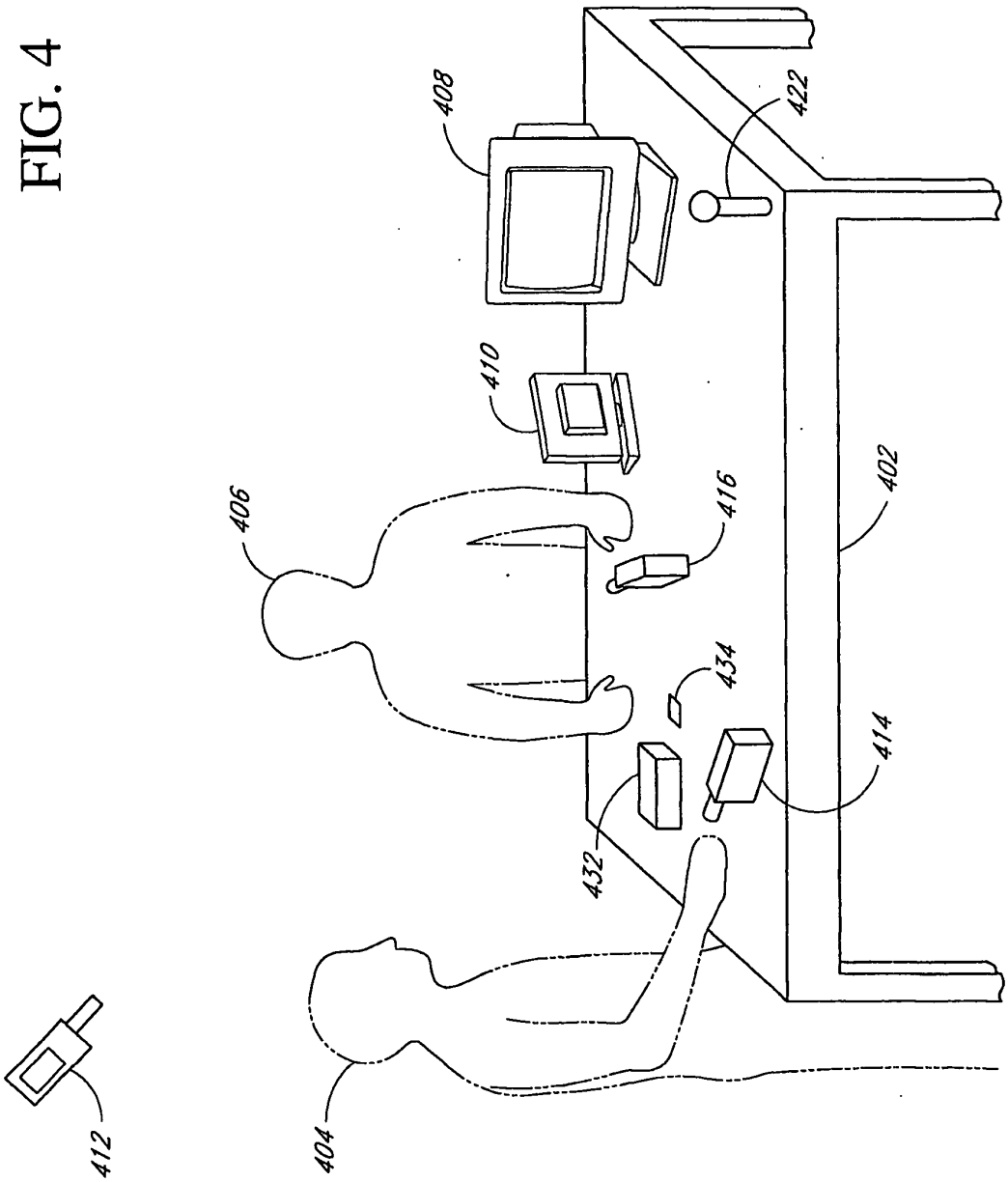

START
302
PROMPT USER TO INSERT SMART CARD
304
PROMPT USER FOR PIN NUMBER
306
PROMPT USER FOR ADDITIONAL INFORMATION
308
USER-ENTERED INFORMATION MATCHES STORED INFORMATION ?
310
NO
YES
DENY USER REQUEST
312
USER CLEARS LEGAL DATABASE ?
314
NO
YES
USER CLEARS FINANCIAL DATABASE ?
316
NO
YES
GRANT USER REQUEST
318
END
320

FIG. 3

FIG. 4



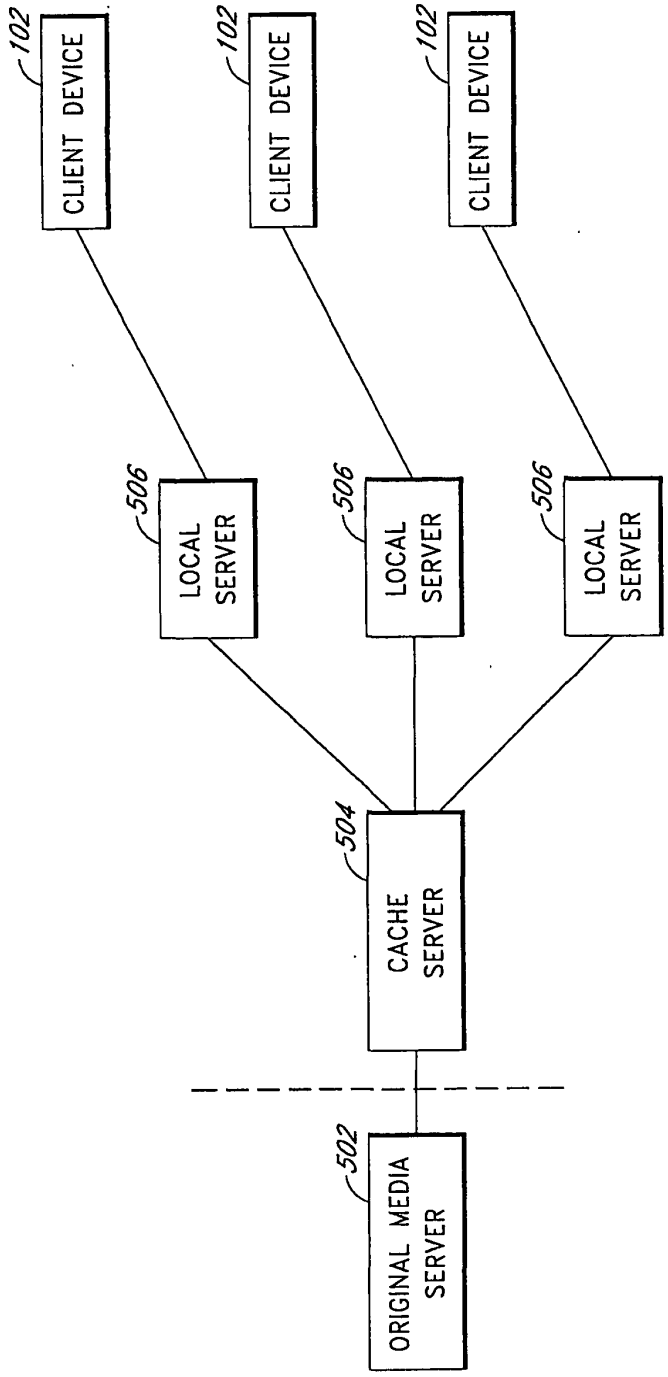

102
CLIENT DEVICE
102
CLIENT DEVICE
102
CLIENT DEVICE
506
LOCAL SERVER
506
LOCAL SERVER
506
LOCAL SERVER
504
CACHE SERVER
502
ORIGINAL MEDIA SERVER

FIG. 5

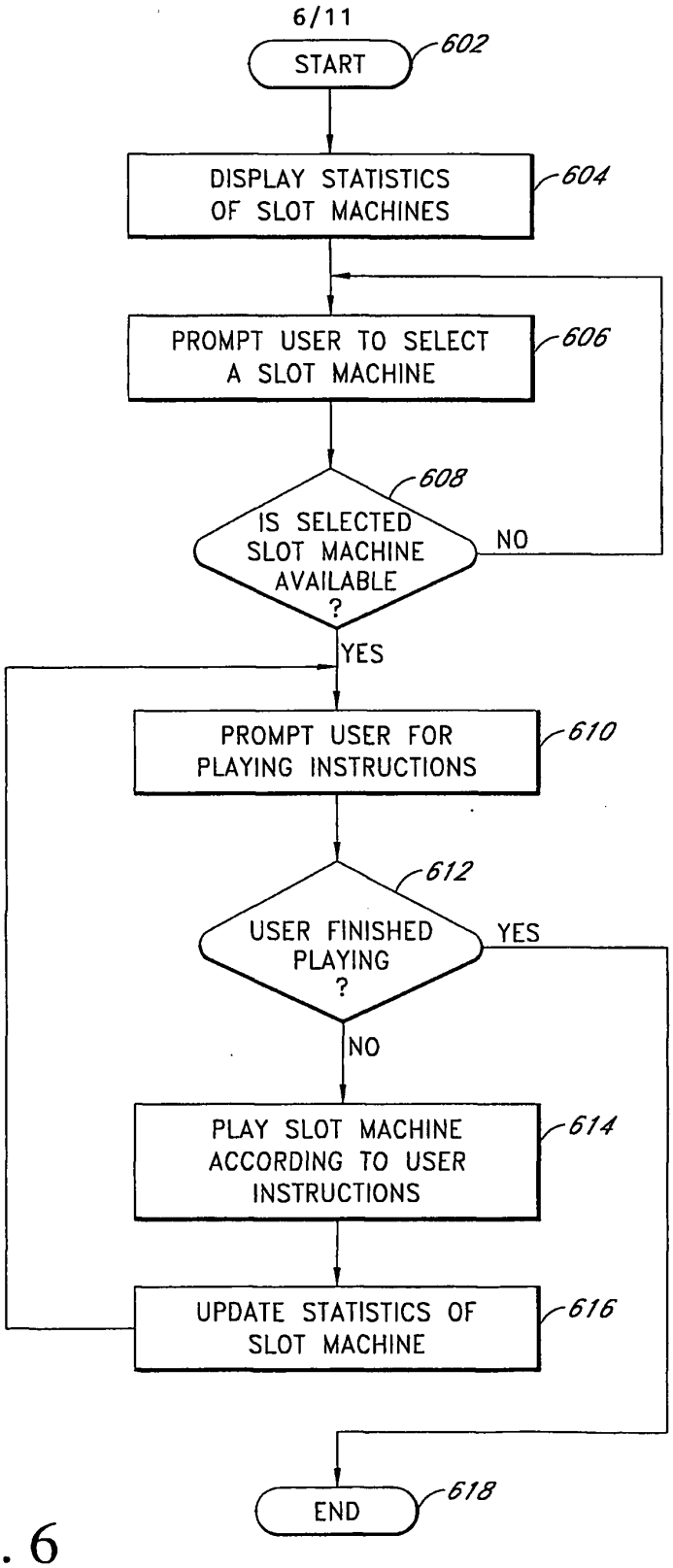

START
602
DISPLAY STATISTICS OF SLOT MACHINES
604
PROMPT USER TO SELECT A SLOT MACHINE
606
IS SELECTED SLOT MACHINE AVAILABLE ?
608
NO
YES
PROMPT USER FOR PLAYING INSTRUCTIONS
610
USER FINISHED PLAYING ?
612
YES
NO
PLAY SLOT MACHINE ACCORDING TO USER INSTRUCTIONS
614
UPDATE STATISTICS OF SLOT MACHINE
616
END
618

FIG. 6

FIG. 7

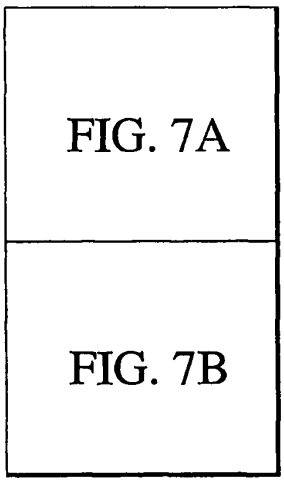
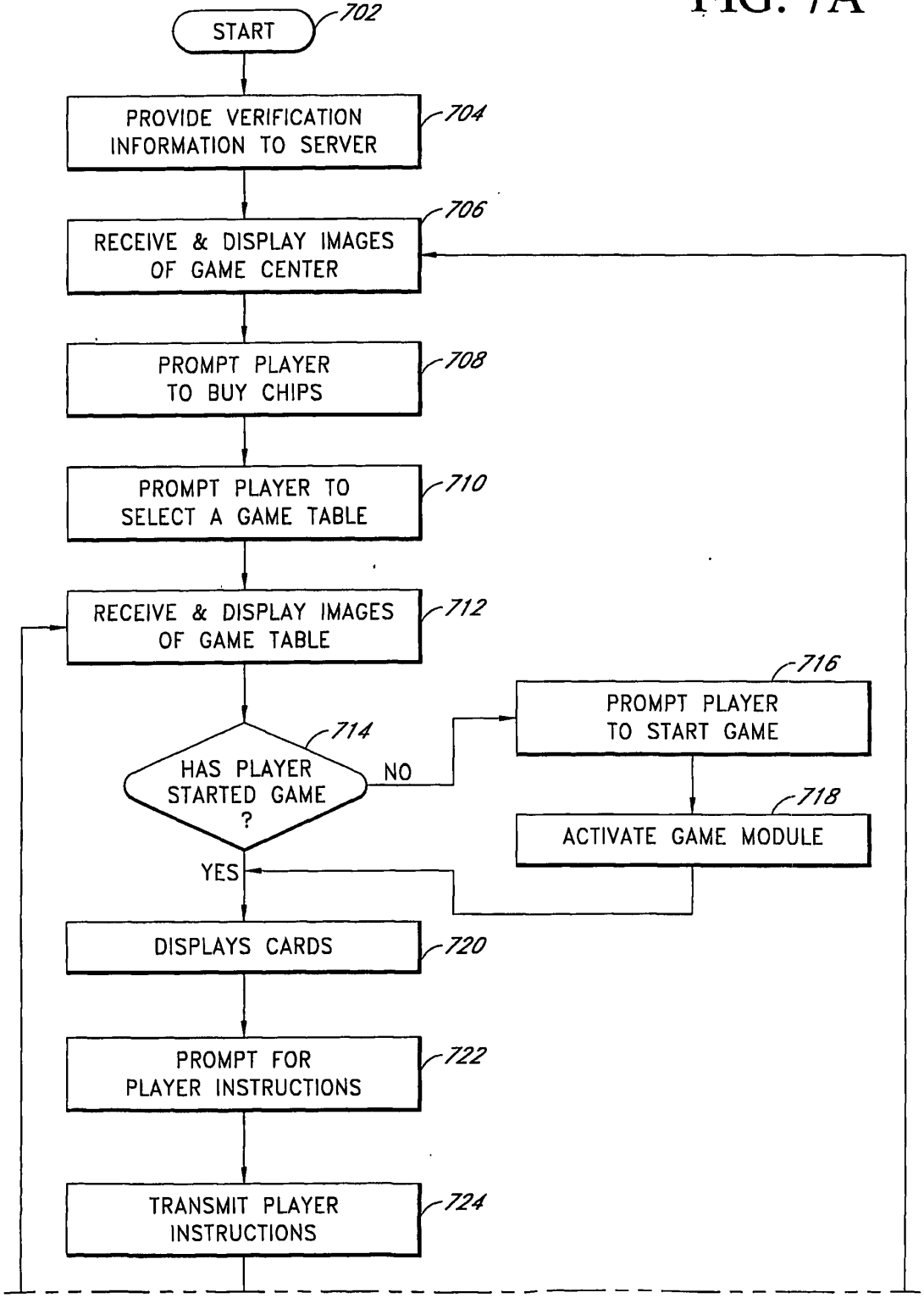


FIG. 7A


START
702
PROVIDE VERIFICATION INFORMATION TO SERVER
704
RECEIVE & DISPLAY IMAGES OF GAME CENTER
706
PROMPT PLAYER TO BUY CHIPS
708
PROMPT PLAYER TO SELECT A GAME TABLE
710
RECEIVE & DISPLAY IMAGES OF GAME TABLE
712
HAS PLAYER STARTED GAME ?
714
NO
PROMPT PLAYER TO START GAME
716
ACTIVATE GAME MODULE
718
YES
DISPLAYS CARDS
720
PROMPT FOR PLAYER INSTRUCTIONS
722
TRANSMIT PLAYER INSTRUCTIONS
724

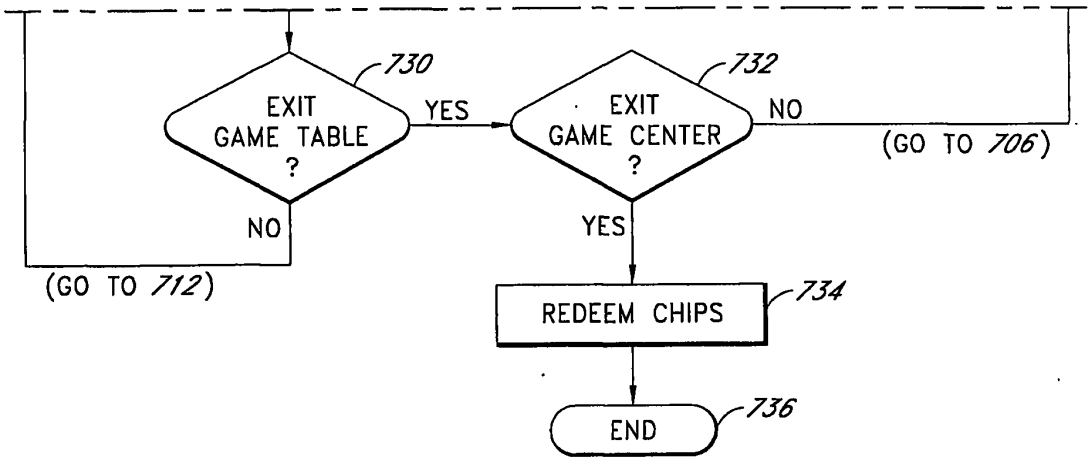

730
EXIT GAME TABLE ?
YES
732
EXIT GAME CENTER ?
NO
(GO TO 706)
NO
(GO TO 712)
YES
REDEEM CHIPS
734
END
736

FIG. 7B

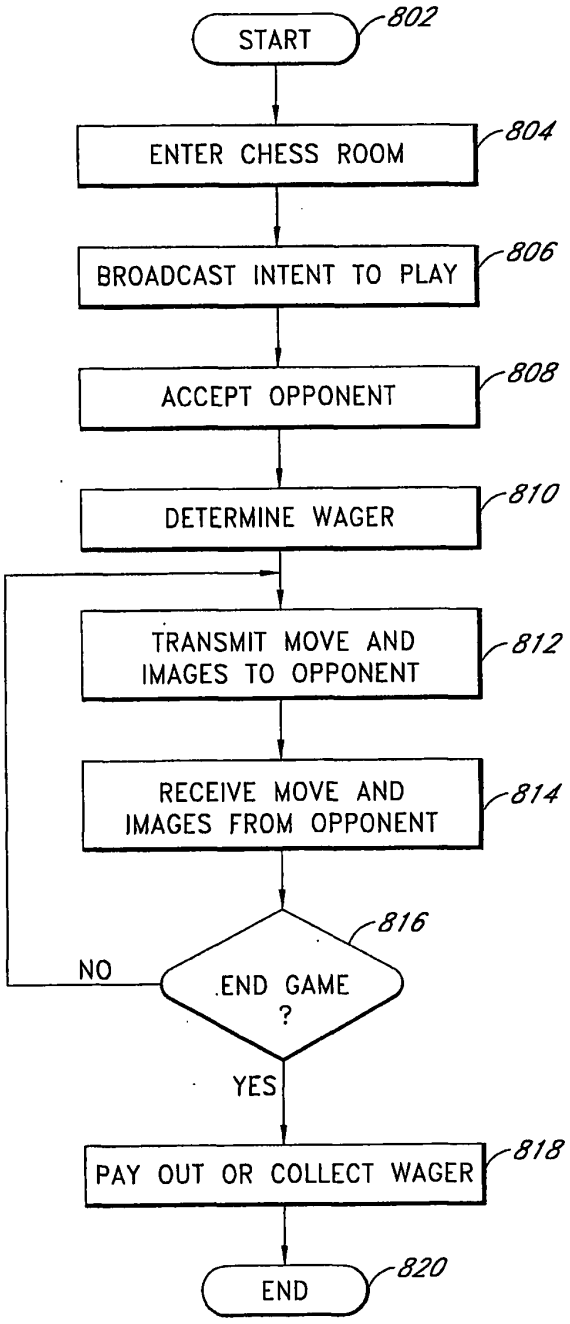

START
802
ENTER CHESS ROOM
804
BROADCAST INTENT TO PLAY
806
ACCEPT OPPONENT
808
DETERMINE WAGER
810
TRANSMIT MOVE AND IMAGES TO OPPONENT
812
RECEIVE MOVE AND IMAGES FROM OPPONENT
814
816
END GAME ?
NO
YES
PAY OUT OR COLLECT WAGER
818
END
820

FIG. 8

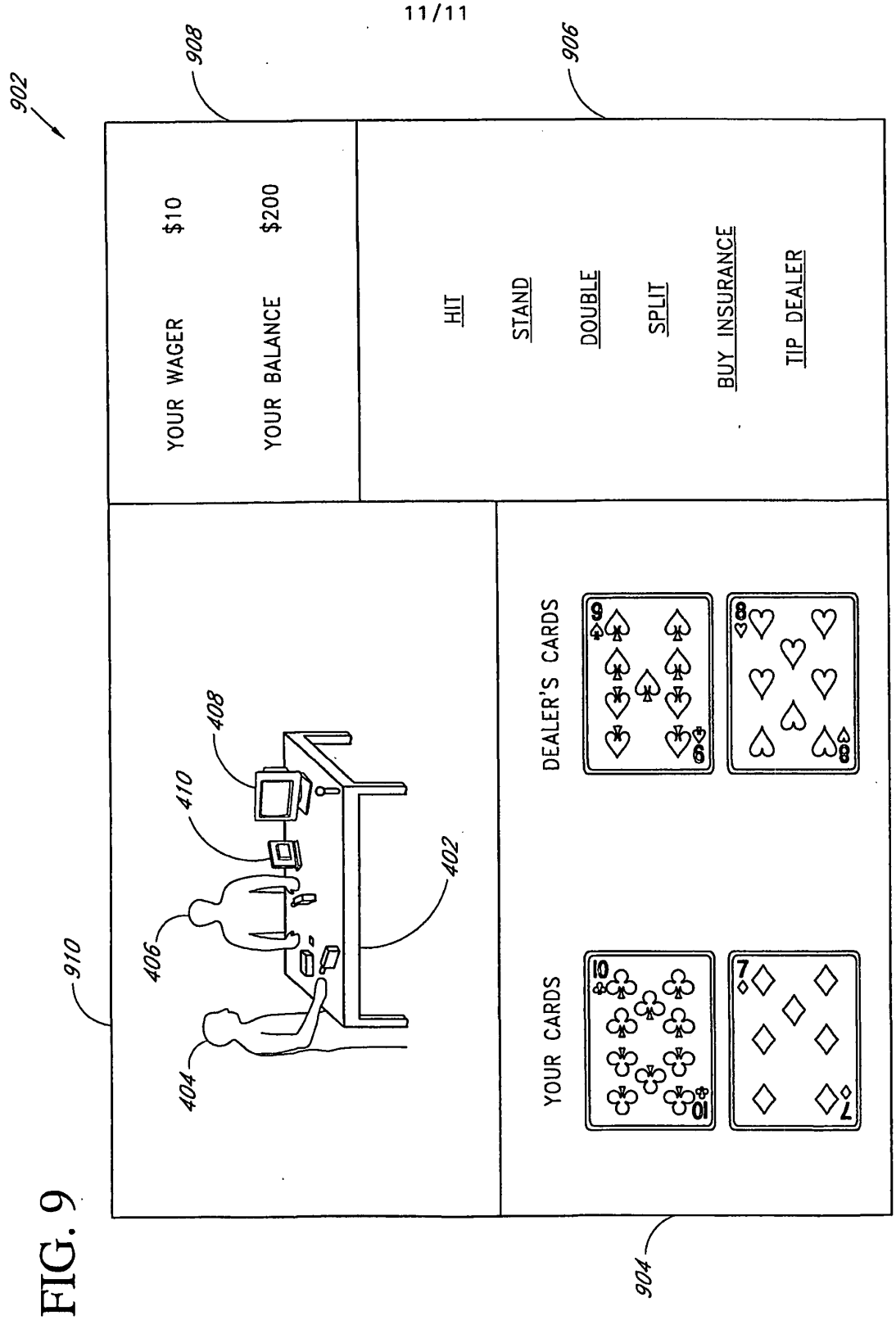

902
908
906
YOUR WAGER $10
YOUR BALANCE $200
HIT
STAND
DOUBLE
SPLIT
BUY INSURANCE
TIP DEALER
DEALER'S CARDS
YOUR CARDS
408
410
402
406
404
910
904

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17285

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A63F 6/24
US CL :Please See Extra Sheet.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 709/200, 203, 217-219; 273/148R, 149R, 149P; 463/30, 34, 40-42

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

West, ACM

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,397,133 A (Penzias) 14 March 1995, See col 1-col 5	1-9
Y	US 6,001,016 A (Walker et al) 14 December 1999, See col 1-col 12	1-9
Y	US 5,127,651 A (Okada) 07 July 1992, See col 1-col 7	10-11
Y	US 6,026,433 A (D'Arlach et al) 15 February 2000, See col 1-col 11	15-22
Y	US 5,878,417 A (Baldwin et al) 02 March 1999, See col 1- col 4	15-22

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 05 SEPTEMBER 2001	Date of mailing of the international search report 10 OCT 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer For VALENCIA MARTIN-WALLACE Telephone No. (703) 308-4119

Sheila Veney
Paralegal Specialist
Technology Center 3700

Form PCT/ISA/210 (second sheet) (July 1998)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17285

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Fernandez et al Catching the Boat with Strudel: Experiences with a Web-Site Management System, ACM May 1998	15-22
Y	US 4,373,719 A (Nelson et al) 15 February 1983, col 1-col 11	23-59

Form PCT/ISA/210 (continuation of second sheet) (July 1998)★

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17285

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17285

A. CLASSIFICATION OF SUBJECT MATTER:
US CL :

709/200, 203, 217-219; 273/148R, 149R, 149P; 463/9-13, 16, 20, 30, 34, 40-42

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING
This ISA found multiple inventions as follows:

Group I - drawn to a game table having a card scanner, one or more cameras, and a remote instruction system ...., claims 1-9.
Group II - drawn to slot machine configuration having a memory and a display device ..., claims 10-11.
Group III - drawn to a method for remotely selecting a slot machine for play....., claims 12-14
Group IV - drawn to creating security for a web site....., claims 15-22.
Group V - drawn to enabling remote player to participate in a game at a physical game center.....,claims 23-59.

This application contains groups of claims drawn to different categories of invention not permitted by Rule CFR 1.475(b) and (d) and therefore do not share a special technical relationship. These categories of invention are deemed to lack Unity of Invention because they are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for more than one inventions to be searched, the appropriate additional search fees must be paid.

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

RCE 3714 & JDW

Request For Continued Examination (RCE) Transmittal

Address to:
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Application Number	09/688,501
Filing Date	October 16, 2000
First Named Inventor	Shridhar P. Joshi
Art Unit	3714
Examiner Name	Alex P. Rada
Attorney Docket Number	247079-000077USPT

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application.

1. Submission required under 37 CFR 1.114 Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

   a. [ ] Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

      i. [ ] Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

      ii. [ ] Other _____

   b. [X] Enclosed

      i. [ ] Amendment/Reply

      ii. [ ] Affidavit(s)/Declaration(s)

      iii. [X] Information Disclosure Statement (IDS)

      iv. [ ] Other _____

2. Miscellaneous

   a. [ ] Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

   b. [ ] Other _____

3. Fees The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

   a. [X] The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 50-4181 . I have enclosed a duplicate copy of this sheet.

      i. [X] RCE fee required under 37 CFR 1.17(e)

      ii. [ ] Extension of time fee (37 CFR 1.136 and 1.17) (for one month)

      iii. [X] Other Check for RCE Fee

   b. [X] Check in the amount of $ 810.00 enclosed

   c. [ ] Payment by credit card (Form PTO-2038 enclosed)

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Signature		Date	December 3, 2007
Name (Print/Type)	Justin D. Swindells	Registration No.	48,733

10823878.1

247079/000077

12/05/2007 FHETEKI1 00000007 09688501
01 FC:1801 810.00 OP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	09/688,501
Applicant:	Shridhar P. Joshi
Filed:	October 16, 2000
Title:	Method Of Transferring Gaming Data On A Global Computer Network
TC/A.U.:	3714
Examiner:	Alex P. Rada
Docket No.:	247079-000077USPT
Customer No.:	70243

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on December 3, 2007.

Signature: Joanna Pinos

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

THIRD INFORMATION DISCLOSURE
STATEMENT UNDER 37 C.F.R. §§ 1.97 AND 1.98

Dear Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, it is respectfully requested that this Third Information Disclosure Statement be entered, and the references listed on enclosed Form PTO-1449 be considered by the Examiner and made of record. In accordance with the waiver of 37 C.F.R. § 1.98(d), copies of the listed references are enclosed.

This Third Information Disclosure Statement is being submitted concurrent with a Request for Continued Examination. Payment of the $810.00 fee identified in 37 C.F.R. § 1.17(e) to request continued examination pursuant to 37 C.F.R. § 1.114 is authorized in the enclosed Request For Continued Examination. No other fees are believed due at this time; however, the Commissioner is authorized to charge any additional fees that may be due or credit any overpayments (except the issue fee), while this application is pending, to Nixon Peabody LLP Deposit Account No. 50-4181 (Ref. No. 247079-000077USPT).

Respectfully submitted,

Date: December 3, 2007

Justin D. Swindells
Registration No. 48,733
NIXON PEABODY LLP
161 North Clark Street
48th Floor
Chicago, Illinois 60601
312-425-3900

ATTORNEY FOR APPLICANT

Form PTO-1449 (modified)	Atty. Docket No. 247079-000077USPT	Serial No. 09/688,501
List of Patents and Publications for Applicant's 3RD INFORMATION DISCLOSURE STATEMENT Page 1 of 2	Applicant Shridhar P. Joshi	
	Filing Date: 10/16/00	Group: 3714

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date if App.
	C01	4,858,930	8/22/89	Sato	273	85	
	C02	5,489,103	2/6/96	Okamoto	273	433	
	C03	5,655,961	8/12/97	Acres et al.	463	27	
	C04	5,707,286	1/13/98	Carlson	463	16	
	C05	5,759,102	6/2/98	Pease et al.	463	42	
	C06	5,800,268	9/1/98	Molnick	463	40	
	C07	5,816,918	10/6/98	Kelly et al.	463	16	
	C08	5,971,271	10/26/99	Wynn et al.	235	380	
	C09	5,999,808	12/7/99	LaDue	455	412	
	C10	6,077,162	6/20/00	Weiss	463	26	
	C11	6,080,062	6/27/00	Olson	463	42	
	C12	6,089,975	7/18/00	Dunn	463	16	
	C13	6,113,495	9/5/00	Walker et al.	463	42	
	C14	6,135,884	10/24/00	Hedrick et al.	463	20	
	C15	6,135,887	10/24/00	Pease et al.	463	42	
	C16	6,210,274	4/3/01	Carlson	463	16	
	C17	6,272,223	8/7/01	Carlson	380	251	
	C18	6,273,821	8/14/01	Moriguchi	463	42	
	C19	6,287,200	9/11/01	Sharma	463	40	
	C20	6,334,104	12/25/01	Hirai	704	258	
	C21	6,346,048	2/12/02	Ogawa et al.	463	42	
	C22	6,354,946	3/12/02	Finn	463	40	
	C23	6,402,618	6/11/02	Reed et al.	463	40	
	C24	6,409,602	6/25/02	Wiltshire et al.	463	42	
	C25	6,428,413	8/6/02	Carlson	463	16	
	C26	6,454,650	9/24/02	Aronin	463	17	
	C27	6,652,378	11/25/03	Cannon et al.	463	20	

EXAMINER:	DATE CONSIDERED:

EXAMINER: INITIAL IF REFERENCE CONSIDERED, WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.

Form PTO-1449 (modified)	Atty. Docket No. 247079-000077USPT	Serial No. 09/688,501
List of Patents and Publications for Applicant's **3RD INFORMATION DISCLOSURE STATEMENT**	Applicant Shridhar P. Joshi	
Page 2 of 2	Filing Date: 10/16/00	Group: 3714

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date if App.
	C28	6,749,510	6/15/04	Giobbi	463	42	
	C29	6,805,634	10/19/04	Wells et al.	463	42	
	C30	6,986,055	1/10/06	Carlson	713	200	
	C31	7,260,834	8/21/07	Carlson	726	4	
	C32	2001/0044337 A1	11/22/01	Rowe et al.	463	29	
	C33	2001/0044339 A1	11/22/01	Cordero et al.	463	42	
	C34	2002/0045484 A1	4/18/02	Eck et al.	463	42	
	C35	2002/0037767 A1	3/28/02	Ebin	463	25	
	C36	2002/0137217 A1	9/26/02	Rowe	436	42	
	C37	2002/0138594 A1	9/26/02	Rowe	709	219	
	C38	2002/0073043 A1	6/13/02	Herman et al.	705	64	
	C39	2002/0087876 A1	7/4/02	Larose	713	200	
	C40	2002/0116615 A1	8/22/02	Nguyen et al.	713	168	
	C41	2003/0162589 A1	8/28/03	Nguyen et al.	463	25	
	C42	2003/0028567	2/6/03	Carlson	708	250	
	C43	2004/0209660 A1	10/21/04	Carlson et al.	463	01	
	C44	2005/0193209	9/1/05	Saunders et al.	713	182	
	C45	2006/0165235	7/27/06	Carlson	380	268	

FOREIGN PATENT DOCUMENTS

Examiner Initial	Ref.	Document Number	Date	Country	Class	Sub-Class	Translation Yes/No
	D1	WO 98/35309 A1	8/13/98	PCT	G06F		
	D2	WO 01/91866 A1	12/6/01	PCT	A63F		
	D3	WO 04/034223 A2	4/22/04	PCT	G06F		

EXAMINER:	**DATE CONSIDERED:**

EXAMINER: INITIAL IF REFERENCE CONSIDERED, WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G06F 17/60 — A1

(11) International Publication Number: **WO 98/35309**

(43) International Publication Date: 13 August 1998 (13.08.98)

(21) International Application Number: PCT/AU98/00072

(22) International Filing Date: 10 February 1998 (10.02.98)

(30) Priority Data:
PO 5041 10 February 1997 (10.02.97) AU
PO 8622 15 August 1997 (15.08.97) AU

(71) Applicant *(for all designated States except US)*: ARISTOCRAT LEISURE INDUSTRIES PTY. LTD. [AU/AU]; 85–113 Dunning Avenue, Rosebery, NSW 2018 (AU).

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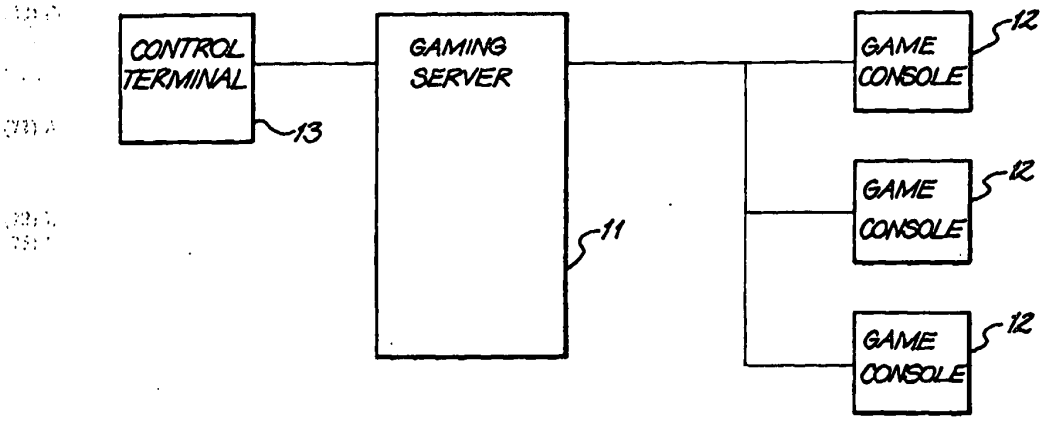

(57) Abstract

A method and apparatus are provided, in which a gaming server (11) is responsible for accounting, game play, and payouts, while the game console (12) is primarily responsible for presenting the user interface. In the general case, communication delays are eliminated by generating game outcomes locally to the console which will be used to determine game outcome to the console prior to the player making their selection. The random numbers used to generate game outcomes are generated in a highly secure device and cannot be used to determine the correct choice of player selection or influence the game outcome. When the player makes a selection the random numbers are already available to the console and the game outcome can be determined and displayed immediately, independent of communication delays.

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Distributed game accelerator

Introduction

The present invention relates to the field of gaming machines and in particular the invention provides a method and apparatus for speeding up the response time of games played over a network, beyond that achievable using traditional systems.

Background of the Invention

Traditionally gaming machines have been provided as stand alone devices connected via a network for information gathering, however in the recent past, distributed gaming systems have been proposed to meet the changing needs of the gaming industry.

In a distributed gaming system games are split across the server and console. In its simplest form, when the player presses the 'play' button on the console, the console relays that fact to the server. The server may then decide to start a game, and if so instructs the console to initiate a spinning reel display. The spinning reel display will run for a set period and then come to a stop with a certain set of symbols showing, as directed by the server. The players account is adjusted by the server according to the game outcome. The console is instructed of the account details by the server for display.

It is a fundamental requirement for security that the game outcome and accounting are solely determined by the server. The console simply provides a user interface. If the game were to be in any way independently controlled by the console then the potential would exist for tampering. Therefore considerable data must be exchanged between the server and console, however communication delays limit the speed and interactivity of games.

The combinations of a game describe the mathematical structure of the game and define all possible games, including the winning patterns and the payouts associated with each. From the combinations the game statistics are determined, including the theoretical return to the player.

A limitation and crucial factor in game play in a traditional distributed gaming system is the response time of games to user input. This time is determined by network and server response times. If either of these is not adequate then the user will notice delays in playing the game.

A game used as an example is the red/black double up. It is a common feature game requiring a fast response time. A card is shown face down on the display so that the colour cannot be seen. The game selects a colour for the card, and the player tries to guess what colour the card is, ie. red or black. The player has a 50% chance of guessing the correct colour and wins double or nothing.

Consider the red/black double up game. When the player makes a selection they expect to instantly be shown the outcome. Any delay must be kept small for the game to be playable. In existing systems it was a requirement that the network did not impose significant delays, or alternatively that games played on the system were designed to make such delays less noticeable.

In this context, the term "outcome" can have two meanings:-

a) the indicia or images displayed at the end of a game

b) the result of the gamble (ie, win/loss and value of prize).

The first of these outcomes we will call the 'game outcome' while the second we will call the 'gamble outcome'. In most game types, game outcome and the gamble outcome are directly linked. However, in some instances, such as the red/black gamble referred to above, they are not because the game outcome is a particular colour of card while the gamble outcome will depend upon which colour was selected by the player. The gamble outcome is also determined by the size of bet selected by the player. The term "outcome" describes the combination of both the game outcome and the gamble outcome.

Summary of the Invention

According to a first aspect, the present invention provides a method of operating a gaming system including at least one gaming console, the console including secure storage means and a user interface allowing a user to initiate a game and observe a result, the method including the steps of:

storing game or gamble outcome information in the secure storage means for use by the console to produce a game or gamble outcome; and

upon receipt of a user input initiating a game, producing a game play sequence including a game and/or gamble outcome indication determined by the game or gamble outcome information stored in the secure storage means alone or in combination with a user input.

According to a second aspect, the present invention provides a gaming system including at least one gaming console, the console including secure storage means and a user interface allowing a user to initiate a game and observe a result, the system including:

secure storage means for storing game or gamble outcome information used by the console to produce a game or gamble outcome; and

game control means in the console arranged to receive a user input initiating a game and to produce a game play sequence including a game and/or gamble outcome indication determined by the game or gamble outcome information stored in the secure storage means alone or in combination with a user input.

According to a third aspect, the present invention provides a secure storage means for use in a gaming console which includes a user interface allowing a user to initiate a game and observe a result, the secure storage means being arranged to store game or gamble outcome information used to produce a game or gamble outcome.

According to a fourth aspect, the present invention provides a secure removable control device for use in a gaming console which includes a user interface allowing a user to initiate a game and observe a result, the control device being arranged to generate game or gamble outcome information used by the console to produce a game or gamble outcome.

The information stored in the secure storage means or generated by the control device may be a sequential list of outcome information relating to a sequence of future games to be played on the console, a set of random numbers sufficient to generate one or more entire game outcomes, or a random number seed from which outcome information relating to a sequence of future games to be played on the console is generated by operation of a pseudo-random number algorithm. Preferably, the game outcome information generated by a pseudo-random number algorithm, will be in the form of a set of random numbers sufficient to generate an entire game outcome.

In one possible embodiment the outcome information is a random number indicating a gamble outcome value and the secure processing means in the console then chooses a game outcome which will achieve that gamble

outcome value, however generally the information will indicate an outcome and the gamble outcome value will be determined from the game outcome.

Preferably the secure storage means or control device is removably connectable to or readable and writable by the console.

In one embodiment, the information relating to future game outcomes stored in the secure storage means is stored before the secure storage means is connected to the console. Preferably the secure storage means is a programmable card which is preprogrammed with outcome information before or after acquisition by a user and is inserted into the console by the user to produce one or more game outcomes on the respective console.

In one embodiment the production of the game outcome indication is performed in a secure processing means connected to the secure storage means by way of a secure communications path.

Preferably also the secure processing means or control device includes a smartcard or smartcard chip which is either removably inserted into or permanently fixed in the console.

The console and therefore the secure storage means or control device, may or may not be connected to the server when the game is played, but in either event, when the secure storage means or control device is next connected to the server, it will generate and send a signal to the server indicating that the stored precalculated result has been used.

According to a further aspect, the present invention provides a virtual casino including a plurality of virtual gaming machines (or gaming consoles, each gaming machine or console having dedicated accounting, and combinations, being uniquely identified and capable of being returned to at any time by the player provided it is not in use by another player.

In a virtual casino, as in a traditional casino, if another player is using a particular virtual machine then, the player must wait or play another machine. Preferably embodiments of the invention will allow a player to view a virtual machine while it is being played by another player.

The return remains with the machine for the life of that machine. Unused return is mathematically equivalent to money and can thus be transferred between games, either as money or combinations changes. To be fair to players and prevent the casino from cheating, when player accounts are shut down, virtual game machines are ended, the gaming site is to be closed, or jackpots are cancelled, etc, the extra accumulated return owed to

players is transferred from the various accounts and redistributed among the players, as jackpots, credits, combinations, etc.

Preferably, the game outcome determining data is stored in the secure storage means and the game outcome is calculated from the data in a secure processing means connected to the secure storage means by way of a secure communications path.

The data precalculated by the server and sent to the secure storage means in the console, may be in the form of a set of random numbers sufficient to generate an entire game outcome (ie, 5 random numbers in the case of a slot machine with a 5 reel display) or alternatively, the precalculated data may be a random seed from which the secure processing means may calculate the required number of random numbers using a pseudo-random number generating program. In another alternative arrangement, the server may calculate an actual game outcome (eg, reel stopping positions or indicia) and transmit codes indicating these positions although this arrangement is inconvenient in a machine capable of playing any one of a number of player selectable games as the server would have to precalculate outcomes for each possible game.

In an alternate embodiment, predetermined outcomes can be implemented using a smartcard as the secure storage and processing means, with predetermined bets and outcomes stored simply as a list of values. Initially all values on the card (except the first which is the initial value of the card) are hidden and playing games discloses the values one by one. The player may redeem the card at any time for the amount of the last disclosed value. The console displays an appropriate game which generates the new value. The player buys a smartcard (or downloads values from a casino) with a fixed number of values. An advantage of this system is that the casino knows the wins and losses of every card released and can adjust the pattern of wins and losses as desired.

In another embodiment a smartcard is provided with a list of predetermined outcomes, with the player making bets on each outcome. The outcomes are initially hidden and are disclosed one at a time as games are played. For each outcome disclosed the player first makes a bet, which is written to the smartcard (in non-volatile memory). The total value owed to the player is simply the sum of wins and losses for each bet and outcome. The player redeems the card for value stored by returning the card. This may

be implemented with a very simple and hence cheap smartcard, requiring only secure memory storage with controlled access. In another implementation the value is redeemed via secure communications with a game server.

The smartcard may be programmed with multiple functions, only one of which is a gaming accelerator. In other modes the smartcard may for example be used as an ID card, a credit card, a bankcard (eg. ATM), etc. The protocol to access the smartcard may be an extension to another, perhaps primary, mode of the smartcard.

In yet another possible alternative arrangement, the server calculates a number indicating a gamble outcome value (per unit bet) and the secure processing means in the console then chooses an outcome which will achieve that win value. This arrangement will work better with some games than others, although, the concept could be altered to suit each game played.

In preferred embodiments of the invention, signals generated by the server and console to send game outcomes or to indicate game play, are encrypted prior to being sent.

Preferably, also encrypted signals are each provided with a piece of unique information prior to encryption such that different signals containing the same game information are not the same after encryption.

Preferably also, the server includes an auditing function to check the game and/or gamble outcome data returned from the secure device in the console.

In one embodiment of the invention, the secure storage and processing means is a smart card which may be permanently fixed in the console or may be removable and may also be used to carry player identification and credit information. Preferably, when a smart card is used as the secure memory and processing means, the encryption and decryption in the console of signals to and from the server and the game outcome calculation will be performed by the smart card.

In one preferred form of the invention, an hierarchical network of gaming servers are provided with the console connected to low order, low security network servers which perform low security and routine control and communication, while passing high security signals to higher level gaming servers having higher security.

Brief Description of the Drawings

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings in which:-

Figure 1 is a block diagram of a distributed gaming system;

Figure 2 is a more detailed block diagram of the server and console components of a distributed gaming system of Figure 1;

Figure 3 is a flow chart showing an initialisation sequence for a system according to the present invention;

Figure 4 is a flow chart showing a sequence of steps in the playing of a game on a system according to the present invention;

Figure 5 is a diagram showing a Blackjack hand as it is initially dealt;

Figure 6 is a diagram of a message format for a message from the smartcard and server;

Figure 7 is a flow chart showing a random number buffering arrangement;

Figure 8 is a block diagram of a system employing a random number server;

Figure 9 is a block diagram of a distributed gaming system including a security server; and

Figure 10 is a block diagram of a distributed gaming system including a network of gaming servers.

Detailed Description of the Embodiments

Embodiments of the invention will now be described in which the gaming server 11 (refer to figure 1) is responsible for accounting, game play, and payouts, while the game console 12 is primarily responsible for presenting the user interface. The console 12 may also keep accounts for the player and run the game combinations, but only as an aid to the rapid update of the display. The real accounts and the combinations are held on the server 11 and the player will be paid as the server determines. Although the console 12 can in theory be tampered with to affect the combinations and accounting any changes will be local to the console 12, and cannot affect the accounting on the server 11, and hence payout. For the sake of completeness, a control terminal 13 is illustrated in figure 1. This control terminal is used by the system operator to manage the gaming server 11.

For a system able to transparently cope with significant delays occurring throughout the system several advantages can be derived as follows, depending on the embodiment used.

- A slower response time from the server 11 is allowable. A cheaper, lower performance server system may be used. In a multiple server installation extra servers may even be eliminated. In addition server software will be easier to develop due to the lower performance constraints.
- Network delays may be allowed to increase. Cheaper, lower performance networking may be allowed. Internet gaming performance can be improved.
- Delays associated with distance are ultimately limited by the speed of light, and cannot be overcome. International delays are therefore significant and cannot be reduced beyond a certain point. However embodiments of the invention can reduce or eliminate the effect of such delays.

Network and server delays may be eliminated or significantly reduced at the console 12 in some circumstances by not waiting for a response from the server 11 before giving the player feedback. Some games do not require knowledge of the gamble or game outcome to continue, although the game cannot be completed until it is known.

In the general case, the delay can be effectively eliminated by sending the random numbers which will be used to determine game or gamble outcomes to the console 12 prior to the player making their selection. These numbers are stored in a highly secure device 23 and cannot be used by the player (or a cheat) to determine the correct choice of player selection. When the player makes a selection the random numbers are already available at the console 12 and the game outcome can be determined and displayed immediately.

Games may be played locally on the console 12 in a similar way to that found in a traditional gaming machine. The key difference being that game outcomes are not determined by the console 12, and that they are audited by the server 11. The players choice is passed to the secure device 23 and it informs the console 12 of the subsequent game outcome. An unforgeable message is generated to advise the game server 11 of the game outcome.

In the embodiment illustrated in the block diagram of figure 2, it will be seen that the server 11 includes a CPU 14 and is used to store

combinations 16 and to perform random number generation 15. The server 11 is connected to one or more consoles 12 via a network 17 and each console 12 includes a CPU 21, a user interface 22 and a secure storage and processing device 23 arranged to provide encryption/decryption functions 24 and game outcome logic 25.

The secure storage and processing means in the console 12 may be achieved by using a relatively standard processor on a separate board within a security cage using techniques presently common in the gaming industry or these functions may be realised in a secure software routine that continuously checks itself for tampering or makes use of a hardware device to constantly monitor itself for validity. The software embodiment, could for example make use of a hardware decryption circuit that decrypts the program and data on the fly during executions and constantly sends encrypted messages to the server 11 to indicate the valid status of the decryption circuit.

In the preferred implementation the secure random number storage and processing device 23 is an ISO 7816 smartcard (or smartcard chip) with embedded microprocessor 21, program ROM and E^2PROM. The smartcard 23 is provided with an encryption function 24 either via software or a hardware accelerator. The smartcard 23 has a 5 pin interface with serial communications for connection to a reader in the console 12.

The smartcard 23 may be inserted into the console 12 by the player or embedded within it by the manufacturer. A smartcard or smartcard chip may also be enclosed within a module which is inserted into the console 12, for example, within a PCMCIA card which is then plugged into a personal computer.

In the following description the smartcard 23 and server 11 are sometimes referred to as communicating directly with each other, without the aid of the console 12. This is for simplicity of description, but it must be realised that the console 12 must act as the intermediary. The console 12 does not interpret or modify any such communications.

In the following embodiments, the game outcome data is preferably transmitted from the server 11 and stored in the console 12 as a random number seed from which any number of random numbers required for the game may be generated.

The game server 11 is responsible for accounting, game play, and payouts, while the game console 12 is primarily responsible for presenting the user interface. The console 12 may also keep accounts for the player and run the game combinations, but only as an aid to the rapid update of the user interface. The real account and combinations is held on the server 11 and the player will be paid as the server 11 determines. The console in effect presents a simulation of the game that is run on the server. Although the console 12 can in theory be tampered with to affect its combinations and accounting any changes will be local to the console 12, and cannot affect the accounting on the server 11, and hence payout.

Predetermined Outcomes

In the preferred implementation random numbers within the secure storage and processing device 23 are used to generate game outcomes as required by the console 12. In an alternate method, called predetermined outcomes, the server 11 determines game outcomes prior to games being played and securely transmits them to the secure storage and processing device 23. When a game is played the console 12 requests one of these game outcomes from the secure storage and processing device 23 and produces a display appropriate to the outcome. Game outcome messages are preferably secured using encryption techniques to prevent cheats decoding messages to determine the outomces before they are played. Alternately physical security of the communicatiocs medium may be used.

For example, consider the red/black double-up game. In the preferred implementation the outcome is dependent on the match between the player selection and random number within the smartcard 23. Using predetermined outcomes the secure storage and processing device 23 contains a predetermined win or lose outcome and the player selection makes no difference to the game outcome. The console 12 outputs an appropriate win or lose display according to the predetermined outcome and player selection. If the player wins the console 12 shows the hidden card the same colour as the players choice, while if the player loses the console shows the opposite colour. The secure storage and processing device 23 generates an unforgeable message to the server 11 informing it of the outcome selected and the amount bet.

Consider also slot games. Again outcome is predetermined, but with the win outcome also containing a win multiplier which is the multiple of

the bet that the player wins. The console 12 displays the outcome appropriate to the win or loss, which may be selected randomly from a range of possible win or loss displays.

The console 12 requests and buffers game outcomes from the server 11 appropriate to the games to be played. Before all of the outcomes have been used the console 12 requests replacement outcomes from the server 11.

In an alternate application, predetermined outcomes can be implemented using a smartcard 23 as the secure storage and processing device 23, with predetermined bets and outcomes stored simply as a list of values. Initially all values on the card (except the first which is the initial value of the card) are hidden and playing games discloses the values one by one. The player may redeem the card at any time for the amount of the last disclosed value. The console 12 displays an appropriate game which generates the new value. The player buys a smartcard (or downloads values from a remote casino) with a fixed number of values. An advantage of this system is that the casino knows the wins and losses of every card released and can adjust the pattern of wins and losses as desired.

In another application a smartcard 23 is provided with a list of predetermined outcomes, with the player making bets on each outcome. The outcomes are initially hidden and are disclosed one at a time as games are played. For each outcome disclosed the player first makes a bet, which is written to the smartcard 23 (in non-volatile memory). The total value owed to the player is simply the sum of wins and losses for each bet and outcome. The player redeems the card for value stored by returning the card. This may be implemented with a very simple and hence cheap smartcard, requiring only secure memory storage with controlled access. In another implementation the value is redeemed via secure communications with a game server 11.

In another implementation the secure storage means and secure processing means are two separate devices, preferably smartcards. Predetermined outcomes and/or bets are loaded from the server to the secure storage means. When the secure processing means and secure storage means are in communication games may be played as the secure processing means uses the predetermined outcomes stored on the secure storage means. The secure storage means may also store the players credit account which is gambled on and adjusted by the secure processing means during game play,

or alternatively a separate secure storage means, preferably yet a further smartcard or smartcard chip is provided to store credit account information. One application of this implementation is where the secure storage means is a multi-application smartcard where the smartcard acts as a secure filing system. Each application is a separate smartcard with secure access to the data file area. The gaming system is simply one of the many applications, with the secure processing means being the other smartcard. A secure access means provides the off-line communication between server and secure storage means to download or update the stored predetermined outcomes and/or credit information.

Applications

In Internet applications the smartcard 23 may be used in conjunction with a PC via a standard smartcard interface or an adaptor such as a PCMCIA card, or directly connected to a network computing device with built in smartcard interface (eg. Sony WebTV, Oracle NC).

The smartcard 23 (or socket) may be integrated with a modem and game program memory within a module for a game console (eg Sony Playstation or Nintendo Ultra64). The game console 12 is then capable of highly interactive gambling.

The smartcard 23 may have multiple functions, only one of which is a gaming accelerator. In other modes the smartcard 23 may for example be used as an ID card, a credit card, a bankcard (eg. ATM), etc. The protocol to access the smartcard 23 may be an extension to another, perhaps primary, mode of the smartcard.

A secure storage and processing device may be used to enhance security in an otherwise traditional distributed gaming system (such as Internet, hotel in-room gaming or on a ship) by securing the game outcome determining function of the server. Depending on the implementation used and as described elsewhere, random numbers (or game outcomes) are either generated by the secure storage and processing device or received from a random number server at a more secure location. Random numbers (or game outcomes) generated at another location are securely (eg. by encryption) communicated to the game server and hence secure storage and processing device by a communication link or a storage medium such as a CD-ROM or hard disk. The game server sends player requests to the secure

storage and processing device and receives game outcomes, which it then communicates to the player consoles.

Software method of disguising delays

Network and server delays may be effectively eliminated at the console 12 in some situations by not waiting for a response from the server 11 before giving the player feedback. The game console 12 must be able to process user input and take actions without waiting for commands from the server 11. For example when the user presses play, a message is sent to the server 11 as usual, but the reels also start spinning immediately.

To maintain security it is essential that the outcome of games be determined only by the server 11, but this does not limit the starting of reel spins (or other events), only stopping of the reels. The typical reel spin time of three seconds can easily encompass a network/server delay of two seconds before the game outcome is received and the reels slow down and stop.

If the response was not received within a set period, say 30 seconds, the console 12 would abort the game without the usual stop and clearly indicate to the player that the current game display is invalid, but that a game may have taken place. A message is then sent from the console 12 to the server 11 indicating a time-out error. Two events may have occurred

The server 11 did not receive a start of game message, therefore the game did not take place. A new game may be played.

The server 11 received the start of game message and played the game, but the console 12 did not receive the servers game outcome message. The game has taken place and the players account updated, but the player does not know what happened. The game is redisplayed on the console 12 as soon as possible.

Preferred Implementation

In the preferred implementation the secure storage and processing device 23 is an ISO 7816 smartcard (or smartcard chip) with embedded microprocessor, program ROM and E^2PROM. The smartcard 23 is capable of encryption either via software or a hardware accelerator. A smartcard has a 5 pin interface with serial communications.

The implementation could also be a microcontroller or a secure multi-component module. The key requirement being that it is not possible to determine the internal operation of the module, and hence the random numbers or security keys.

Initialisation

Communication must be established between the server 11 and smartcard 23 prior to any games taking place. Each smartcard 23 is provided with a unique preprogrammed ID number and secret encryption key. Preferably the ID number and secret encryption keu are encoded into the smartcard after manufacture but before distribution to the casino or users. The server is informed of the card ID and matching encryption key, which will be the same as the smartcards key or different depending on whether symmetric or asymetric encryption is used.

Referring to figure 3, during initialisation the console 12 reads 101, 102 the ID from the smartcard 23 and informs 103, 104 the server 11. The server 11 uses the ID to look up the encryption key used to communicate with the smartcard 23 and allows the console 12 access to the account information once the server 11 has authenticated the smartcard 23. The console 12 may access the players account for information including credit available, game preferences and game initialisation, following authentication of the smartcard 23 by encrypted communications.

The ID is not itself required during communication with the smartcard 23, as due to the encryption, if the wrong ID is supplied communications cannot take place. An exception to this is in an alternate implementation where the same keys are used for all cards, when the ID must be encoded into all messages to prevent the same random numbers being played on more than one card. Although the ID may be the smartcards public encryption key, preferably, in the interests of security this is not disclosed.

Console to server communication of the smartcard ID is one of the few types of message that is not encrypted, as it is performed by the console 12 rather than the smartcard 23. In an alternate implementation these messages may also be encrypted using a public key that the server 11 publishes. Encrypted messages may thus be sent to the server 11 that only the server is able to decode.

Referring again to Figure 3, in the preferred implementation the server 11 first checks 105 the smartcard 23 for unacknowledged games, and the smartcard responds 106 with details of the outstanding games it is holding. The server then transmits 107 an initial game state to the console 12 and enables initiation of game play 109. Where the previous game was interrupted (eg. due to a communications failure or player choice) this

restores the last state of the game. Preferably the initial state includes the current value of the players account. It may also be requested during game play to ensure that the game simulation that the player sees correctly reflects the true account held by the server.

In some types of game the combination being played depends on previous games, changing during the course of game play. For example, after 100 games with a return of 85% the player is given 10 games at 90% return. This change in combinations affects the long-term return to the player and therefore the method of initialisation, which can be one of:

- The server 11 always initialises the game to the same state, maximising the return to the server.
- The last game state is recorded in the player's account and the same state is restored during initialisation.

The last game state of the player is randomly assigned to the next player to play that game. This is analogous to the situation in a casino, when one player finishes with a gaming machine and the next player starts. The average return to the casino does not increase.

Virtual Casino

To further simulate an actual casino environment a Virtual Casino may be created. The Virtual Casino contains a (preferably large) number of virtual gaming machines which act like gaming machines in a traditional casino. Each has it's own accounting, combinations, etc, is uniquely identified and can be returned to at any time by the player, but may only be played by one player at a time. If a player is using a particular virtual machine then as in a traditional casino other players must wait or play another machine. Therefore the return remains with the machine for the life of that machine. To further simulate a real casino players may be able to observe another player play a virtual gaming machine and to start playing that virtual gaming machine when the current player ceases. A queue mechanism may be used where multiple players want to play the same virtual gaming machine.

Unused return is mathematically equivalent to money and can thus be transferred between games, either as money or combinations changes. To be fair to players and prevent the casino from cheating, when player accounts are shut down, virtual game machines are ended, the gaming site is to be closed, or jackpots are cancelled, etc, the extra accumulated return owed to

players is transferred from the various accounts and redistributed among the players, as jackpots, credits, combinations, etc.

Game Play

In the preferred implementation the smart card generates the random numbers used to calculate game outcomes from an initial seed set prior to use of smart card and optionally periodically updated from the server.

In an alternate implementation random number seeds are generated by the server 11 and sent to the smart card prior to each game. In this implementation, the random number seed, combined with an auto-incrementing index (the seed index) is encrypted such that only the smart card can decode it. The smartcard 23 uses the seed to generate as many random numbers as required for the next game. Each time a new seed is generated a unique new index is used. The index is unique to a game and is used to identify that game to the server 11 for the game outcome, and again for the server to acknowledge receipt of the game outcome to the smartcard 23.

Figure 4 illustrates the game play sequence, following initialisation in Figure 3 and the selection of a game to play. Once the player has selected the game type the console 12 sends the selection to the smartcard 23, together with the game description and amount bet. The smartcard 23 then writes the game type, player choice(s), amount bet, game outcome and card index to its internal E^2PROM memory. The smartcard 23 must inform the server 11 of the amount bet, otherwise tampering could occur with the server being told that losses had small bets, while wins had large bets.

The console 12 then requests a game outcome, which the smartcard 23 generates, stores in E^2PROM and then sends to the console, which can immediately display the result to the player. The smartcard 23 also generates an unforgeable encrypted game outcome message for the server containing the game type, gamble, player choice(s), amount bet game outcome, and card index which it sends to the console 12, and hence to the server 11. The server 11 decrypts the message and is thus informed of the game played and is able to adjust the account correctly. The server 11 then sends an acknowledgment to the smartcard 23, which responds by erasing that outcome from its E^2PROM. Games are recorded in the smartcards E^2PROM until acknowledged by the server 11. Unacknowledged games will quickly fill the available memory and stop the smartcard from accepting new games.

Security is dependent on it being impossible to determine what encrypted message to send back to the server 11 if the wrong choice of gamble is made. Only the smartcard has this information.

The game type uniquely identifies each type of game to the server 11. Many games may share the same combinations, but each has a different game type. Note that the combination type may be sent instead of the game type, but auditing (to check popularity of games, for example) is better served by sending the game type.

In another variation, after initialisation (eg. power up), the card may refuse all games until any outstanding game outcomes in E^2PROM have been acknowledged by the server 11.

So far only the first game has been accelerated. To eliminate delays in subsequent games two factors must be considered

- A new game must be able to take place before the server 11 acknowledges receipt of the first game outcome.
- New random numbers must be available immediately.

When the server 11 has not yet acknowledged the previous game before the player starts the next, a number of game outcomes may be stored in E^2PROM. The next game may be played immediately assuming more random numbers and space is available. Games can continue to be played until the limit of E^2PROM memory is reached, random numbers are no longer available, the total value of player losses in outstanding games reaches the preset loss limit, etc.

The server 11 may at times require that all game outcomes outstanding in the smartcard must be acknowledged, in particular before the player collects money from their account. The server 11 may query the smartcard for outstanding games, or in an alternate implementation simply maintain a list of the random numbers seeds that have not yet been used.

In the alternative implementation, where the server generates a random number seed for each game, before a game starts a random number seed is generated 108 (refer to Figure 4 and Figure 7) by the server 11, combined with the seed index, encrypted, and sent to the console 12 where it is stored 121 at or prior to start of game play 123. Referring to Figure 7, maintenance of the seed buffer is performed by a background task that regularly tests 140 the state of the seed buffer in the console 12 and if it contains less than a predetermined number of seeds, a request 107 is

generated to the server 11 for more seeds. As the seeds are encrypted and contain an encrypted sequence number, the buffer does not need to be maintained in a secure part of the console 12.

When a game requires a seed to generate a set of random numbers, the console 12 tests the buffer 150 to ensure it is not empty and then retrieves 151 a seed and sends 124 the seed to the smart card where it is received 157 and any required additional random numbers generated. In the event that a game requires only one random number, the seed may be used directly as the random number, however, where more numbers are required, the smartcard uses a pseudo-random number algorithm known to the server 11, such that the server can predict the numbers generated by the seed.

Only the smartcard is able to receive and decrypt 124 the seed. Referring to figure 4 the smartcard uses the seed to generate 129 as many random numbers as required for the next game outcome. Each time a new seed is generated 108 a unique new index is used. The index is unique to a game and is used to identify that game to the server 11 when reporting 130 the game outcome, and again for the server to acknowledge receipt 132, 133 of the game outcome to the smartcard.

Once the type of game has been selected 123 by the player the console 12 waits 125 for the player to press play 126 and then sends this information to the smartcard with a request 127 for a game outcome, together with the game type and amount bet. The smartcard then writes 128 the received seed index or card index, game type, gamble type, player choice, amount bet and outcome (note: the outcome is not strictly required as the server is also able determine it) to its internal E^2PROM memory.

The smartcard informs the server 11 of the amount bet otherwise tampering could occur with the server being told that loses had small bets, while wins had large bets.

The game outcome 131 is then sent to the console 12, which can immediately display the result to the player. The smartcard also generates 129 an unforgeable encrypted game outcome message for the server 11 containing the seed index, game type, gamble type, player choice, amount bet and game outcome, which it sends to the console 12, and hence 130 to the server. The server 11 decrypts the message and is thus informed of the game played and is able to adjust 132 the account correctly. The server 11 then sends 133 an acknowledgment to the smartcard which responds by

erasing 134 the outcome from its E^2PROM. When the game is complete 135 the console 12 waits 125 for another player input 126 to commence another game.

Security is dependent on it being impossible to determine what encrypted message to send back to the server 11 if the wrong choice of gamble is made. Only the smartcard knows this and this information is not accessible

When each new random number seed is received the embedded index is checked against that of the most recent game outcome stored in E^2PROM. There are three possible outcomes;

- The received index is newer (ie. larger) than that of the last stored game, indicating that it is a new seed, for a new game.
- The received index is the same as the stored index, indicating that the game has already taken place, and the console 12 is so informed. No new gamble choice will be accepted. This may occur if the system aborted the game without completing the transaction (ie. power down) to the console 12, or server 11. It also acts to prevent cheating where the encrypted random numbers are resent and the gamble is tried again with a different choice.
- The received index is older (ie. less) than that of the last stored game. This is either the result of an error in the system or an attempt at cheating. This condition is signalled back to the console 12 and the set of random numbers discarded.

In a variation on the implementation described above, the index must be the next in the sequence for the smartcard to accept the communication. For example, if the last index was 1000, the next must be 1001.

In another variation, after initialisation, (ie, power up) the card may refuse all games until any outstanding game outcomes in E^2PROM have been acknowledged by the server 11.

Where taxes are required to be paid to government these may be calculated from the player accounts.

High Loss Gambles

If the value of a gamble is large it may easily exceed the value of the smartcard. If the smartcard is destroyed then any losses outstanding on the smartcard and of which the server 11 is not aware are lost with the smartcard and the player will not have their account on the server debited with the loss.

In some cases it would therefore be in the players best interest to destroy the smartcard and avoid large losses.

A loss limit is programmed into the smartcard, to prevent a single gamble or a series of gambles above the set limit. The loss limit is set by the smartcard issuer to be that value at which it is not worth tampering with the smartcard in this way. In applications where the smartcard is physically secure and there is no question of such tampering, as in a traditional casino environment, a loss limit is not required.

When a series of gambles has been made and are still outstanding (unacknowledged) on the smartcard, the order of notifying the server 11 of game outcomes may be modified to give priority to losses over wins.

One or more of the following methods may be used to deal with high loss games

- The player is charged for a new smartcard. For example a player paying $50 for a smartcard will not profit by destroying a smartcard with only $50 losses on it. The loss limit in this case may be $50.
- The loss limit is set to such a point that even though it is possible to make money by destroying the smartcard it is not economically worthwhile.
- The issuer may detect players who regularly destroy cards and refuse further business with them. Analysis software on the server 11 or off-line aids in detecting suspicious activity.
- The player makes a guarantee to the server 11 for a play limit. If the smartcard is destroyed the player forfeits the amount guaranteed. For example the player guarantees $500, and the server 11 instructs the smartcard of a new loss limit of $500. This is analogous to transferring money into the smartcard and if the smartcard is destroyed the player loses $500.
- The player may only be able to withdraw money from their account on the server 11 by using the smartcard. If the account is in net credit then the player would have to keep the smartcard safe.
- The player must present the smartcard in person to collect winnings, so that the smartcard can be physically examined. This would typically be used if tampering were suspected or the value of the win was large.
- The system may revert to the traditional distributed gaming mode for high value gambles, where games are played directly from the server 11 and the smartcard is not used. The gamble is set up on the server 11, the outcome

solely determined by the server after the player selection and then transmitted to the console 12.

- For high value gambles the console 12 requests a gamble amount from the server 11. The player is then committed to gambling this value or cancelling it via the correct (secure) method. The server 11 responds with an encrypted gamble confirmation message to the smartcard which allows the game to proceed. If tampering takes place and the server 11 never receives a response from the smartcard, the player forfeits the gamble amount initially set up on the server. This method has the delays associated with the traditional method and that this invention is designed to eliminate.
- The smartcard may be a multipurpose card, and destroying it may not be worth the trouble caused, due to the nature of the other functions. It may, for example, also be a bank or credit card.

An attempt may be made to tamper with the system by deleting a losing game outcome message before it reaches the server 11, or system errors may cause the loss of messages. Therefore the previous game is stored in E^2PROM until the server 11 acknowledges receipt (with an unforgeable message) of the encrypted game outcome message for that game, upon which it may be deleted. The encrypted acknowledge message will at least include an acknowledge code and the card index that identifies that game. One or more of the following methods may be used to detect and prevent tampering where losing messages are deleted.

The server 11 monitors responses from the console 12 and quickly detects lost messages. This is possible using the card index and/or in an alternate implementation the random number seed index. If the cause of lost messages is determined to be the player he is deterred from tampering.

When a message is lost the server 11 cannot acknowledge that game. It will remain in the cards E^2PROM and contribute to the loss limit and memory space taken up. Eventually the smartcard will become unusable.

Game outcomes are stored in the smartcards E^2PROM until acknowledged by the server 11. In one implementation, any subsequent communications between the smartcard and server allows the server 11 to uncover these stored outcomes. Therefore to lose messages the smartcard may never again communicate with the server 11. In this implementation all game outcome messages to the server 11 may additionally contain the

number of game outcomes stored in the smartcard. The server 11 may then request these game outcomes from the smartcard.

Game and Function Description To Smart Card

The console 12 informs the smartcard, and hence the server 11, of the game type to be played. Theoretically this is sufficient for the smartcard to know the combinations for that game and the gamble that is about to take place. However a smartcard preprogrammed with this information will not be able to deal with new games, and the large number of possible games may overrun its memory capacity. Therefore in practice it is preferable for the console 12 to also describe the gamble to the smartcard and hence the server 11.

The game is described to the smartcard using a minimal number of generic descriptions or commands. For some games the generic commands may not be adequate to describe the game and game specific commands may need to be added. As the smartcard contains a microprocessor virtually any type of game command may be added. In response to a command the smartcard generates a response, stores the appropriate information in the E^2PROM (for later transmission to the server 11) and then sends a response to the console 12. Generally a game is described by:

- The console 12 sends a message to the smart card describing some state of the game to the server 11. The card does not interpret the message, but encodes it for transmission to the server 11. By sending the message to the smartcard the console 12 proves to the server 11 that the message (eg. a player selection) was made at a particular point in the game. Messages include start of game, end of game, player selections, game type, amount bet etc.
- The smartcard generates an array of M random numbers, each in the range 1 to N. The numbers may be independently selected (ie duplicates may exist) or of unique values. The console 12 subsequently requests numbers from the array, with the smartcard recording the requests and values for transmission to the server 11. Note that a request for a single random number in the range 1 to N is a simple case of an array in which M = 1.

When an array is required exceeding the maximum memory capacity of the smartcard the array is split into multiple sub-arrays that are generated independently. Using a selection algorithm that is common to both console

12 and server 11 the arrays are merged (in the console 12 and server 11) and if necessary duplicate values are reselected from the smartcard.

Many games have a fixed sequence of events, however the sequence of events in some games depends on the actions of the player. The server 11 must be able to determine the end of a gamble to update the players account. Preferably the console 12 informs the smartcard, and hence the server of the start and end of games, although this may not be necessary for some types of game in which these are implicit. For example, a winning slot game may be followed by a sequence of up to 5 double-ups. The server 11 is able to determine that the game ends if the player loses on the slot game or any of the double-ups, but must be informed if the player chooses not to play the double-ups.

Card games (eg blackjack) usually deal cards from a single deck of 52, which is reshuffled for each game. Traditional casino games usually deal from a deck of 6 packs of cards, to hinder card counting. Games using 6 packs of cards can be handled in two ways. Preferably cards (random numbers) are selected from the smartcard independently and sequentially. If a card is selected that has already been selected 6 or more times then it is reselected until a valid card is selected. Alternately a special game description command can be added that is able to generate an array representing 6 shuffled packs of cards.

Another example of a special game description command is the use of multiple arrays. The preferred implementation is able to generate and select values from only one array. If a game were implemented that required generation and selection of multiple arrays, extra commands would need to be added. Preferably when such commands are added compatibility with old games is maintained.

Double-Up Game Description

In red/black double-up the player chooses a number (colour) between 1 and 2 which the console 12 sends to the smartcard as a message to the server 11. The console 12 then requests the smartcard to generate a random number between 1 and 2. If the player selection matches the smartcard selection the player wins, otherwise the player loses. Both the console 12 and server 11 can determine the game outcome from the player choice and the smartcards randomly determined choice.

Alternatively the smartcard first generates the random number, the player selects a colour, and only then does the smartcard disclose the colour chosen.

Using the card index the server 11 verifies the player selected the card colour before the colour was disclosed by the smartcard.

Odds Gamble Game Description

An odds gamble is similar to double up, except the player chooses the odds to play. The odds chosen are both the random number range and the amount by which the stake will be multiplied if the player wins.

Preferably the player chooses the odds, N to 1 (eg. 2:1 or 3:1), and the smartcard generates a random number in the range 1 to N. If the random number is the winning value (eg 1) the player wins, otherwise the player loses.

Alternately the player chooses the odds, N to 1, then makes a selection. The game is described to the smartcard as a player selection of a number (from 1 to N) followed by a smartcard generated random number in the range 1 to N. If player and smartcard selections match the player wins.

Slots Game Description

A typical spinning reel slot game has 3 reels, each of 30 symbols with 3 symbols from each reel visible to the player on the screen. This particular game requires the generation of 3 independent random numbers in the range 1 to 30, representing the final stopping positions of each of the 3 reels. A choice made by the player is not applicable in this situation.

The console 12 requests an array of 3 independently selected random numbers from the smartcard, each random number being in the range 1 to 30. The smartcard then returns the result to the console 12 and server 11, as to which of the N possibilities was randomly selected for each selection in the array of M, as described previously. In the case that reel strips have different numbers of stop positions a random number is generated in the appropriate range for each.

Blackjack Game Description

The game of blackjack is more complex and requires a game specific command. In one implementation of blackjack four cards 201, 202, 203, 204 are selected from a deck, two for the dealer 201, 202 and two for the player 203,204 (See Figure 5). One of the dealer's cards 201 and both player cards are displayed to the player. The other dealer card 202 is hidden. If the

displayed dealer card is an ace the player may choose to take an insurance bet against a dealer blackjack (ie that the hidden card has a count of ten). If the dealer has a blackjack the game ends and the player is paid a win only if they took an insurance bet. If the dealer did not have a blackjack the game continues. Using the usual rules of blackjack the player and dealer choose additional cards from the deck.

First, a shuffled deck of cards is created by generating an array of up to fifty two unique random numbers, each in the range one to fifty two. Next the console 12 reads three of the cards from the array and displays to the player the two player cards 203, 204 and one dealer card 201, leaving the second dealer card 202 displayed facedown. If the displayed dealer card is an ace then using a blackjack specific command the console 12 checks if the second dealer card 202 has a count of ten. The smartcard does not disclose the actual value of the card 202, only if it had a count of ten, or not. Additional player cards are selected as required from the remaining numbers in the array.

Keno Game Description

To play Keno the player selects X unique numbers in the range 1 to Z and the console 12 selects Y unique numbers in the range 1 to Z. Typically X = 10, Y = 20, and Z = 80. The console 12 compares the X player selected numbers with the Y console selected numbers and pays the player according to the number that match.

First the player makes a selection of X numbers, which are sent as a message for the server 11 to the smartcard. This proves the player selection before the smartcard generates the console selection

The console 12 then requests the smartcard to generate an array of Y unique numbers in the range 1 to Z and reads the generated numbers. The console 12 reads these numbers and scores the game according to the quantity that match.

Accounting Description

In the preferred implementation the server performs accounting. Alternatly the smartcard may also be used to perform accounting to allow independant auditing of player gambling and hence provide enhanced security against tampering at the server and help in resolving player disputes. Although the console can keep accounts these are not secure and are therefore of limited value. In this implementation an extra function

description is used for the player bet, so that the smartcard can keep appropriate accounting of bets, wins and losses. These accounts may be read independantly (of the server) from the smartcard but cannot be modified, except by the playing of games.

Download of Code to the Smartcard

To increase flexibility of the smartcard, code may be downloaded to it from the console 12. Security of the smartcard may be maintained in two ways:

- The code that can be executed is restricted such that no possible code that is downloaded can compromise security. A simple interpreted language could easily satisfy this condition.
- Downloaded code is encrypted such that only an authorised source could have generated it. Alternately a digital signature is used to show that the code is from an approved source.

A copy of the code or a one way hash function of it, is sent from the smartcard to the server 11 as a means of verification, with the server confirming the code before it is executed.

Off-line Gaming

The smartcard may be used in off-line gaming, in which the games may be played without continuous communication with a server 11.

The smartcard is used to generate and record game outcomes of games played without communication to the server 11. When communication is re-established with the server 11 the recorded games are sent to the server for verification and account update.

- A personal gaming machine comprising of a small hand held console, similar in concept to a "Gameboy™" games console or Radica: ™ gaming toy, into which the smartcard is either inserted by the player or embedded by the manufacturer.
- A traditional gaming machine with enhanced security features provided by an embedded smartcard.
- Gaming on a home or business computer, with the computer as the console 12. Credits may be transferred to the card via a communications link to the casino. The computer may be an Internet terminal and credits transferred via Internet.
- A plug in module for a game console 12 (eg. Sony Playstation or Nintendo Ultra64), containing the game program (game data) for the console 12 and

the smart card. The module may additionally have a modem for communications.

In an off-line gaming application the number of games played is limited by the non-volatile storage available on the card and therefore data compression techniques may be used to increase the data storage capacity of the card.

Alternately the card may perform verification of the combinations for games itself instead of sending the game descriptions to the server 11. Therefore, the game descriptions are not stored within the card (except for the most recent, as required for game recall), saving space and increasing the number of games that may be played independently of the server 11. The server 11 need only check the total of wins and losses for these games. However, only games with combinations known to the smartcard can be compressed in this way. Any other game combinations played take the usual amount of non-volatile storage. In this implementation both the smartcard and console 12 may store game descriptions intended for later communication to the server 11, but they are not essential for security.

Server Verification Of Games

The server 11 verifies the games played on the console 12 using the game description message from the smartcard. At least the following checks are made:

- If implemented, the server 11 checks that the random number seed index is valid.
- The game descriptions are consistent with the game type selected.
- The gamble is correct for the game type played.
- The amount bet is valid, including maximum bet, maximum win, etc.
- The game has been fully described and that no messages from the smartcard are missing.
- The server 11 may know the initial random number and hence be able to calculate all future random numbers. It can therefore check the random numbers generated by the smartcard.

For example, a game may allow up to five red/black double ups following a win on a spinning reel game. The server 11 would check that the double up followed a win, that no more than five double ups were played, that each successive double up was played only as a result of a win on the previous game, and that the odds described to the smartcard for each game

were correct. The gamble is not complete until the last double up has been played, and preferably the end of game message has been sent. The server 11 cannot update the account until each of the outcomes is known, in the correct sequence. The game type is therefore different for each of the games played (ie. there are a maximum of six game types played), or another field is added to the game description message to describe which game in the sequence is being played.

Additionally games may be validated by another server 11 whose sole purpose is to verify games. All communications between smartcard and server 11 are copied to the verification server by the game server. The verification server 11 must know the encryption keys used for communication between game server and smartcards 23. A jurisdictional body may, for example, use a verification server 11 to verify the correct operation of the casinos operating within its authority.

Optionally, the encrypted game outcome messages from the smartcard to server include the random numbers used to determine the game outcome. The server verifies that the random numbers produce the specified game outcomes and that the random numbers are valid (either by checking the sequence or statistical tests).

Game Recovery

In the event of an interruption to the game sequence (power down, communications failure, console failure etc.) it is possible to recover to the same position in the sequence via several means, including;

- The console 12 may have non-volatile storage from which it can recover its previous state of play.
- Outstanding game outcomes in the smartcard are first transmitted to the server 11. Once all game outcomes have been acknowledged, the server 11 has a complete record of the state of game play and the console 12 may then request the current state.
- In an alternate implementation the smartcard stores information sufficient to restore a game in its non-volatile memory, which is passed on request from the smartcard to console 12.

Communications

Prior to encryption messages may include a message type identification code and a message integrity code (eg. CRC or checksum or secure hash). An additional integrity code added after encryption ensures

successful transmission of data over the communications link between the server 11 and console 12. Therefore, when either the smart card or server 11 detects errors within the encrypted message either may assume that these are not communication errors and that tampering is taking place and hence take appropriate action.

The console 12 may require secure communications with the server 11 separate to that required by the smartcard. This may include the need to download game graphics, sound and code, or player account information. Two methods may be used to accomplish this:

- The servers 11 and console 12 communicate using the smartcard as the encryption means. The console 12 effectively encrypts and decrypts data using the smartcard as the encryption engine.
- The console 12 requests an encryption key from the server 11 for the game session. The key is generated by the server 11, encrypted, and sent to the smartcard. The smartcard decrypts the key and gives it to the console 12 which then uses it for private communications with the server 11.

In a variation on the preferred implementation the console 12 or smartcard suspends games when communication delays with the server 11 exceed a preset time limit, thus ensuring that when the server or network is not operating the console does not play games.

Server To Smart Card Messages

The server 11 and hence the console 12, may send the following messages to the smartcard, as described elsewhere in this document:

- Send random number seed to the smartcard.
- Request previous game outcomes from the smartcard.
- Request last game outcome from the smartcard.
- Request Card ID (or public key) from the smartcard.
- Send game outcome receipt acknowledge to the smartcard.
- Security poll requiring an immediate and unforgeable response.

Messages from the server 11 are encrypted to prevent eavesdropping or tampering, especially where game outcomes and random numbers are being sent. The server 11 unforgeably identifies itself to the smartcard in its communications by:

- Encrypting messages using the smartcards encryption key, if that key is secret and shared only between the server 11 and smartcard.

- By the server 11 having at least one other encryption key that is a secret known only to the server and smartcard(s).
- By the server 11 having a public key pair and encrypting or signing messages with its private key. The smartcard(s) verify messages with the public key.

To ensure cryptographic freshness and prevent attacts by replaying messages to the smartcard, the message may contain two additional fields (similar to those in smartcard to server messages) in which:

- A randomising code ensures that otherwise identical messages produce different messages when encrypted.
- An index field is used to determine if the message is fresh. Typically this field contains an incrementing 32-bit number and for a message to be valid it must contain a larger index number than the last valid message.

A replay attact might, for example, replay the transmission of a random number seed and cause it to be reused. The optimum game choices could then easily be determined.

Smart Card To Server Messages

Each command sent to the smartcard used to describe games or generate game outcomes for the console 12 also generates an encrypted and unforgeable message to the server 11 (See Figure 6). Each type of game description or command will cause a different type of message to the server 11 to be generated. Each message is comprised of the card index, game description and optional integrity code (eg. checksum or CRC), which is then encrypted. Therefore four basic messages types are used (message from console 12 to server 11, random number array generation and selection, and the blackjack specific command) with more being added as required.

The card index is used to uniquely identify and sequence each game description sent from console 12 to the smart card, and hence to the server 11. It is automatically incremented for each description and used by the server 11 to determine the order and completeness of all games. Typically the card index is a 32-bit number. For example, if the server 11 receives messages with card indexes of one and three only, it knows that it is missing message two. If a message is lost and needs to be resent to the server 11 the original card index is used and the message is identical, except in an implementation where a randomising number is included in the message. It also knows that game description two was made after description one, and

that three was after two. The card index also prevents tampering by replay attacts in which messages are recorded and resent to the server.

To improve security a randomising code may be included in the encrypted message to ensure that every message from the smartcard is unique, even if it contains otherwise identical data. The randomising code is different for each transmission and would typically be a simple count value or random number. The server 11 ignores the randomising code.

In the alternate implementation where random number seeds are generated by the server 11 the encrypted game outcome message sent from the smartcard to the server also includes the index number that was received with the random number seed used for that game. Including the index ensures that all packets of encrypted data sent back to the server 11 are unique, and that a previous winning game outcome message cannot be resent to the server. The server 11 checks the index number to ensure that this game outcome has not been previously recorded. Old messages or messages for games that have never occurred are evidence of attempted tampering. The random numbers may also be included in this return packet as further confirmation.

Messages to and from the smartcard may be combined reduce the amount of data transmitted and the response time. The response time of the card to game commands is composed of communications times, command processing time, and E^2PROM write time. Therefore to reduce the response time commands to, and results from, the smartcard may be combined. For example, if the E^2PROM write time is 5ms, three commands each resulting in writes to E^2PROM would require at least 15ms. However if the commands are combined only a single 5ms E^2PROM write is required, saving 10ms.

Attacks on smartcard security may be attempted by timing analysis of smartcard responses to commands from the console 12. Two methods may be used to prevent this:

- A small random time delay may be introduced into all communication from the smartcard to the console 12.
- All responses from the smartcard are delayed to the maximum time that any response could take. All messages therefore take the same amount of time from initiation.

Random Number Generation

The random numbers used to determine game outcomes are generated either within the smartcard, by the server 11 and sent to the smartcard, or a combination of both.

Smartcard Generated Random Numbers

In the preferred implementation the smartcard generates the random numbers required for outcomes from an initial seed. The seed may be set once during configuration/manufacture or updated at various times by the server 11. An implementation that does not allow the server 11 to update the seed eliminates the possibility that a compromised server can be used to influence or determine the game outcome and hence cheat the system. In an implementation in which the random number seed can be updated the principals set forth for server generated random numbers are also applicable.

An obvious point of attack is the random number generator as it is on the smartcard. An automated attack can play a large number of games and record the outcomes to try to determine the random number sequence. One or more of the following methods can be used to prevent this attack:

- The random number generator is reseeded from the server 11 periodically. Each time the generator is reseeded the attack analysis would have to restart.
- When the set limit on the generator is reached without a new seed the smartcard refuses to accept new gambles.
- The delay between generating random numbers can be sufficiently large that it takes too long to determine the sequence by exhaustive trial.
- The generator used is unpredictable, even if its output can be recorded.
- The results output from the smartcard do not indicate the exact random number generated, only a region in which it falls. Thus the random number is quantised, becoming much harder to determine.
- An automated attack would preferably be made without gambling and thereby losing money. Therefore zero value gambles are either not allowed or enable a different type of random number generator. If this generator is compromised it is of no help in real games.
- The smartcard generates an internal random number from an initial seed set during manufacture and combines (eg. exclusive or) it with a random number generated with a seed sent from the server 11. The random

number sequence therefore changes when a new server seed is sent, but a compromised server cannot influence the outcome of games.

Server Generated Random Numbers

In this alternate implementation the server 11 generates random numbers and transmits them to the smartcard prior to the game requiring them. The server may generate all the random numbers required for games, but preferably a single random number seed is used to generate all the random numbers required for a game, reducing the amount of data transferred. For example, a five-reel slot game requires at least five random numbers, but five random numbers are easily generated from a single random number seed.

In a variation encrypted random seeds must be used within a set time period. Seeds having a limited lifetime, of say 1 hour, shorten the time seeds are available for malicious decrypting. Both encrypted and non-encrypted 'use by dates' are attached to each encrypted seed to enable the console 12 and smartcard to discard seeds that are no longer valid. If a game is played with an invalid seed the server 11 will declare that game void. To prevent tampering whereby messages about losing games are delayed and voided by the server only wins are voided, not losses.

In another variation random numbers are continually sent to the smartcard. The smartcard discards all those that it does not use, and optionally informs the server 11 that it has done so.

When the console 12 is initialised for game play it requires random number seeds for the smartcard. These may be stored locally from the previous game session or will be generated on request, by the server 11. The console 12 stores multiple seeds in a buffer (Figure 7), the quantity being determined by the delay associated in requesting more over the network.

The console 12 or an intermediate level server in an hierarchical system may store seeds and these can be used in a new session. The console 12 is therefore able to immediately supply random number seeds to the smartcard as required and when the console buffer runs low it will request more from the server 11.

Where the random number seeds are sent with a unique index the server 11 may need to determine the last seed used by the smartcard, to enable the next numbers in the sequence to be generated. In this implementation the server 11 is able to query the smartcard during

initialisation for the sequence number (or entire game outcome message) of the last game played.

In an alternative implementation, random number seeds are sent from the server 11 with an embedded index number, which is returned to the server with the game outcome that was created with that random number. The index number prevents cheating where a random number seed is reused and further enables the server 11 to verify game outcomes. When each new random number seed is received the embedded index is checked against that of the most recent game outcome stored in E^2PROM. There are three possible outcomes:

- The received index is newer (ie. larger) than that of the last stored game, indicating that it is a new seed, for a new game.
- The received index is the same as the stored index, indicating that the game has already taken place, and the console 12 is so informed. No new gamble choice will be accepted.
- The received index is older (ie. less) than that of the last stored game. This is either the result of an error in the system or an attempt at cheating. This condition is signalled back to the console 12 and the random number seed discarded.

Optionally the index must be the next in the sequence for the smartcard to accept the communication. For example, if the last index was 1000, the next must be 1001. In an alternate implementation is for the next random number seed to be sent in response to the encrypted game outcome for the last game being received by the server 11. However, a delay may occur before the next game if sufficient seeds are not available during subsequent games.

Random Number Server

In a variation on server generated random numbers and to increase security or control over gaming (by government jurisdiction), a random number server 114 (Figure 8) may be used to create random number seeds. The random number server 114 generates and encrypts seeds using an encryption key not known to the game server(s) 11 and sends them to the game server(s) 11 for distribution to the player consoles 12 and hence smartcards 23. It is therefore not possible for a compromised server to be used to influence or determine the outcome of games.

Random seeds may be encoded such that they can only be used by a specific smartcard, to reduce the possibility of cheating by sending the same seed to multiple smartcards.

The smartcard may generate an acknowledgment message to confirm that it has received the random number seed, which the game (or verification) servers then use to verify the correct operation if the system. When sending the acknowledgment message, the smartcards card index is incremented, allowing the game (or verification) server to detect when the same random number has been used by multiple smartcards, as acknowledgments cannot be deleted without detection.

Multiple sources of random numbers may be combined within the smartcard to produce the random number to be used to generate the game outcome. The multiple sources may be used for each random number required or periodically used to randomise the sequence further, for example, the server 11 sends the smartcard its own random number together with that from two independent random number servers 114. The smartcard in addition has its own random number generator seeded during manufacture of the card. The four random numbers are combined (eg. exclusive or) to form the random number(s) used to generate a game outcome. So long as at least one of the sources of a random number is not compromised the game outcome cannot be influenced or predicted.

Security

Preferably security will be provided in signals transmitted between a game server and a smartcard by use of cryptographic techniques, with the following general principles being employed:

1. All critical transmissions will be encrypted using state-of-the-art encryption schemes;
2. Key management schemes will be used to ensure the security of IDs and keys;
3. The freshness of all transmissions will be ensured and monitored
4. Mutual authentication of principals will be routinely implemented.
5. Cryptographically strong, unbiased pseudo-random number generators will be used through-out the implementation.

In applications where the smartcard is associated with a single player or account (such as Internet gaming) it is an ideal means of identifying the player to the console 12. Preferably to prevent unauthorised use of the

smartcard players are required to identify themselves to the smartcard in order for it to function, typically using a pin number, password or biometric identification. Multiple accounts (eg. members of a family) may be accessed using a single smartcard and multiple pins, passwords or biometric identification.

Although smartcards are very hard to compromise, they cannot be assumed to be perfectly secure. The potential for breaking the security on the smartcard is acknowledged and the system designed to minimise the damage caused. One or more of the following methods may be used to improve security or detect or limit damage:

- A measure of physical security may be provided when the smartcard is not player accessible. This is only applicable in situations where the player is not required to access the smartcard.
- A different encryption key is used on each smartcard, so that if one smartcard is compromised not all cards are compromised.
- The smartcard issuer (eg. Casino) may retain the ownership rights to cards and can reclaim a smartcard at any time. This allows them to check for physical compromise and remove any cards from use that seem to be suspicious.
- The server 11 can cancel a smartcard. The server 11 will not allow any transactions with that smartcard and may notify its human attendants of any such attempts.
- To prevent stolen cards being used the card ID is programmed when the cards are manufactured. Cards cannot be used without the server 11 knowing the card ID and hence stolen cards cannot (safely) be used.
- When the smartcard detects attempted tampering via erroneous requests it may respond with a randomly generated response message that appears the same as a correct response, but is meaningless.
- When the smartcard detects attempted tampering via erroneous requests it may delay its response to the next request by a significant time. Automated tampering will be slowed down to the point of worthlessness, but normal activity will never encounter delays.
- The server 11 examines the pattern wins and losses associated with individual cards for evidence of tampering. For example, if the return to the player exceeds the statistically likely amount or a statistically

significant distribution exists in the size of bets between wins and losses (ie. large bets on wins and small bets on losses).

- A smartcard that is used from a second location at a distance from the first location that is impossible to reach in the time between uses. This may indicate duplicate smartcards 23.

In some applications where the smartcard is continuously on-line, such as hotel in-room gaming, security may be enhanced by the server 11 periodically establishing secure communications with the smartcard. Only the smartcard is able to correctly respond, hence there is some assurance that the smartcard is not being tampered with. In addition the smartcard may require a similar response from the server 11, to check for itself that tampering is not taking place, and take appropriate action (eg shut down) if it is.

Verifiability of the smartcard may be enhanced by a command causing the smartcard to dump its entire memory contents. Security demands that this command can only be issued by an authorised source, typically a server 11 (in which case the memory dump may be encrypted) or test equipment. Preferably the command is encrypted using the server 11 encryption key or a key reserved especially for this purpose.

Encryption

The purpose of encryption between server 11 and smartcard 23 is to both hide the data (especially random numbers) and authenticate the source of the message.

Either symmetric or asymmetric (public key) encryption may be used for smartcard to server communications. When public key encryption is used the public key need not be made public (except in an hierarchical system or to identify the smartcard to the server 11).

Preferably each smartcard has its own unique key, so that in the event of a single key (or smartcard) being compromised the entire system is not compromised. The server 11 uses a different key for communicating with each smartcard.

Alternatively, cards use the same key for communication with the server 11, which simplifies key management, but leads to potential security problems

In the hierarchical or verification server system public key or a hybrid encryption scheme may be preferred as it enables a feature where each of the

servers is able to decode messages from the smartcard without possibility of any server 11 compromising the system by forging messages.

To further prevent tampering messages may be padded out with extra data, prior to encryption, that is randomly generated each time a message is sent. The messages may also be padded out to the same length each time. Each time an encrypted message must be resent (eg. due to a system error) it will be different. It will not therefore be possible to determine which messages are associated with which events. The recipient may ignore the extra data.

Server

The server 11 functions much as a server for a traditional distributed gaming system would, with some additional features:

- An account is maintained for each smartcard that exists. In addition to player accounting and games information the account holds the encryption key(s) used for the smartcard and other information required to monitor security.
- Software to detect tampering.
- Encryption for smartcard communications and highly secure storage of smartcard keys.
- The server 11 reads the game type played and verifies the gamble. The outcome and amount bet are used to adjust the players account. Any discrepancy between the server determined result and that of the game console are either system bugs or an attempt at tampering.

Security Server

Ensuring security of the server 11 may be a difficult and expensive process. In theory any software modifications on the server 11 require complete recertification of the software.

An encryption server 113 (See Figure 9) may be provided to physically separate the functions of the server 11 and encryption. When software unrelated to security is changed on the server 11 the security system does not need to be recertified. All communications between the server 11 and consoles 12 passes through the security server 113.

To match the bandwidth of the game server 11 and security server 113 to the application one or more game servers 11 may be used with one or more security servers 113, in any combination.

Hierarchical Server Architecture

A large network may be constructed containing an hierarchy of servers (See Figure 10). The function of the servers is somewhat different to that described for a single server system. Advantages over a single level network are possible:

- When random numbers are generated by the top level server 111 the games cannot operate without it, ensuring a high level of control. The top level server 111 is able to maintain highly accurate accounting of the entire system.
- The lower level servers 112 need not have a high level of security if they are not involved in payouts, in which case payouts are determined by a higher level server 111 that does have high level security.
- The low level servers 112 are used for local monitoring and accounting and can improve response time.
- In a very large system the load is distributed across multiple servers. Lower level servers 112 off load communications traffic.
- Communications from the console 12 to its server 11 must be relatively fast to keep games responsive. Communications between the levels of server need not be fast, if the top level server 111 generates a large number of random numbers and downloads them to the lower level servers 112 for later use. Games can proceed without immediate communication to the top level server 111 until the supply of random numbers runs out.

Smartcards 23 may use public key encryption (or digital signatures) on game outcome messages, with the public key known to each of the appropriate levels of servers. In this implementation both the low level server 112 and higher level server 111 can keep track of games and accounting information. The low level server 112 can verify transactions, but not modify them.

Examples of possible implementations are:-

State wide networks spanning an entire state, such as Nevada in the USA or Victoria in Australia. The lower level servers 112 would be located in casinos or clubs and the top level server 111 controlled by the governing body of that state.

On Internet a central high security server 113 distributes games (including random numbers) to lower security servers. The lower level servers 112 have a reduced responsibility to not loose games or results, but since it is not possible for them to tamper with games, security requirements

are reduced. Attempts to tamper are easily detected by the top level server 111.

A low level server 112 is implemented on an aeroplane. Communications between the aeroplane server 112 and ground based high level, high security server 113 may be slow, or only used when the plane has landed.

Verification Server

In an alternate implementation verification of games and accounts also takes place on a verification server, in addition to verification by the normal game server. This enables enhanced security as some types of tampering at the game server can be detected, depending on the system implementation used. The verification server may be run, for example, by a government controlled regulator to audit commercial establishments.

Copies of all communications to the smartcard affecting game outcomes, from the smartcard to server reporting game outcomes, and acknowledgments, are sent by the game server to the verification server.

Messages are encrypted, such that the verification server can read messages between the game server and smartcard. This may require that the verification server has the encryption keys shared by the game server and smartcard, or that an encryption method is used that allows a three way secure communication. Preferably, the game and verification server cannot forge the identity of the other.

Verification Mode

The secure storage means may be provided with a verification mode in which the memory contents of the secure storage means may downloaded to an external device. Preferably, in the interests of security, secret encryption keys stored within the secure storage means are not disclosed. Crytographic technuiques are used to ensure only an authorised party is able to initiate the verification mode. Typically it is the server using its secret key which is authorised, but other parties may be used when the secure storage means is provided with a secret verification key. Preferably invocation of device verification disables the secure storage means from futher use, except for device verification, and minimal changes are made to memory contents.

Downloaded Console Code

Traditional gaming machines do not allow the downloading of code because tampered code can cheat the system. Because console security is

solely dependent on the smartcard and encrypted communications, then it is perfectly reasonable to download code to the console 12 as part of the game package. No possible code can compromise the security of the system, except in so far as it may mislead the player into the nature of the game being played. However, to further enhance security, code may be authenticated with methods such as digital signatures or encryption.

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

CLAIMS:

1. A method of operating a gaming system including at least one gaming console, the console including secure storage means and a user interface allowing a user to initiate a game and observe a result, the method including the steps of:

storing game or gamble outcome information in the secure storage means for use by the console to produce a game or gamble outcome respectively; and

upon receipt of a user input initiating a game, producing a game play sequence including a game and/or gamble outcome indication determined by the game or gamble outcome information stored in the secure storage means alone or in combination with a user input.

2. The method of claim 1, wherein the information stored in the secure storage means is a sequential list of outcome information relating to a sequence of future games to be played on the console.

3. The method of claim 2, wherein the game outcome information stored in the secure storage means, is in the form of a set of random numbers sufficient to generate an entire game outcome.

4. The method of claim 1, wherein the information stored in the secure storage means is a random number seed from which outcome information relating to a sequence of future games to be played on the console is generated by operation of a random number generator.

5. The method of claim 4, wherein the random number generator is provided as a pseudo-random number algorithm.

6. The method of claim 4 or 5, wherein the game outcome information generated by the random number generator, is in the form of a set of random numbers sufficient to generate an entire game outcome.

7. The method of claim 4 or 5, wherein the outcome information is a random number used to determine a gamble outcome and the secure processing means in the console then chooses a game outcome which will achieve that gamble outcome.

8. The method as claimed in claim 7, wherein the game outcome chosen depends upon the game being played.

9. The method as claimed in any one of claims 7 or 8, wherein the game is chosen by the player.

10. The method as claimed in any one of claims 7, 8, or 9, wherein the game is chosen by the console.

11. The method as claimed in any one of claims 7, 8, 9 or 10, wherein the game being played includes a plurality of game outcomes corresponding to the gamble outcome corresponding to the random number and one of the game outcomes is chosen by the console.

12. The method as claimed in any one of claims 10 or 11, wherein games or outcomes chosen by the console are chosen at random.

13. The method as claimed in any one of claims 10 or 11, wherein games or outcomes chosen by the console are chosen sequentially.

14. The method as claimed in any one of the preceding claims wherein the secure storage means is removably connectable to or readable and writable by the console.

15. The method of claim 14, wherein the information relating to future game outcomes stored in the secure storage means is stored before the secure storage means is connected to the console.

16. The method of claim 15, wherein the secure storage means is a programmable card which is preprogrammed with outcome information before or after acquisition by a user and is inserted into the console by the user to produce one or more game outcomes on the respective console.

17. The method as claimed in any one of claims 1 to 16, wherein the production of the game or gamble outcome determination is performed in a secure processing means connected to the secure storage means by way of a secure communications path.

18. The method as claimed in claim 17, wherein communications over the secure communications path are secured by encryption.

19. The method as claimed in claim 17, wherein communications over the secure communications path are secured by physical security means.

20. The method as claimed in any one of claims 17, 18 or 19, wherein the secure processing means is a smartcard or smartcard chip which is permanently fixed in the console.

21. The method as claimed in any one of claims 1 to 13, wherein the secure storage means is a smartcard or smartcard chip which is permanently fixed in the console.

22. The method as claimed in any one of claims 1 to 20, wherein the secure storage means is a smartcard which is removable from the console.

23. The method of claim 21 or 22, wherein the secure storage means carries player identification and credit information.

24. The method of any one of claims 1 to 14, wherein a gaming server is provided and is in communication with each gaming console, the gaming server being arranged to calculate the outcome information in relation to a game for storage in a secure storage means and to send outcome signals to the console in which the secure storage means is located, the method including the steps of:

in the gaming server, precalculating data which partially or completely defines an outcome of at least one game on one console, and generating and sending to the respective console a signal indicating the precalculated data prior to a user initiating the game on the console;

in the console, receiving the data signal and storing the data as part or all of the game or gambleoutcome information in the secure storage means.

25. The method of claim 24, wherein the console, upon receipt of the user input to initiate a game, generates and sends a signal to the gaming server indicating that the stored information has been used to determine the respective game or gamble outcome.

26. The method of any one of claims 1 to 14, wherein a gaming server is provided and is in communication with each gaming console, and each console, upon receipt of the user input to initiate a game, generates and sends a signal to the gaming server indicating that the stored information has been used to determine the respective game or gamble outcome.

27. The method as claimed in claim 24, 25 or 26, wherein the gaming server additionally performs the function of an accounting server whereby the accounting server is arranged to maintain credit account information in relation to a player playing a game on the gaming system and to send accounting information to the console on which the player is playing.

28. The method as claimed in any one of claims 1 to 26, wherein an accounting server is provided and is in communication with each gaming console, the accounting server being arranged to maintain credit account information in relation to a player playing a game on the gaming system and to send accounting information to the console on which the player is playing.

29. The method of claim 27 or 28, wherein the console, upon receipt by of the user input to initiate a game, generates and sends data to the accounting server to allow the accounting server to update the players account.

30. The method of claim 24, wherein the console communicates to the gaming server data to enable the gaming server to verify the game.

31. The method of any one of claims 24 to 30, wherein the console saves data sent to each server and upon receipt of a secure signal indicating that the respective server has received the data then deletes the data from memory.

32. The method of any one of claims 24 to 31, wherein the precalculated data is transmitted from the game server to the secure storage means in the console and the game verification data is transmitted by the secure storage means to the game server.

33. The method of claim 27, 28 or 29, wherein the accounting data is transmitted from the server to the secure storage means in the console.

34. The method of claim 25 or 26, wherein the secure storage means, is not in communication with the gaming server when the game is played, and each time the secure storage means is next connected to the gaming server, it will generate and send a signal to the server indicating the stored game outcome information that has been used.

35. The method as claimed in any one of claims 24 to 34, wherein signals generated by the server and console to transmit game outcomes or to indicate game play, are encrypted prior to being sent.

36. The method of claim 35, wherein encrypted signals are each provided with a piece of unique information prior to encryption such that different signals containing the same game information are different to one another after encryption.

37. The method as claimed in any one of claims 24 to 36, wherein the server includes an auditing function to check the game and/or gamble outcome data returned from the secure device in the console.

38. The method as claimed in claim 35, 36 or 37, wherein the game outcome calculation and the encryption and decryption of signals to and from the game server are performed in the console by the smartcard.

39. The method as claimed in any one of claims 24 to 38, wherein an hierarchical network of gaming servers are provided with the console connected to a low order, low security network server which performs low

security and routine control and communication, while passing high security signals to higher level gaming servers having higher security.

40. The method as claimed in claim 1, wherein the game or gamble outcome information represents a plurality of predetermined gamble outcomes which are stored in the secure storage means.

41. The method as claimed in claim 40, wherein the game outcome information is stored as a list of values representing a plurality of game outcomes.

42. The method as claimed in claim 41, wherein all unused values in the secure storage means, except for an initial value, are hidden and playing games discloses the values one by one.

43. The method as claimed in claim 40, wherein the game outcome information is stored as an initial value representing a game outcome, and values representing subsequent games are generated from the initial value using a pseudo-random number algorithm.

44. The method as claimed in claim 40, 41, 42 or 43, wherein the secure storage means is a smartcard or smartcard chip.

45. The method as claimed in claim 44, wherein the player can redeem the smartcard device at any time for the amount of the last disclosed value.

46. The method as claimed in claim 45, wherein the redemption of the value on the smartcard is carried out via secure communication between smartcard and an accounting server.

47. The method as claimed in claim 45 or 46, wherein the last disclosed value of the smartcard is the sum of the value of gamble outcomes for all games played on the smartcard.

48. The method as claimed in claim 45, 46 or 47, wherein upon initiation of a game by a player, the console retrieves the new value of the smartcard device and displays an appropriate game sequence.

49. The method as claimed in claim 48, wherein the player acquires a smartcard device with a fixed number of values.

50. The method as claimed in claim 49, wherein the smartcard device is provided with a list of predetermined outcomes, and game play includes a step in which the player makes a bet on the outcome of each game.

51. The method as claimed in claim 50, wherein for each outcome disclosed the player first makes a bet, which is written to non-volatile

memory in the smartcard device, and the total value owed to the player is calculated from the wins and losses for each bet and outcome.

52. The method as claimed claim 51, wherein the player redeems the smartcard device for a latest value owed to the player.

53. The method as claimed in claim 52, wherein the secure storage on the smartcard device is accessed via controlled access provided by the smartcard device.

54. The method as claimed in claim 53, wherein the secure storage on the smartcard is accessed via a secure communications system within the console.

55. The method as claimed in claim 54, wherein the secure communications system is provided by a further smartcard device.

56. The method as claimed in any one of claims 40 to 55, wherein the smartcard device is programmed with multiple functions, only one of which is a gaming accelerator.

57. The method of claim 56, wherein the smartcard device is programmed for use as an ID card and/or a credit card and/or a bank ATM card.

58. The method of claim 57, wherein the protocol to access the smartcard device is compatible with another mode of the smartcard.

59. The method as claimed in any one of claims 24 to 39, wherein the console sends a signal to the secure storage means describing a state of a game being played to the game to the server.

60. The method of claim 59, wherein the secure storage means encodes the message for transmission to the server.

61. The method of claim 59 or 60, wherein the message indicates start of game, end of game, player selections, game type, or amount bet.

62. A gaming system including at least one gaming console, the console including secure storage means and a user interface allowing a user to initiate a game and observe a result, the system including:

secure storage means for storing game or gamble outcome information used by the console to produce a game or gamble outcome; and

game control means in the console arranged to receive a user input initiating a game and to produce a game play sequence including a game and/or gamble outcome indication determined by

the game or gamble outcome information stored in the secure storage means alone or in combination with a user input.

63. The system of claim 62, wherein the information stored in the secure storage means is a sequential list of outcome information relating to a sequence of future games to be played on the console.

64. The system of claim 63, wherein the game or gamble outcome information stored in the secure storage means, is in the form of a set of random numbers sufficient to generate an entire gamble outcome.

65. The system of claim 64, wherein the information stored in the secure storage means is a random number seed from which outcome information relating to a sequence of future games to be played on the console is generated by operation of a pseudo-random number algorithm.

66. The system of claim 65, wherein the game outcome information generated by the pseudo-random number algorithm, is in the form of a set of random numbers sufficient to generate an entire game outcome.

67. The system of claim 66, wherein the outcome information is a random number indicating a gamble outcome value and the console then chooses a game outcome which will achieve that gamble outcome value.

68. The system as claimed in any one of claims 62 to 67, wherein the secure storage means is removably connectable to or readable and writable by the console.

69. The system of claim 68, wherein the information relating to future game outcomes stored in the secure storage means is stored before the secure storage means is connected to the console.

70. The system of claim 69, wherein the secure storage means is a programmable card which is preprogrammed with outcome information before or after acquisition by a user and is inserted into the console by the user to produce one or more game outcomes on the respective console.

71. The system as claimed in any one of claims 62 to 70, wherein a secure processing means is provided to produce the game or gamble outcome indication and is connected to the secure storage means by way of a secure communications path.

72. The system as claimed in claim 71, wherein the secure processing means is a smartcard or smartcard chip which is permanently fixed in the console.

73. The system as claimed in any one of claims 62 to 67, wherein the secure storage means is a smartcard or smartcard chip which is permanently fixed in the console.

74. The system as claimed in any one of claims 62 to 72, wherein the secure storage means is a smartcard or smartcard chip which is removable from the console.

75. The system of claim 74, wherein the secure storage means carries player identification and credit information.

76. The system of any one of claims 62 to 75, wherein a gaming server is provided in communication with each gaming console, the server being arranged to calculate the outcome information in relation to a game for storage in a secure storage means and to send game or gamble outcome signals to the console in which the secure storage means is located, and the console including receiving means for receiving the game or gamble outcome signal and storing the information carried in the signal as the game or gamble outcome information in the secure storage means.

77. The system as claimed in claim 76, wherein the server includes an auditing means for checking game and/or gamble outcome data returned from the secure device in the console.

78. The system of any one of claims 62 to 75, wherein a gaming server is provided in communication with each gaming console, the server including an auditing means for checking game and/or gamble outcome data returned from the secure device in the console.

79. The system as claimed in claim 76, 77 or 78, the server and console each includes encryption and decryption means to encode transmission of game outcomes and/or transmissions indicating game play.

80. The system as claimed in claim 77, wherein the encryption and decryption means in the console is a smartcard.

81. The system as claimed in any one of claims 76 to 80, wherein an hierarchical network of gaming servers are provided with the console connected to a low order, low security network server which performs low security and routine control and communication, while passing high security signals to higher level gaming servers having higher security.

82. The system as claimed in claim 62, wherein the game outcome information represents a plurality of predetermined gamble outcomes which are stored in the secure storage means.

83. The system as claimed in claim 82, wherein the secure storage means is a smartcard or a smartcard chip.

84. The system as claimed in claim 83, wherein the secure storage device is arranged to keep hidden all unused values until disclosed by playing a respective game.

85. The system as claimed in claim 84, wherein the console is arranged to display an appropriate game sequence in which it retrieves, the new value of the smartcard device upon initiation of a game by a player.

86. The system as claimed in claim 85, wherein the smartcard device is originally provided with a fixed number of values.

87. The system as claimed in claim 86, wherein the smartcard device is provided with a list of predetermined outcomes, and the console includes a bet input means arranged to receive a bet on the outcome of a game.

88. The system as claimed in claim 87, wherein a non-volatile memory is provided in the smartcard device for recording player bet values , and the total value owed to the player.

89. The system as claimed in claim 88, wherein the smartcard device is provided with controlled access means in communication with the secure storage means for secure communication therewith.

90. The system as claimed in claim 88, wherein the console is provided with a secure communications system for secure communication with the secure storage device.

91. The system as claimed in claim 91, wherein the secure communications system is provided by a further smartcard device.

92. The system as claimed in any one of claims 83 to 91, wherein the smartcard device which provides the secure storage means is programmed with multiple functions, only one of which is a gaming accelerator.

93. The system of claim 92, wherein the smartcard device which provides the secure storage means, is programmed for use as an ID card and/or a credit card and/or a bank ATM card.

94. The system of claim 93, wherein the protocol to access the smartcard device which provides the secure storage means, is compatable with another mode of the smartcard.

95. The system as claimed in any one of claims 76 to 81, wherein the console sends a signal to the server via the secure storage means describing a state of a game being played to the game to the server.

96. The method of claim 95, wherein the secure storage means encodes the message for transmission to the server.

97. The method of claim 95 or 96, wherein the message indicates start of game, end of game, player selections, game type, or amount bet.

98. A secure storage means for use in a gaming console which includes a user interface allowing a user to initiate a game and observe a result, the secure storage means being arranged to store game or gamble outcome information used by the console to produce a gamble outcome.

99. The secure storage means of claim 98, wherein the information stored in the secure storage means is a sequential list of outcome information relating to a sequence of future games to be played on the console.

100. The secure storage means of claim 99, wherein the game outcome information stored in the secure storage means, is in the form of a set of random numbers sufficient to generate an entire gamble outcome.

101. The secure storage means of claim 100, wherein the information stored in the secure storage means is a random number seed from which outcome information relating to a sequence of future games to be played on the console is generated by operation of a pseudo-random number algorithm.

102. The secure storage means of claim 101, wherein the game outcome information generated by the pseudo-random number algorithm, is in the form of a set of random numbers sufficient to generate an entire game outcome.

103. The secure storage means of claim 101, wherein the outcome information is a random number indicating a gamble outcome value.

104. The secure storage means as claimed in any one claims 98 to 105, wherein the secure storage means is arranged to be removably connectable to or readable and writable by the console.

105. The secure storage means of claim 98, wherein the information relating to future game outcomes stored in the secure storage means is stored before the secure storage means is connected to the console.

106. The secure storage means of claim 105, wherein the secure storage means is a programmable card which is preprogrammed with outcome information before or after acquisition by a user and is arranged to be insertable into the console by the user to produce one or more game outcomes on the respective console.

107 The secure storage means as claimed in any one of claims 98 to 106, wherein a secure processing means is provided, and the secure storage means is arranged to be connected to the secure processing means by way of a secure communications path, and the secure processing means is arranged to provide the gamble outcome.

108. The secure storage means as claimed in any one of claims 98 to 103, wherein the secure storage means is a smartcard or smartcard chip which is arranged to be permanently fixed in the console.

109. The secure storage means as claimed in any one of claims 98 to 107, wherein the secure storage means is a smartcard which is removable from the console.

110. The secure storage means of claim 109, wherein the secure storage means carries player identification and/or credit information.

111. The secure storage means of any one of claims 98 to 110, wherein the secure storage means is arranged to communicate with a gaming server via a gaming console, the server being arranged to calculate the game or gamble outcome information in relation to a game for storage in the secure storage means and to send outcome signals to the secure storage means via the console, the secure storage means being arranged to receive and store the game or gamble outcome information.

112. The secure storage means of claim 111, wherein the game or gamble outcome information received by the secure storage means from the server is combined with existing information held by the secure storage means to generate a game or gamble outcome.

113. The secure storage means of claim 111 or 112, wherein upon receipt by the console of the user input to initiate a game, the secure storage means generates and sends a signal via the console to the gaming server indicating that the stored information has been used to determine the respective game or gamble outcome.

114. The secure storage means of any one of claims 98 to 108, wherein the secure storage means is arranged to communicate with a gaming server via a gaming console, and upon receipt by the console of the user input to initiate a game, the secure storage means generates and sends a signal via the console to the gaming server indicating that the stored information has been used to determine the respective game or gamble.

115. The secure storage means of claim 113 or 114, wherein the signal sent to the gaming server includes data indicating a game played or a function performed and the secure storgage means stores the data sent to the server until the gaming server acknowleges receipt of the signal.

116. The secure storage means of claim 111, 112, 113, 114 or 115, wherein communications between the gaming server and the secure storage means is encrypted.

117. The secure storage means as claimed in claim 98, wherein the game outcome information represents a plurality of predetermined game or gamble outcomes which are stored in the secure storage means.

118. The secure storage means as claimed in claim 117, wherein the secure storage means is a smartcard or a smartcard chip.

119. The secure storage means as claimed in claim 118, wherein all unused values in the secure storage means, except for the initial value, are hidden and playing games discloses the values one by one.

120. The secure storage means as claimed in claim 119, including a fixed number of initial values.

121. The secure storage means as claimed in claim 120, including an initial list of predetermined outcomes.

122. The secure storage means as claimed in claim 121, wherein the outcomes are initially stored in a secure form accessible only during game play whereby they are disclosed one at a time as games are played.

123. The secure storage means as claimed in claim 98, wherein for each outcome disclosed the player first makes a bet, which is written to non-volatile memory in the smartcard device, and the total value owed to the player is the sum of wins and losses for each bet and outcome.

124. The secure storage means as claimed in claim 123, wherein the secure storage on the smartcard is accessed via a secure communications system within the console.

125. The secure storage means as claimed in claim 124, wherein the secure communications system is provided by a further smartcard device.

126. The secure storage means as claimed in any one of claims 118 to 125, wherein the smartcard device is programmed with multiple functions, only one of which is a gaming accelerator.

127. The secure storage means of claim 126, wherein the smartcard device is programmed for use as an ID card and/or a credit card and/or a bank ATM card.

128. The secure storage means of claim 127, wherein the protocol to access the smartcard device is compatible with another mode of the smartcard.

129. A secure removable control device for use in a gaming console which includes a user interface allowing a user to initiate a game and observe a result, the control device being arranged to supply game or gamble outcome information used by the console to produce a game outcome.

130. The control device of claim 129, wherein the information supplied by the control device is a sequential list of outcome information relating to a sequence of future games to be played on the console.

131. The control device of claim 130, wherein the game outcome information supplied by the control device, is in the form of one or more random or pseudo-random numbers sufficient to generate an entire game outcome.

132. The control device of claim 130, wherein the outcome information is a random number indicating a gamble outcome .

133. The control device as claimed in any one of claims 129 to 132, wherein a secure processing means is provided within the control device, the secure processing means being arranged to provide the game outcome indication.

134. The control device as claimed in any one of claims 129 to 132, wherein a secure processing means is provided, connected to the control device by way of a secure communications path, and the secure processing means being arranged to provide the game outcome indication.

135. The control device as claimed in claim 134, wherein the secure processing means is a smartcard or smartcard chip which is permanently fixed in the console.

136. The control device as claimed in any one of claims 129 to 134, wherein the control device is a smartcard or smartcard chip which is permanently fixed in the console.

137. The control device as claimed in any one of claims 129 to 134, wherein the control device is a smartcard which is removable from the console.

138. The control device of claim 136 or 137, wherein the control device carries player identification and/or credit information.

139. The control device of any one of claims 129 to 138, wherein the control device is arranged to communicate with a gaming server via the gaming console.

140. The control device of claim 139, wherein upon receipt by the console of the user input to initiate a game, the control device generates and sends a signal via the console to the gaming server and/or an accounting server indicating the details of the game outcome information that has been used to determine the respective game or gamble outcome.

141. The control device of claim 139 or 140, wherein communications between the control device and the server is secured by encryption.

142. The control device as claimed in claim 129, wherein the game outcome information represents a series of game or gamble outcomes which are supplied by the control device.

143. The control device as claimed in claim 142, wherein the control device is a smartcard or a smartcard chip.

144. The control device as claimed in claim 143, wherein for each game outcome the player first makes a bet, which is written to non-volatile memory in the smartcard device, and the total value owed to the player calculated from wins and losses for each bet and outcome.

145. The control device as claimed in claim 144, wherein the secure storage on the smartcard is accessed via a secure communications system within the console.

146. The control device as claimed in claim 145, wherein the secure communications system is provided by a further smartcard device.

147. The control device as claimed in any one of claims 143 to 146, wherein the smartcard device is programmed with multiple functions, only one of which is a gaming accelerator.

148. The control device of claim 147, wherein the smartcard device is programmed for use as an ID card and/or a credit card and/or a bank ATM card.

149. The control device of claim 148, wherein the protocol to access the smartcard device is an extension of another mode of the smartcard.

150. A virtual casino system including a gaming server, a gaming console and at least one virtual gaming machine operable via the console, each virtual gaming machine having its own accounting, and combinations, and

each virtual machine being uniquely identified and capable of being returned to at any time by the player.

151. The virtual casino system of claim 150, wherein each virtual machine is only capable of being returned to for play by the player provided it is not in use by another player.

152. The virtual casino system of claim 150 or 151, wherein a player can observe on the console the operation of a virtual machine while it is in use by another player.

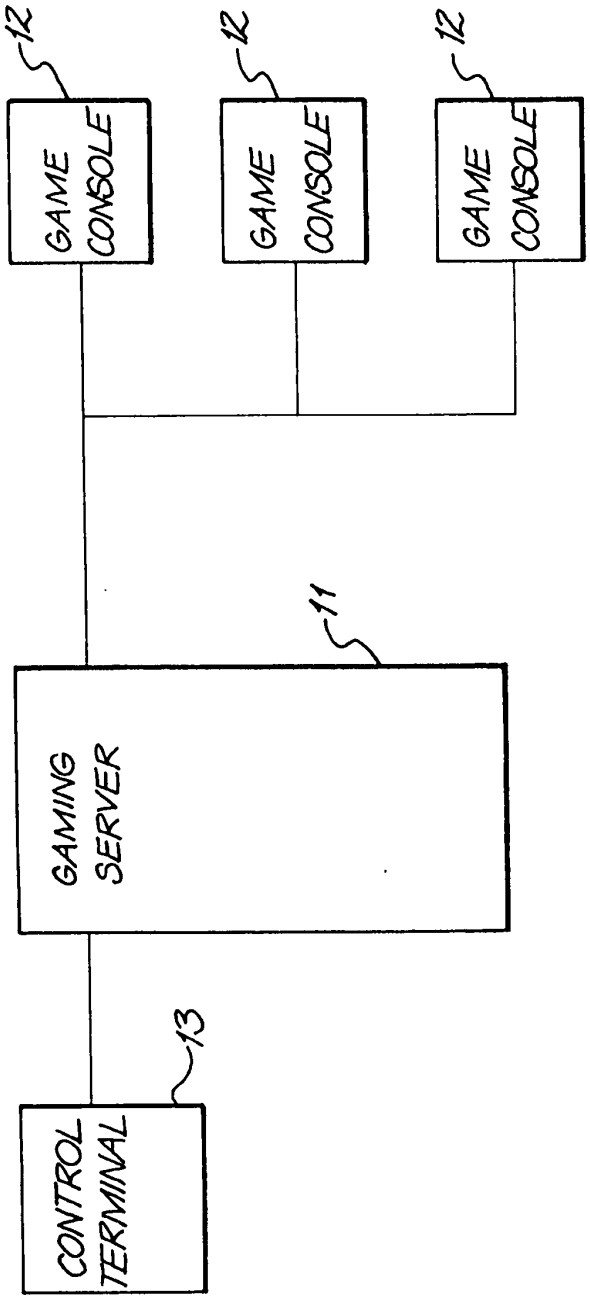
12
GAME CONSOLE
12
GAME CONSOLE
12
GAME CONSOLE
11
GAMING SERVER
13
CONTROL TERMINAL

FIG. 1

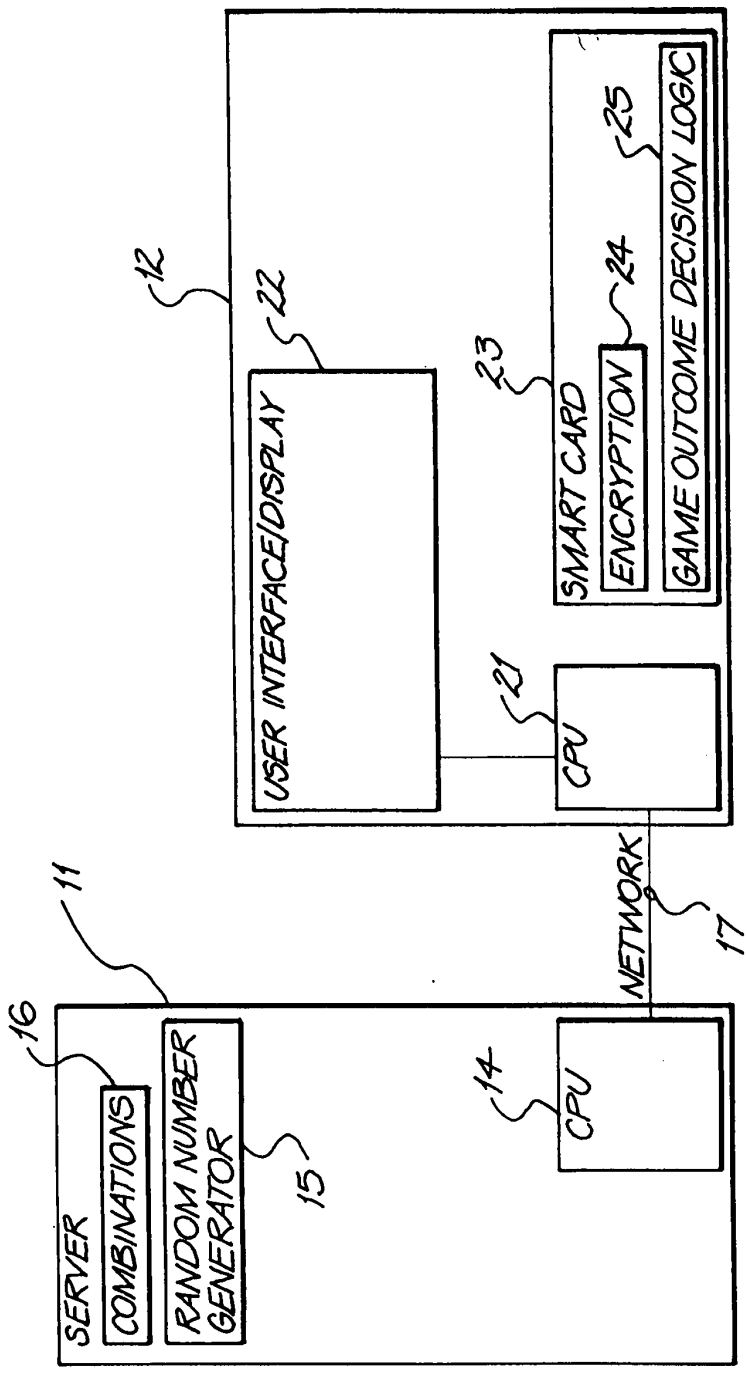
SERVER
COMBINATIONS
RANDOM NUMBER GENERATOR
15
16
11
CPU
14
NETWORK
17
CPU
21
USER INTERFACE/DISPLAY
22
12
SMART CARD
23
ENCRYPTION
24
GAME OUTCOME DECISION LOGIC
25

FIG. 2

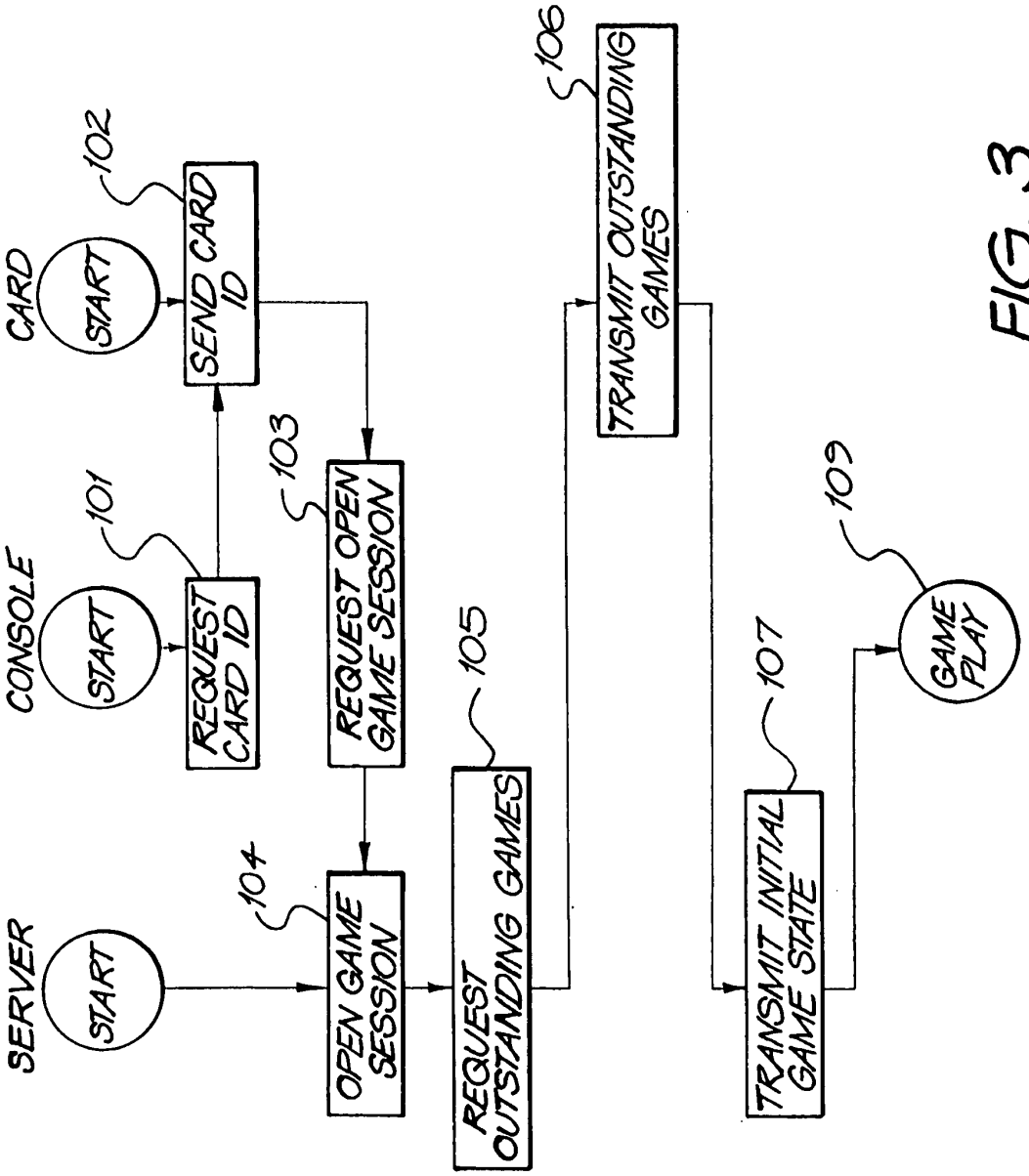
SERVER
START
CONSOLE
START
CARD
START
101
102
103
104
105
106
107
109
REQUEST CARD ID
SEND CARD ID
REQUEST OPEN GAME SESSION
OPEN GAME SESSION
REQUEST OUTSTANDING GAMES
TRANSMIT OUTSTANDING GAMES
TRANSMIT INITIAL GAME STATE
GAME PLAY

FIG. 3

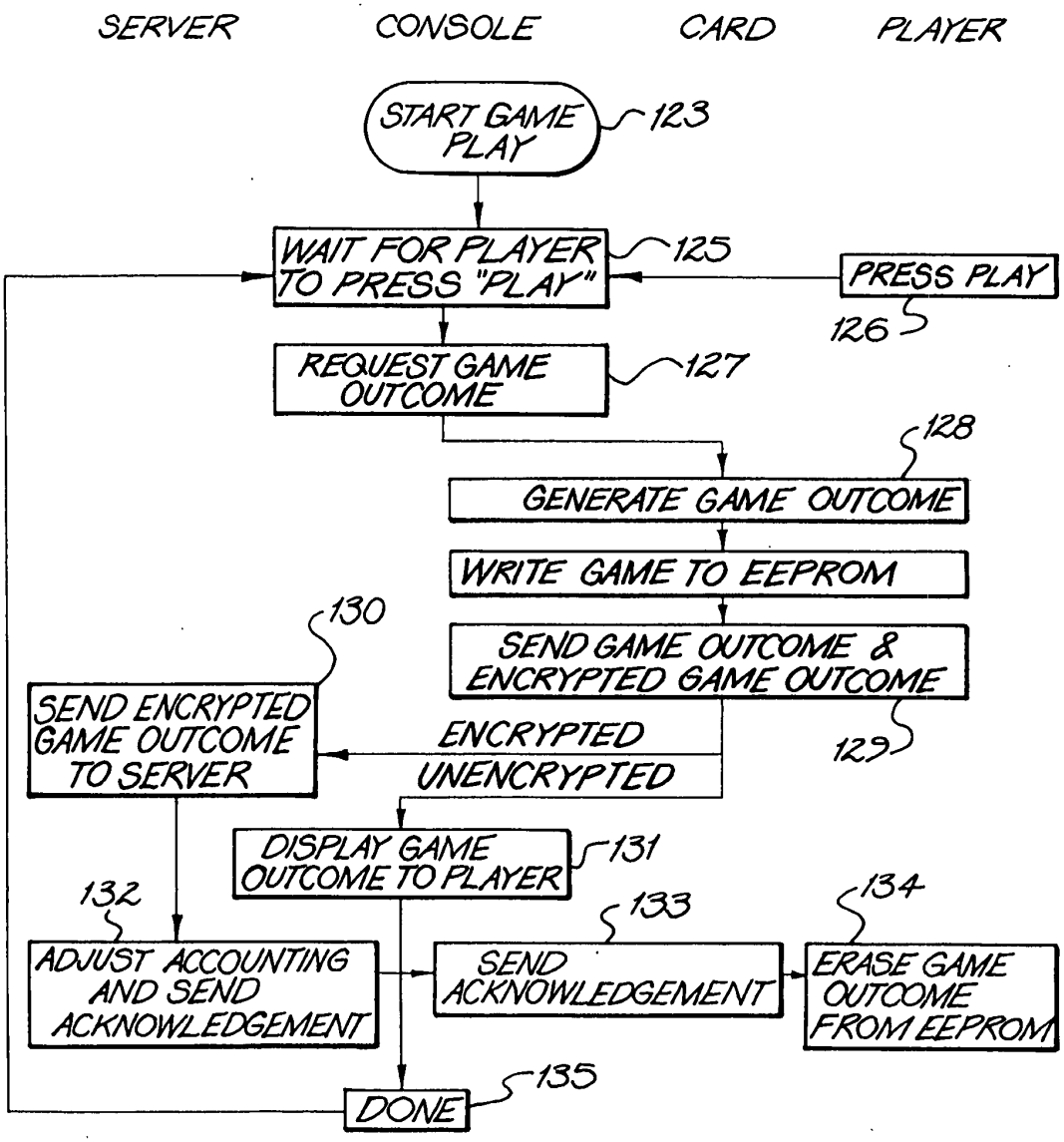
SERVER
CONSOLE
CARD
PLAYER
START GAME PLAY
123
WAIT FOR PLAYER TO PRESS "PLAY"
125
PRESS PLAY
126
REQUEST GAME OUTCOME
127
128
GENERATE GAME OUTCOME
WRITE GAME TO EEPROM
130
SEND GAME OUTCOME & ENCRYPTED GAME OUTCOME
SEND ENCRYPTED GAME OUTCOME TO SERVER
ENCRYPTED
UNENCRYPTED
129
DISPLAY GAME OUTCOME TO PLAYER
131
132
133
134
ADJUST ACCOUNTING AND SEND ACKNOWLEDGEMENT
SEND ACKNOWLEDGEMENT
ERASE GAME OUTCOME FROM EEPROM
DONE
135

FIG. 4

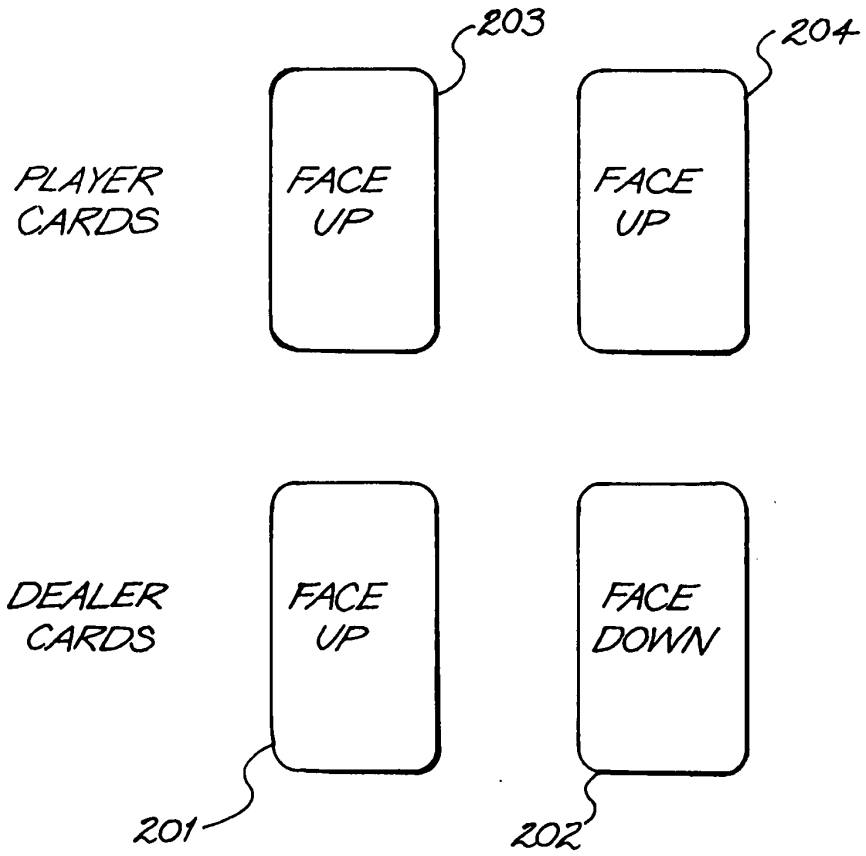
203
204
PLAYER CARDS
FACE UP
FACE UP
DEALER CARDS
FACE UP
FACE DOWN
201
202

FIG. 5

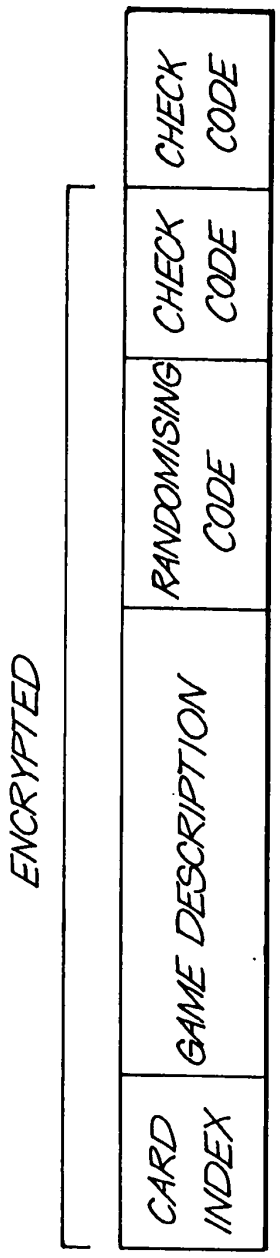
ENCRYPTED
CARD INDEX
GAME DESCRIPTION
RANDOMISING CODE
CHECK CODE
CHECK CODE

FIG. 6

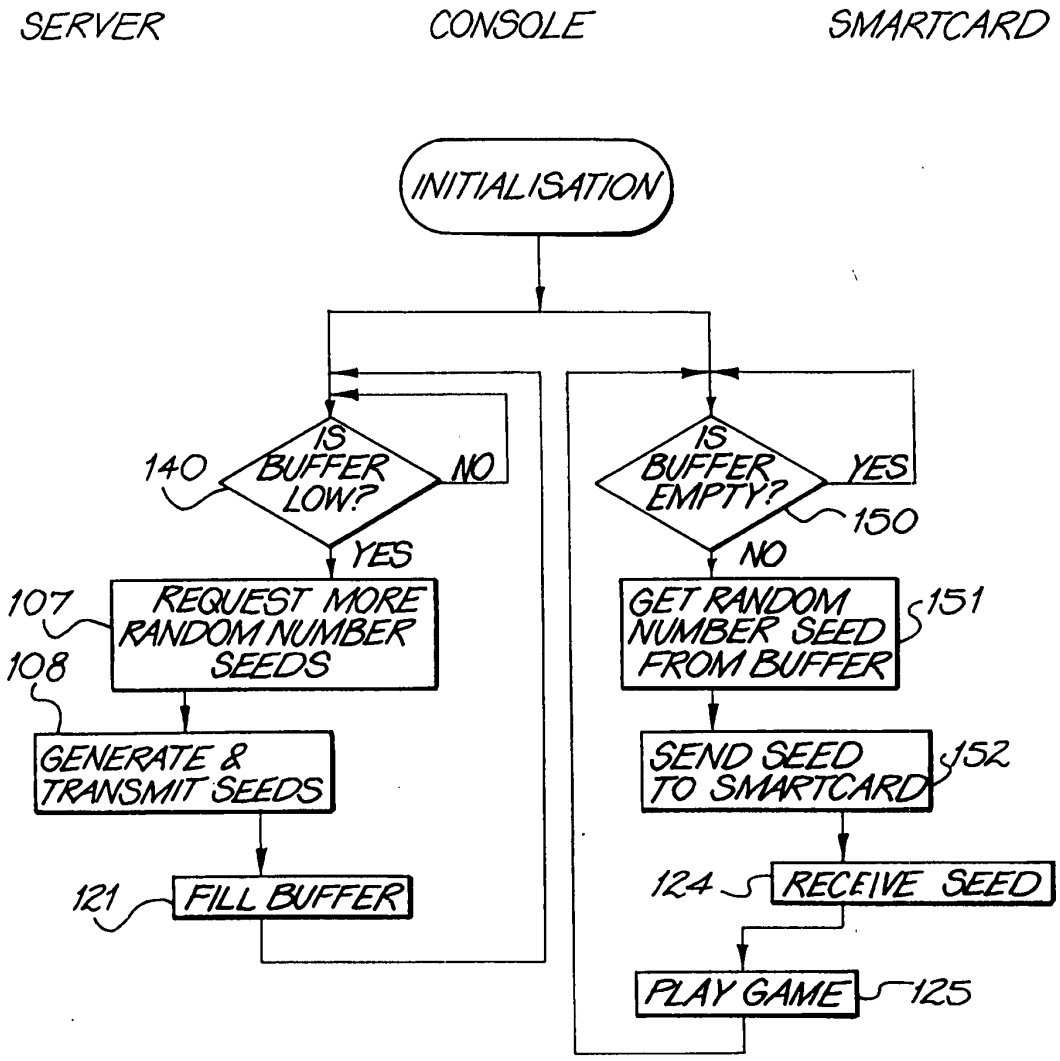
SERVER
CONSOLE
SMARTCARD
INITIALISATION
IS BUFFER LOW?
140
NO
YES
107
REQUEST MORE RANDOM NUMBER SEEDS
108
GENERATE & TRANSMIT SEEDS
121
FILL BUFFER
IS BUFFER EMPTY?
YES
150
NO
GET RANDOM NUMBER SEED FROM BUFFER
151
SEND SEED TO SMARTCARD
152
124
RECEIVE SEED
PLAY GAME
125

FIG. 7

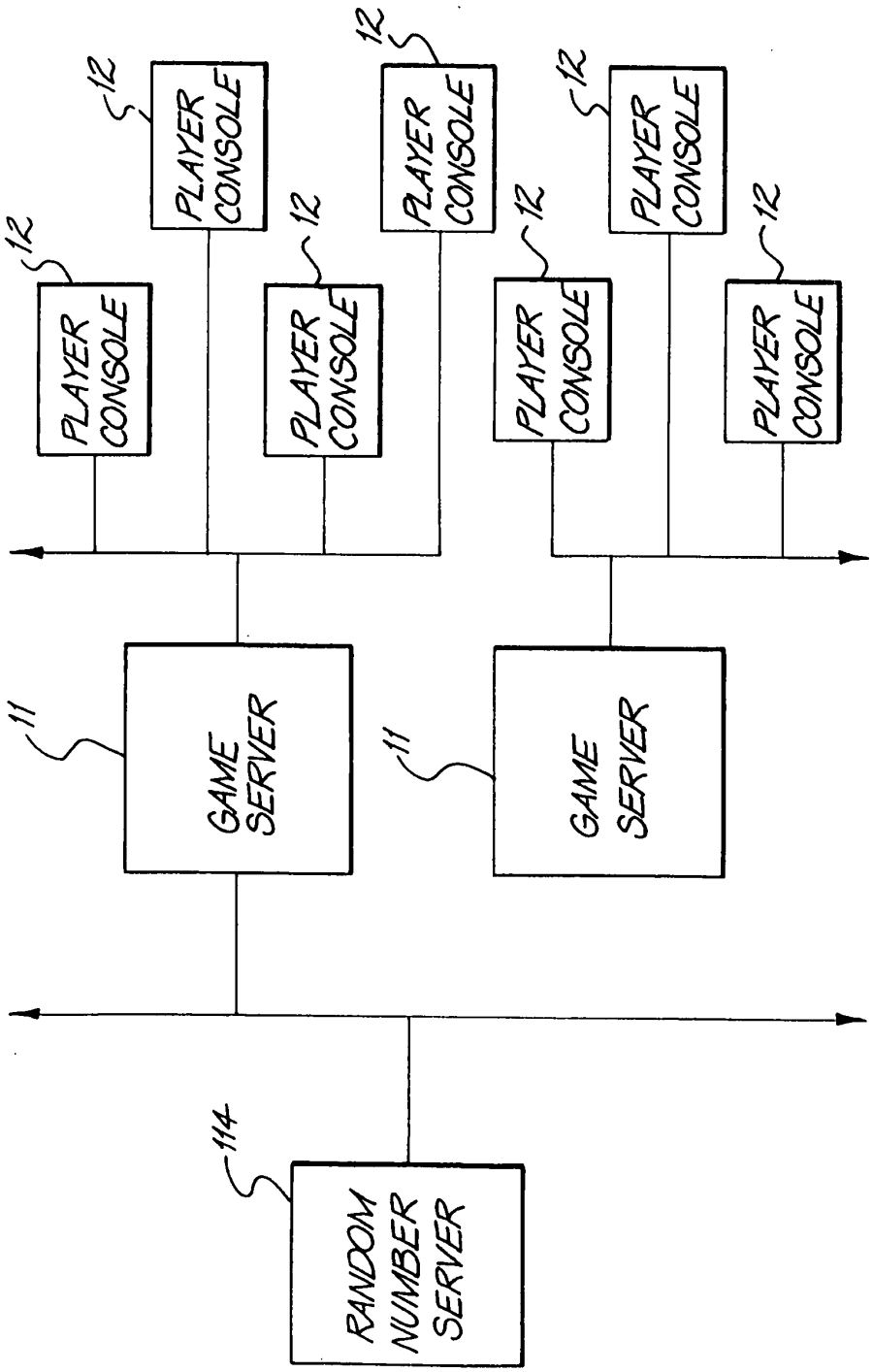
12
PLAYER CONSOLE
12
PLAYER CONSOLE
12
PLAYER CONSOLE
12
PLAYER CONSOLE
12
PLAYER CONSOLE
12
PLAYER CONSOLE
11
GAME SERVER
11
GAME SERVER
114
RANDOM NUMBER SERVER

FIG. 8

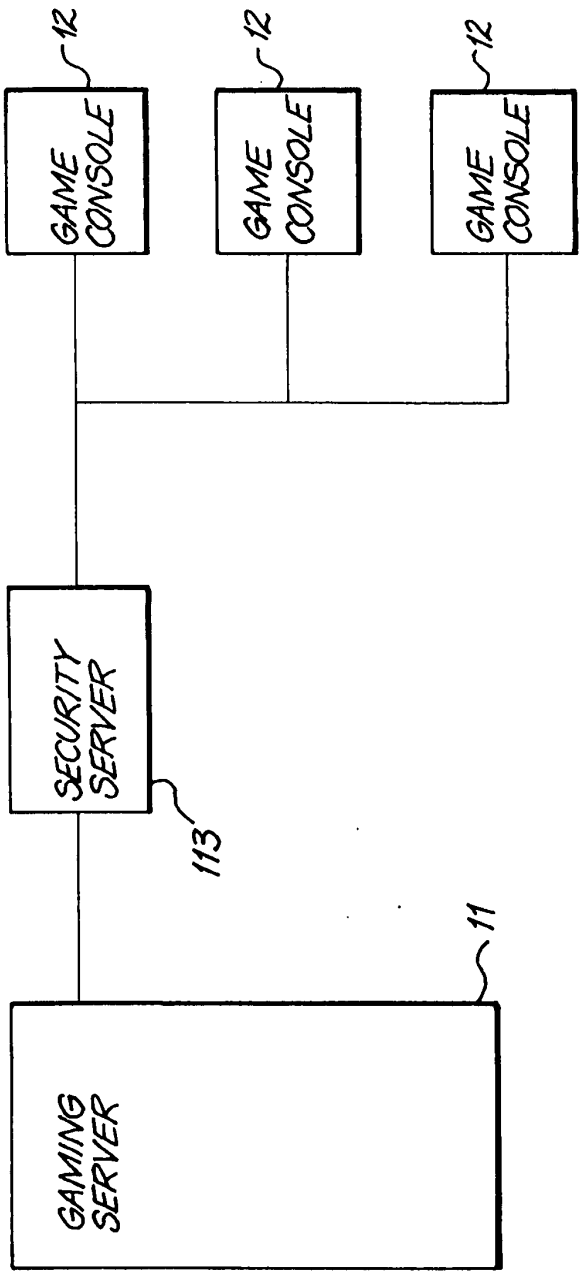
12
GAME CONSOLE
12
GAME CONSOLE
12
GAME CONSOLE
SECURITY SERVER
113
11
GAMING SERVER

FIG. 9

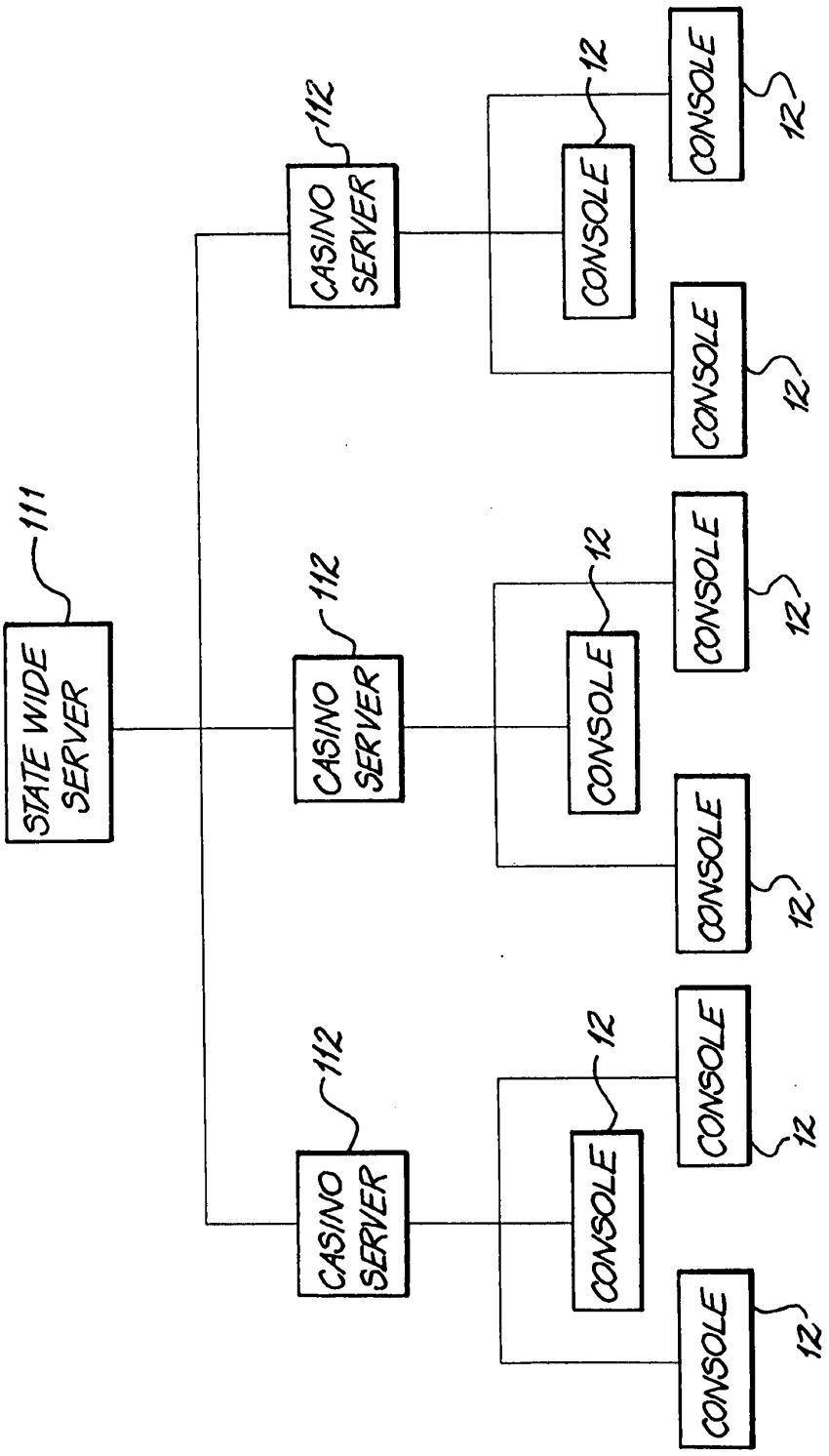
STATE WIDE SERVER
111
CASINO SERVER
112
CASINO SERVER
112
CASINO SERVER
112
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12
CONSOLE
12

FIG. 10

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/AU 98/00072

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC G06F 17/60, 17/00, 15/44, A63F 9/22, 9/24

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT: (POKER()MACHINE# or FRUIT()MACHINE# or SLOT()MACHINE# OR GAM:()MACHINE#) and SERVER;
(POKER OR FRUIT OR GAM:) and (SERVER)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU, A, 44278/96 (ARISTOCRAT INDUSTRIES PTY. LTD.) 25 July 1996	98, 150-152
X	AU, B, 27192/95 (686824) (ACRES GAMING INC.) 2 May 1996	98, 150-152
X	US, A, 4636951 (HARLICK) 13 January 1987	98, 150-152

☐ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 April 1998	23 APR 1998
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929	Authorized officer S. LEE Telephone No.: (02) 6283 2205

Form PCT/ISA/210 (second sheet) (July 1992) coprow

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No.
PCT/AU 98/00072

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member				
AU	44278/96	WO	9622586			
AU	35878/95	US	5655961	WO	9612262	US 5702304
US	4636951	AT	1451/84	AU	27572/84	DE 3416229
		ES	531967	GB	2139390	JP 59209374
		NL	8401380	ZA	8403276	

END OF ANNEX

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PCT

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(25) Filing Language: English

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(71) Applicant *(for all designated States except US)*: **LEGAL IGAMING, INC.** [US/US]; 200 Ultra Drive, Henderson, NV 89074 (US).

(72) Inventors; and

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(74) Agent: **MALLON, Joseph, J.**; Knobbe, Martens, Olson & Bear, LLP, 2040 Main Street, 14th Floor, Irvine, CA 92614 (US).

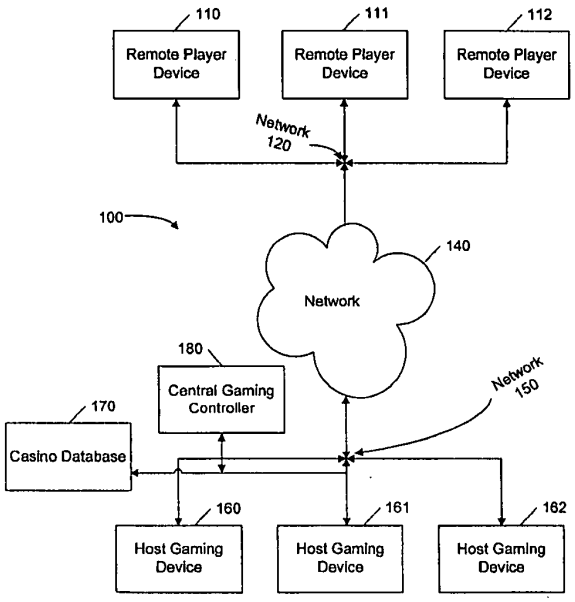
(81) Designated States *(national)*: AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, EG, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR CONNECTING GAMING DEVICES TO A NETWORK FOR REMOTE PLAY



(57) Abstract: A system (100) and method for connecting remote player devices (110) to regulated host gaming devices (160) in a network to provide remote game play. A host gaming device (160) is configured to provide game information to a plurality of remote player devices (110) to allow remote play of the host game device (160). Whether each remote player device (110) is permitted to receive gaming data is based upon, at least in part, the geographic location of the remote player device (110).

WO 2004/034223 A2

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SYSTEM AND METHOD FOR CONNECTING GAMING DEVICES TO A NETWORK FOR REMOTE PLAY

Background of the Invention

Field of the Invention

[0001] The present invention generally relates to electronic devices. In particular, the invention relates to methods and systems of interactive gaming.

Description of the Related Technology

[0002] Traditionally, the way for a gaming operator to increase revenue from gaming devices is to increase the number of gaming devices available for play. In order for casinos to increase the number of gaming devices available for play, casino floor space must be added to house the additional gaming devices. The floor space allocated to house additional gaming devices must meet specific criteria as defined by the gaming authority for the jurisdiction in which the gaming devices are to be located. Providing additional floor space is an expensive process for casino operators and often requires constructing new casino properties. Also, adding gaming devices typically requires payment of additional licensing fees for each additional game.

[0003] A trend in the gaming industry has been to provide Internet gaming. Internet gaming allows players to make wagers on the outcome of casino style games similar to that described above, except that the player does not have to be physically located in a casino to do so. Internet players make wagers and play casino games using a personal computer and wager on games running on computers connected to the Internet.

[0004] More broadly, interactive gaming is the conduct of gambling games through the use of electronic devices. The popularity of Internet gambling sites has indicated a strong market for remotely accessible gaming, or other interactive gaming. Regulated casino operators strongly desire to provide interactive gaming while capitalizing on existing infrastructure. Thus there is a need for improved electronic devices that support regulated remote gaming.

Summary of the Invention

[0005] The system of the present invention has several aspects, no single one of which is solely responsible for its desirable attributes. Without limiting the scope of this invention as expressed by the claims which follow, its more prominent features will now be discussed briefly. After considering this discussion, and particularly after reading the section entitled "Detailed Description of the Invention" one will understand how the features of this invention provide advantages which include providing remote gaming in regulated environment.

[0006] A gaming system and method of using the same to allow a host gaming device to be played from remote player devices to allow casino operators to obtain maximum advantage from their gaming licenses.

[0007] More particularly, in one embodiment gaming system may comprise a data network, a host gaming device connected to the data network, the gaming device configured to execute at least one game and a plurality of remote player devices connected to the data network. Each of the remote player devices is configured to receive game information provided by the host gaming device. Whether each remote player device is permitted to receive gaming data may be based upon, at least in part, the geographic location of the remote player device.

[0008] The host gaming device may be configured to allow no more than a predetermined number of remote player devices to concurrently receive game information provided by the host gaming device during the gaming session. This predetermined number may be determined by a gaming agency.

[0009] In another embodiment of a gaming system, at least one of the plurality of remote player devices may be permitted to receive game data based upon, at least in part, the geographic location of the remote player device, an age of a user of the remote player device.

[0010] A gaming system according to the invention may also include a central gaming controller configured to record gaming transactions on the host gaming device and on each remote gaming device.

[0011] The data network may be, in part, the Internet, and be comprised of one or more logical segment, which may include closed-loop networks. The host gaming device may be configured to identify the geographic location of a remote player device based, at least in part, on a logical segment corresponding to the remote player device. A mobile communications network, or a GPS device may also allow identification of the geographic location of the remote player device.

[0012] The host gaming device may be in a location approved by a gaming agency and include at least one game control configured to provide local use. This game control may be disabled when the host gaming device is providing game information to a remote player device. A host gaming device may also be configured to save an encrypted game state allowing a game to be resumed following a device or network failure.

[0013] A remote player device may be coupled to a credential device configured to receive information relating to a user of the remote player device. The information relating to a user may include the age of the user, or a password that is input by the user. The credential device is a smart card reader, a biometric device such as a fingerprint reader, or any type of input device. The credentials may be verified against information, such as age, password, or fingerprint in a database configured to provide information associated with each of a plurality of users of the gaming system.

[0014] In another embodiment, a gaming system may be comprised of a means for executing at least one game, the game providing game information during its execution, a local access means provides local access to the game information for a user in a location approved by a gaming agency, player means for receiving game information, presenting the game information to a user and providing at least one game control, a means for providing the game information over a data network to a predetermined number of receiving means, means for determining the location of the receiving means, and means for disabling the local access means. Other similar embodiments may also be comprised of means for creating an auditable record of gaming transactions on the playing means and on the gaming means.

[0015] Another embodiment of a gaming system, in addition to the features of the embodiments discussed above, may also include customized promotional messages to players of gaming devices.

[0016] On a remote player device, an embodiment of a method of remotely accessing a host gaming device may include: establishing access to the host gaming device through a data network, receiving gaming related information from the host gaming device through the data network, presenting the gaming related information to a player, receiving at least one control signal from the player, sending the control signal to the host gaming device through the data network, and disabling local use of the host gaming device. In one embodiment, the method may also include recording each gaming transaction occurring on the remote player device. Another embodiment of the method may include providing a geographic location of the remote player device. In another embodiment of the method, the age of the user of the remote player device is also provided.

[0017] On a host gaming device, an embodiment of a method of providing remote access, including: verifying the geographic location of a remote player device, establishing a gaming session on a host gaming device from a remote player device through a data network, receiving at least one control signal from the remote player device through the data network, and sending gaming related information from the gaming device through the data network. One embodiment of a method may also include recording each gaming transaction occurring on the host gaming device,

[0018] In order to provide tolerance for failures of system components, a method of resuming an interrupted gaming session on a gaming device is provided. One embodiment of a method may include generating a gaming state of the gaming session on the first gaming device, encrypting the gaming state, transporting the encrypted gaming state from the gaming device. The method may also include the converse: transporting the encrypted gaming state from the first gaming device to a second gaming device, decrypting the gaming state on the second gaming device; and loading the game state into a second gaming device to resume the gaming session.

[0019] An embodiment of a gaming system which provides for resuming interrupted gaming sessions across a data network. The system may include a first host gaming device connected to the data network, the gaming device configured to execute at least one game, generate a gaming state based on execution of at least one game, encrypt the gaming state, and send the encrypted gaming state over the data network. A second host gaming device may be connected to the data network, the second gaming device configured to receive the encrypted gaming state over the data network, decrypt the gaming state, and resume executing at least one game from the gaming state. A plurality of remote player devices, configured to receive game information provided by the host gaming device, may be connected to the data network. The gaming state may include user payment or credit information, and game jackpot or payout information.

[0020] Another embodiment of a gaming system providing resumption of interrupted gaming sessions may include means for executing at least one game, means for generating a gaming state based on execution of at least one game, means for encrypting the gaming state, and means for sending the encrypted gaming state. The system may also include means for receiving the encrypted gaming state, means for decrypting the gaming state and means for resuming executing at least one game from the gaming state.

[0021] To enable gaming regulatory compliance, methods authenticating gaming system users are also provide. An embodiment of a method of authenticating a user of a host gaming device may include receiving a security certificate from the smart card, sending the security certificate from the gaming device to an authenticator device, receiving an authentication reply from the authenticator, and playing a game in response to the authentication reply.

[0022] An embodiment of the method may also include presenting the security certificate from the gaming device to a certificate authority for authentication over a data network.

[0023] An embodiment of a method of authenticating a user of a remote player device for playing a host gaming device may include receiving an indicia of identity for a user, sending the indicia of identity to an authenticator device, receiving an authentication reply from the authenticator device, and authorizing use of a host gaming device based on the indicia of identity. The indicia of identity for a user may be provided by a biometric device, a smart card, or a password provided by the user.

[0024] Another embodiment of a gaming system provides authentication of users. The system may include a data network, a host gaming device interfaced to the data network, a plurality of remote player devices interfaced to the data network, and a security device configured to provide player credentials to at least one remote player device. The each of the remote player devices may be configured to receive game information provided by the host gaming device. The host gaming device may provide game information to a predetermined number of permitted remote

player devices. Whether a remote player device is permitted to receive gaming information may be based upon, at least in part, on player credentials provided by the security device.

[0025] In one embodiment, a method of remotely accessing a gaming device provides for creating records of gaming transactions on both host gaming devices and remote player devices sufficient to provide an auditable record for a gaming authority in the jurisdiction. The method may include establishing a gaming session on a gaming device for a remote player device through a data network, sending gaming related information from the gaming device through the data network, receiving at least one control signal from the remote player device through the data network, creating an auditable gaming session record representing each gaming transaction of a gaming session on the host gaming device and on the remote gaming device. In addition, the record may be sent to a third party, such as a gaming authority, through the data network.

[0026] In another embodiment of a gaming system, the gaming system includes a network comprised of a plurality of logical segments. A security policy controls the flow of data between logical segments. A host gaming device may be connected to the data network, the gaming device configured to execute at least one game. A plurality of remote player devices may be connected to the data network. The plurality of remote player devices are each configured to receive game information provided by the host gaming device, and to control a gaming session established on the gaming device, subject to the security policy. The security policy may be based, at least in part, on the geographic location of a logical segment.

[0027] One embodiment of the gaming system may include a promotional message server to deliver customized promotional messages to users of the gaming system. In this embodiment, a gaming system may include a data network, a promotional message server configured to provide customized promotional messages. Each message may be customized with information associated with a user of the gaming system. In addition, a gaming system may include a host gaming device interfaced to the data network, and a plurality of remote player devices interfaced to the data network. The plurality of remote player devices are each configured to receive game information provided by the host gaming device and to receive and present promotional messages.

[0028] In another embodiment, a gaming system may include a means for data communication, means for executing at least one game, means for providing game information over the data network to a predetermined number of receiving means, a plurality of means for receiving game information over the data communication means. Each means for receiving game information may be coupled to a means for receiving customized promotional messages. A gaming system may also include a means for presenting promotional messages in conjunction with gaming data.

[0029] A related method of displaying information on a remote player device is also provided. The method may include receiving a promotional message on a remote player device, presenting the promotional message in conjunction with gaming information for an amount of time; and removing the promotional message from the remote player device. Information in the promotional message may be used to calculate the amount of time to present the promotional message.

[0030] A remote player interface of a gaming system may have a number of embodiments. In one embodiment of a gaming system, the gaming system includes data network, a host gaming device interfaced to the data network, and at least one remote player device interfaced to the data network. The remote player device is configured to receive game information provided by the host gaming device. The remote player interface of the gaming system may include a video display device in communication with the remote player device and a remote control device in communication with the remote player device. The remote control device is configured to control operation of a game.

[0031] An embodiment of method of remotely accessing a gaming device may include establishing a gaming session on the host gaming device from a remote player device through a data network, receiving gaming related information from the host gaming device through the data network, presenting gaming related information to a player via a video display device, receiving at least one control signal generated by a remote control device for controlling the gaming session, and sending the control signal to the host gaming device through the data network.

Brief Description of the Drawings

[0032] **FIG. 1** depicts a simplified block diagram of a gaming system according to one embodiment of the invention.

[0033] **FIG. 2** depicts a simplified block diagram of system elements relating to a host gaming device of **FIG. 1** according to one embodiment of the invention.

[0034] **FIG. 3** depicts a simplified block diagram of system elements relating to a remote player device of **FIG. 1** according to one embodiment of the invention.

[0035] **FIG. 4** is a flowchart depicting the sequence of events for acknowledging command messages in a gaming system as embodied in **FIG. 1.**

[0036] **FIG. 5** is a flowchart depicting the sequence of events for establishing a remote gaming session, playing a game, and terminating the remote gaming session in a gaming system as embodied in **FIG. 1.**

[0037] **FIG. 6** is a flowchart depicting the sequence of events for transferring funds from a player's source of funds in the gaming system of **FIG. 1.**

[0038] **FIG. 7** is a flowchart depicting the sequence of events for a host gaming device of **FIG. 2** to connect to a network using security certificates and a certificate authority.

[0039] **FIG. 8** is a flowchart depicting the sequence of events for a gaming device of **FIG. 2** to build and deliver an encrypted block of data representing the complete state of the gaming device.

[0040] **FIG. 9** is a flowchart depicting the sequence of events for retrieving a block of data representing the state of a gaming device from a database and loading the block into a gaming device as performed by a gaming system embodiment as in **FIG. 1**.

[0041] **FIG. 10** is a more detailed block diagram of a gaming system as depicted in **FIG. 1**.

[0042] **FIG. 11** is a detailed block network diagram of a portion of a gaming system as depicted in **FIG. 10**.

Detailed Description of the Preferred Embodiment

[0043] The following detailed description is directed to certain specific embodiments of the invention. However, the invention can be embodied in a multitude of different ways as defined and covered by the claims. In this description, reference is made to the drawings wherein like parts are designated with like numerals throughout.

[0044] In a traditional casino environment, gaming devices are generally located on a gaming floor. Gaming devices are subject to regulation by gaming regulatory agencies. Regulations may limit the locations where gaming devices may be placed and by limit users of gaming devices to those of legal age to gamble in the respective jurisdiction. Regulatory agencies for a given jurisdiction may also limit the number of licensed gaming devices provided to a licensee. Where gaming devices are physically located on a casino gaming floor, verification of whether a device is being used in its licensed location within the jurisdiction may be determined by physical inspection of the gaming floor. Further, monitoring of the gaming floor in casinos ensures that players are of legal age as set by the jurisdiction.

[0045] An embodiment of a gaming system according to the present invention allows a licensed host gaming device to be used by one or more remote player devices geographically separated from the host gaming device, but still located within the jurisdiction of a gaming authority. **FIG. 1** depicts a simplified block diagram of an embodiment of a gaming system **100** according to the invention. One or more host gaming devices **160, 161, 162** are licensed gaming devices. Although three host gaming devices are shown on **FIG. 1**, the gaming system **100** may employ any number of host gaming devices ranging from one to thousands. For convenience of discussion, set forth below is a description of certain aspects of the host gaming device **160**. It is to be appreciated that the other gaming devices may contain the following or different aspects.

[0046] A host gaming device may be any device, comprised of electronic, mechanical, or a combination of electronic and mechanical components, which is used for gaming and which affects the result of a wager by determining win or loss. A host gaming device **160** is connected to a data network **150**. In the embodiment depicted in **FIG. 1**, the data network of gaming system **100** is comprised of three logical segments. Gaming network **150** connects each host gaming device **160** and related elements such as the database **170** and central gaming controller **180**. Remote network **120** connects remote player devices **110, 111, 112** to the system. Backbone network **140** provides interconnection between the gaming network **150** and the remote network **120**.

[0047] The database **170** may be computer server running database software, or any other commercially available database solution. In one embodiment, as depicted, the database **170**, is a casino database. In other embodiments, the database may also contain other data related, or unrelated to the casino operation.

[0048] Remote network **120** connects remote player devices **110, 111, 112** to the system. Each remote player device **110** allows a user to play a game executing on a host gaming device **160**. For convenience of discussion, set forth below is a description of certain aspects of the remote player device **110**. It is to be appreciated that the other remote player devices may contain the following or different aspects. Although three remote player devices are shown on **FIG. 1**, the gaming system **100** may employ any number of remote player devices ranging from one to thousands.

[0049] The remote network **120** may be any form of computer network, as discussed below. In one particular embodiment, the remote network **120** is part of a network provided by a cable television system. **FIG. 10** depicts an embodiment of a gaming system where the remote network **120** is provided through a digital home communications terminal (DHCT) **1000**, such as a set-top box.

[0050] Each host gaming device **160** may be located in any location approved by a gaming agency, such as a casino gaming floor. A host gaming device **160** provides a legally regulated random number generator. Once generation of random number has been performed, a game result is determined. Any further interaction through the game's user interface is for the benefit of a user. For example, in one embodiment of a gaming system, the host gaming device may be a slot machine. After payment is made, through a coin, token, credit device, etc, the player pulls a lever arm to execute play. In a mechanical game, for example, a slot machine, a game result may be determined by the interaction of spinning wheels. In a host gaming device **160** of an embodiment of the present invention, however, pulling the arm triggers generation of a random number which determines the game result. Thus any spinning wheels or its electronic equivalent is

purely for entertainment of the user. A host gaming device **160** plays at least one game of chance, including, but not limited to, Slots, Blackjack, Poker, Keno, Bingo, or Lotteries.

[0051] **FIG. 2** depicts a more detailed block diagram of an embodiment of a gaming system **100** showing additional gaming system elements coupled to the host gaming device **160**. The host gaming device **160** may include local controls **220** such as an arm. The host gaming device **160** may have a display **210** to present the results of a game to a user. Further, the gaming device **160** may have a smart card reader **280**. Functions of the smart card reader **280** may include receiving payment for a game, or identifying a user for promotional or loyalty programs. A biometric identity device **290**, such as a fingerprint scanner, may be used for similar functions by the gaming system.

[0052] Networks **120, 140, 150** may include any type of electronically connected group of computers including, for instance, the following networks: Internet, Intranet, Local Area Networks (LAN) or Wide Area Networks (WAN). In addition, the connectivity to the network may be, for example, remote modem, Ethernet (IEEE 802.3), Token Ring (IEEE 802.5), Fiber Distributed Datalink Interface (FDDI) Asynchronous Transfer Mode (ATM), Wireless Ethernet (IEEE 802.11), or Bluetooth (IEEE 802.15.1). Note that computing devices may be desktop, server, portable, hand-held, set-top, or any other desired type of configuration. As used herein, the network includes network variations such as the public Internet, a private network within the Internet, a secure network within the Internet, a private network, a public network, a value-added network, an intranet, and the like. In embodiments of the present invention where the Internet is the backbone network **140**, gaming network **150** and remote network **120** may form a virtual private network (VPN) transported over the Internet.

[0053] In preferred embodiments, the remote network **120** may be a closed-loop network, such as the cable network depicted in **FIG. 10**. A closed-loop network **120** may have a limited geographic scope which allows the geographic location of a remote player device **110** to be identified. For example, a given cable network may be limited to a specific hotel. Each hotel room may be provided with a remote player device **110** which may then be identified with that location. In other embodiments, the remote network **120** may be a mobile telephone network which is capable of identifying a caller's geographic location.

[0054] As depicted in the simplified block diagram of **FIG. 3**, a remote player interface **300** may comprise a remote player device **110**, a display **310** for presenting game information and a control **320** to provide user game control for the remote player device **160**. In one embodiment, a remote player interface **110** may also comprise a remote control **395** to provide game controls. In preferred embodiments of the remote control, the connection **394** between the remote control **395** and the remote player device **160** may be any type of wireless connection,

including infra-red based protocols, or a RF wireless protocol such as Bluetooth (802.15.1). The remote control **395** may also be connected to the remote player device **160** through a wired connection such as Universal Serial Bus (USB), serial, or equivalent connection. The remote control **395** may also include controls customized for gaming. A handheld computer may also comprise a remote control **395**.

[0055] The display **310** may be a television, a personal computer, or a handheld computer device. A fixed or wireless telephone handset may comprise a display **310** and controls **320** of a remote player interface. In some embodiments the controls **320** may be integrated with display **310**, as for instance, in a touch screen.

[0056] In one embodiment, the game information may be a random number which represents the result of the game, information related to gaming device jackpots, or player credits. In another embodiment, the gaming information may be multimedia, sound and images, including, in one embodiment, video, representing the execution of a game. In another embodiment, game information may also be software for execution on a remote player device **110** or on any element of a remote player interface **300**, such as a remote control **395**, which interactively presents the game through the remote player interface **300**.

[0057] To enable regulatory conformance of the gaming system, gaming device users must be geographically within an approved jurisdiction and of legal age in the jurisdiction. In a regulated gaming environment, such as a gaming floor, physical control of the premises allows enforcement of this requirement. For remote player devices **110** not operated in the regulated gaming environment of a gaming floor, the age of the user of a remote player device **110** must be verified before game information is provided by a host gaming device **160**. Credentials may be received from a user using a variety of security devices and compared to records, such as in a database **170** to confirm identity and thus age of the user.

[0058] To ensure compliance with regulatory requirements, a gaming system **100** may identify the geographic location of a remote player device **110**. As discussed above, a network **120** may be a closed-loop network **120** whose devices are thereby identified in geographic location by the location of that network. Other embodiments may employ a GPS system on the remote player device **110** to provide the geographic location of the device **110**. In other embodiments, the remote network **120** may be a mobile communications network which provides the geographic location of network clients, such as a remote player device **110**.

[0059] In one embodiment, a security device may be a smart card reader **380** that is coupled to the remote player device **110**. In embodiments using a smart card reader, a user inserts a smart card into the reader which provides credentials sufficient to verify the age of the user. In

one such embodiment, indicia present on the smart card reader are compared to records in a casino database **170** to verify the age of the user.

[0060] In other embodiments, a remote player device **110** may be coupled to a biometric identity device **390**, such as a fingerprint scanner. In one embodiment, information received from the biometric identity device **390** may be compared to records in a casino database **170** to verify the age of the user. In other embodiments a biometric identity device **390** may be retinal scanner or facial recognition device.

[0061] In some embodiments, the controls **320** may include an input device (not pictured in **FIG. 3**) coupled to a remote player device **110** to receive a password or PIN as a security device. The password or PIN may be compared to information, such as records in a casino database **170** to verify the identity, and thus the age, of the remote player device user. For example, the input device may be a keyboard, rollerball, pen and stylus, mouse, or voice recognition system. The input device may also be a touch screen associated with an output device. The user may respond to prompts on the display by touching the screen. The user may enter textual or graphic information through the input device. The controls **320** may be coupled to a display **310** in the form of a personal computer, a television, a television with a set-top box, a handheld computer, or a telephone, fixed or mobile, handset.

[0062] Embodiments of a remote player device **110** may be a television, a cable interactive set-top box, a remote control, a personal computer, or a mobile or fixed telephone handset. Another embodiment may comprise a handheld computer coupled to a fixed or preferably wireless network. Also, a host gaming device **160** may also be a remote player device **110**.

[0063] In one embodiment, a remote gaming device **110** may be in a location approved by a gaming agency with controls **320** and display **310** which match the appearance of a stand-alone gaming device. For example, a remote gaming device **110** may be appear to be a slot machine with an arm control **320**, a mechanical or electronic "slots" display **310**. In other embodiments, remote gaming devices **110**, regardless of location, may have controls and displays which match the appearance of a host gaming device **160**. This may include control devices coupled to personal computers or set-top boxes which may be customized for one or more games.

[0064] Indicia of identity and age received from a smart card reader **380**, biometric identity device **390**, or user entry of a password may also be compared to records stored on the remote player device **110**. For example, a remote player device **110** in a hotel room may be programmed by hotel staff to store identification information for eligible guests in the room containing the gaming device without the identification information being included in the casino database **170**. In these embodiments, access to the remote player device thus may itself be an indicium of legal age to the central gaming controller **180** or host gaming device **160**.

[0065] A central gaming controller **180** may manage the interaction of remote player devices and host gaming devices. The central gaming controller **180** may comprise one or more server computers or may be integrated with a host gaming device. In the embodiment depicted in **FIG. 10**, the application server **1027** and request processing servers **1023** comprise the central gaming controller **180**.

[0066] One embodiment of a gaming system **100** comprises a single remote player on a remote player device **110** establishing a gaming session on a host gaming device **160** with no local player using the host gaming device **160**. In this embodiment, the local controls **220** of a host gaming device **160** become disabled for local play during the remote gaming session. Correspondingly, a host gaming device **160** in this embodiment also becomes unavailable for remote play while a player uses the local controls **220** to use the host gaming device **160**.

[0067] Another embodiment comprises a single player using the local controls **220** of a host gaming device **160** and a single remote player on remote player device **110** concurrently. Thus in this embodiment, the local game controls **220** on the host gaming device **160** are not disabled during the remote gaming session.

[0068] Another embodiment of the gaming system **100** comprises a single local player of the host gaming device **160** and multiple remote players on a plurality of remote player devices **110** having concurrent gaming sessions. A similar embodiment comprises multiple concurrent remote players and no local players on the host gaming device **160** because the local controls **220** may be disabled during the remote gaming sessions.

[0069] Another embodiment of a gaming system **100** comprises one or more remote player devices **110** which are physically located in a location approved by a gaming agency and networked to a host gaming device **160** that hosts both local and remote player sessions. Players physically located in the casino may occupy a remote player device **110** and play the games provided by the host gaming device **160**. Concurrently, gaming sessions to one or more remote player devices **110** physically located outside the casino may be provided. Thus, in this embodiment, players may concurrently play using the host gaming device **160**, a physically remote player device **110**, or a remote player device **110** in a location approved by a gaming agency.

[0070] Another embodiment of the invention comprises one or more remote player devices **110**, physically located in a location approved by a gaming agency and at least one host gaming device **160**. In this embodiment, player sessions may only be established on a host gaming device **160** from a remote player device **110** if that remote player device **110** is physically located in a location approved by a gaming agency, such as a casino gaming floor. Players may also play the host gaming device **160** using local controls **220** concurrently with remote player sessions.

Thus, in this embodiment, players may concurrently play using the host gaming device **160**, or a remote player device **110** that is located in a location approved by a gaming agency.

[0071] In each of the above disclosed embodiments, the remote player devices **110** that may concurrently receive game information from a host gaming device **160** may be limited to a predetermined number that is determined by a regulatory gaming agency for the jurisdiction.

[0072] A remote player device **110** that is physically located in the casino in a location approved by a gaming agency, such as a casino gaming floor, may differ from a remote player device physically located outside the casino floor. In one embodiment, a remote player device **110** located in a location approved by a gaming agency resembles the appearance of a stand-alone gaming device and may thus be similar in appearance and operation to the host gaming device **160**.

[0073] In one embodiment, a remote player device **110** requests game data from the host gaming device **160** by sending a request for a game to a central gaming controller **180**. The central gaming controller **180** then transmits the request for a game to the host gaming device **160**. The host gaming device **160** receives the request and provides game data to the central gaming controller **180** that passes to the remote player device **110**. That information is then translated into a game by the remote player device **110** and displayed or performed to the player. The remote player device **110** may contain on-board hardware and software that may be required to present a game. The regulated portion of hardware and software required to execute a game, such as a random number generator, is on the host gaming device **160** and the information transmitted to the remote player device **110** each time a game is requested.

[0074] Gaming devices according to an embodiment of the invention may use mixed-protocol delivery systems for game content and game results. Game information and results comprising image and sound data may be delivered by packet based network protocols such as IP datagrams, by connection-oriented network protocols, or by a combination of both. Streaming media protocols may also be employed. During a given gaming session, these communication methods may be used interchangeably or concurrently.

[0075] In one embodiment, communication over the data networks **120**, **140**, or **150**, may use IP datagrams to package image and sound data comprising a host gaming device interface and display, encrypts it, and delivers it to the remote player device.

[0076] Internet Protocol (IP) is a network layer protocol used by many corporations, governments, and the Internet worldwide. IP is a connectionless network layer protocol that performs addressing, routing and control functions for transmitting and receiving datagrams over a network. The network layer routes packets from source to destination. An IP datagram is a data packet comprising a header part and a data part. The header part includes a fixed-length header

segment and a variable-length optional segment. The data part includes the information being transmitted over the network. As a connectionless protocol, IP does not require a predefined path associated with a logical network connection. Hence, IP does not control data path usage. If a network device or line becomes unavailable, IP provides the mechanism needed to route datagrams around the affected area.

[0077] The remote player interacts with a game through a remote player interface **300**. A remote player device **110** may send commands back to the central gaming controller **180** as, in one embodiment, IP datagrams. The IP datagrams are interpreted by the central gaming controller **180** and used to proxy user interface interaction between the gaming device and the remote player. Game results may also be packaged as IP datagrams and delivered to the remote player through this method.

[0078] Alternative embodiments may use connection-oriented protocols such as TCP, or a combination of connection oriented protocols and connectionless packet protocols such as IP. Transmission Control Protocol (TCP) is a transport layer protocol used to provide a reliable, connection-oriented, transport layer link among computer systems. The network layer provides services to the transport layer. Using a two-way handshaking scheme, TCP provides the mechanism for establishing, maintaining, and terminating logical connections among computer systems. TCP transport layer uses IP as its network layer protocol. Additionally, TCP provides protocol ports to distinguish multiple programs executing on a single device by including the destination and source port number with each message. TCP performs functions such as transmission of byte streams, data flow definitions, data acknowledgments, lost or corrupt data re-transmissions, and multiplexing multiple connections through a single network connection. Finally, TCP is responsible for encapsulating information into a datagram structure.

[0079] Static content comprising the game interface or other elements of the game may be delivered to the remote player device **110** and stored on the remote player device. This delivery of content may use a mixed-protocol as described above. A static image may be a fixed image or an animation activated by the remote control device. Such images may further be overlaid with additional game content such as images and sound that is delivered dynamically during game play.

[0080] In an embodiment of the invention, a central gaming controller **180** converts image and sound data comprising the gaming device interface and display from the remote machine into a data stream (for example but not limited to MPEG-2), encrypts it, and delivers it to the remote player device **110**. The remote player interacts with the game using the remote player interface **300** to send commands back to the central gaming controller as IP datagrams. The IP datagrams may be interpreted by the central gaming controller **180** and used to proxy user interface

interaction between the gaming device **160** and the remote player device **110**. Game results may also be packaged as a data stream and delivered to the remote player through this method.

[0081] **FIG. 4** is a flowchart depicting a method employed when a command message is acknowledged by a central gaming controller **180** according to one embodiment of a gaming system **100**. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Note that in some embodiments, not all messages received by the central gaming controller **180** need be acknowledged. Starting at step **401**, a command message is sent to the central gaming controller **180** by a host on the network. The host may be remote player device **110** used for remote play, or other authorized network devices. Next, at step **405**, a qualified request message is received by the central gaming controller **180**. Moving to step **410**, the message is then recorded in a database. The database may be a casino database **170**. Proceeding to step **415**, the message is processed and a response prepared. Next at step **420**, the response is recorded in the database. Moving to step **425**, the response is sent back to the requesting device. At step **430**, a test to determine whether an acknowledgment of the message has been received is made. Continuing at step **435**, if the timeout value has passed control continues to step **440**, if the timeout period has not expired control returns to step **430**. Moving to step **440**, whether the message has not been acknowledged by the originating host is tested. If acknowledgement has been received, control proceeds to **445**, if not control proceeds to step **455**. At step **445**, the message status is recorded as "RECEIVED" and the process moves to the end state. Returning to step **455**, where the process flow continues following an unacknowledged message, the system sends a status request message to the sending host. Next, at step **460**, if the originating device responds to the message then flow continues to step **465**, otherwise control moves to step **480**. Moving to step **465**, a diagnostic message is sent to query whether the originating device is ready to receive the original message. Next at step **470**, if the originating host responds that it is ready to receive the original message, then control transfers to step **425** but if the originating host fails to respond then control moves to step **480**. Moving to step **480**, the status of the originating host is set to offline until such time as the originating host can respond or reinitializes, and the process moves to the end state.

[0082] **FIG. 5** is a flowchart depicting a method used when a request for a remote gaming session is received, when playing a game, and when terminating the remote gaming session. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at **510**, a request for a remote gaming session is received as a request for a secured encrypted connection to the central gaming controller **180**. Included in the request are the remote players security credentials in the form of a security certificate, for example, X.509 certificate. Next at **515**, the security credentials are authenticated.

This authentication may be performed by submitting the security certificate to a certificate authority for authentication. Moving to **520** if the player is not authenticated, control reverts to **515**. Continuing to step **525**, the central gaming controller **180** establishes a secure encrypted connection with the remote player device **110**. Next, at step **530**, if required the player transfers funds to use during the remote gaming session. Continuing to step **535**, the player then chooses a host gaming device **160** to play. Next, at step **540**, in one embodiment, when a host gaming device **160** is chosen for remote access play the local controls of the host gaming device **160** is disabled to prevent local play. Moving on to step **545**, a remote play session is opened on the host gaming device **160**. Continuing at step **550**, after a remote gaming session is established on the host gaming device, the central gaming controller **180** sends a message to the host gaming device **160** instructing it to displace representations of its user controls, graphics and sounds to the remote player interface **300**. The central gaming controller **180** directs the host gaming device **160** controls over the secured encrypted connection and manages the remote gaming session. Next at step **555**, the remote player may transfer funds from a player account to the host gaming device **160** for wagering on the host gaming device **160**. Moving to step **560**, a wager is made. Next at, **656** a game is played. Continuing to step **570**, the central gaming controller **180** delivers the results of the game to the remote player interface **300**. Next at step **571**, the remote player may repeat the sequence from step **560**. Next at step **575**, if there are any credits on the host gaming device **160** when the player terminates the remote gaming session, the central gaming controller **180** automatically transfers those credits back to the players account. Moving to step **580**, the central gaming controller **180** terminates the remote gaming session with the host gaming device **160**. Continuing to step **585**, the central gaming controller **180**, enables local play on the host gaming device **160**, control is then transferred to the end state.

[0083] **FIG. 7** is a flowchart depicting a method for a host gaming device **160** to become connected to a network using security certificates and a certificate authority. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at **705**, a host gaming device **160** starts the process of connecting to a network as part of its initialization mode. Continuing to step **720**, at a point during initialization, the host gaming device **160** submits a security certificate to a certificate authority for authentication. Moving to step **725**, the certificate authority authenticates the certificate. Next at step **730**, if the certificate is authenticated control moves to step **740**, otherwise control moves to step **735**. Continuing on to step **740**, the host gaming device **160** is permitted onto the network and the process moves to its end state. Returning to step **735**, if the certificate is not authenticated then a log entry is generated and the host gaming device **160** is not permitted onto the network.

[0084] Embodiments according to the invention may also use instant messaging and/or email messaging systems. Typical instant messaging systems permit computer users to type text messages and add file attachments into a host program and have the host program automatically deliver the text through a virtual direct connection to a target computer. Public email systems are those available for general use, as over the internet. Examples of public instant messaging systems in use today include but are not limited to chat programs like IRC, MSN Messenger, AOL Instant Messaging and a host of others. Private systems are restricted to a casino or gaming system. Typical email messaging systems permit messages and file attachments to be entered into a host program and addressed to a specific recipient on a network. These messages may not be delivered directly to the addressee, but are sent to a storage area where the recipient may retrieve the message at a time of their own choosing.

[0085] Gaming devices **160** and remote player devices **110** routinely exchange information with a central gaming controller **180** for, typically, but not limited to, account and game tracking functions. In one embodiment of the invention, devices may send and receive data over public and/or private email-type messaging systems. The message body of any particular message may vary, using a proprietary or non-proprietary format, and may be encrypted or in human-readable format. Messages may be sent at a time determined by the message originator, typically, but not exclusively, in response to an event. The recipient of the message may be any device capable of consuming the message. The message recipient may be responsible for checking the prescribed message storage area for messages addressed to it. The message recipient may reply to a received message or may generate a new message to a specific recipient, a group of recipients, or all recipients connected to the system. Remote player devices **110** may periodically check for new messages in the system and process them.

[0086] According to one embodiment of the invention, gaming devices **160** may send and receive data over public and/or private instant messaging systems. The message body of any particular message may vary, using a proprietary or non-proprietary format, and may be encrypted or in human-readable format. Messages may be sent at a time determined by the message originator, typically, but not exclusively, in response to an event. The recipient of the message may be any device capable of consuming the message. Both the gaming device **160** and the message recipient may queue incoming and outgoing messages. Queuing messages permits devices involved in instant message communications to accept new messages while processing received messages and to generate outgoing messages for delivery as system resources permit.

[0087] In another embodiment according to the invention, devices may send and receive data over public and/or private email-type messaging systems. The message body of any particular message may vary, using a proprietary or non-proprietary format, and may be encrypted or in human-readable format. Messages may be sent at a time determined by the message

originator, typically, but not exclusively, in response to an event. The recipient of the message may be any device capable of consuming the message. The message recipient may be responsible for checking the prescribed message storage area for messages addressed to it. The message recipient may reply to a received message or may generate a new message to a specific recipient, a group of recipients, or all recipients connected to the system. Gaming system devices **110** and **160** may periodically check for new messages in the system and process them.

[0088] Embodiments according to the invention may present promotional messages during remote play sessions. Messages sent may comprise instant messages for promotional information, notification of events, or other pieces of information that can be communicated electronically. Promotional messages may also include jackpot and bonus information. A promotional message server may be used to construct and send promotional messages. In one embodiment, a computer server, comprising a central gaming controller **180**, may also comprise the promotional message server.

[0089] A user interface may be provided to construct message templates. These templates are then used to construct a deliverable message. Embodiments of a message template may comprise a timeout value that indicates how long the message is to be displayed, the frequency with which the message displays in relationship to other scheduled messages, a limitation value that prevents the message from being displayed too often and an expiration date after which the message is no longer used in the system. Custom graphics and display modes may also be specified for a message template, such as icons, animations, and various scrolling methods.

[0090] A remote player device **110** may present a promotional message for an amount of time determined from the contents of the promotional message. The promotional message may be presented to a user in conjunction with gaming information. The presentation may contain icons, animations, and various scrolling methods. In addition multimedia such as sound and video may be utilized.

[0091] The promotional message server may also provide a dynamic data insertion function to insert player information such as the player's name or birthday into a message prior to delivery. Dynamic data insertion may be accomplished through the use of specialized tags within the message body. When encountered, the tag characters within the message are replaced with data from a related data source. The specific tag's character sequence is associated with a specific subset of the data in the data source, such as a player's name in a data source of player information. Processing comprises reading the data source and its subsets, parsing the specialized tags from the message template, indexing the data source and replacing the tag characters with data from the data source to create a deliverable message for each item in the data source. This sequence continues until all the data in the data source has been included in messages. The messages may be delivered

as they are created or queued until all items in the data source have been used to create messages, then all messages may be sent at the same time.

[0092] In one embodiment, a gaming system **100** may comprise a card reader installed in a gaming device **280** or remote player device **380**. Promotional messages may be based on information obtained about a player that is either stored on a card inserted into the card reader or by using identifying information from the card to access the casino's proprietary database systems **170**.

[0093] One embodiment of the promotional message server may also provide a dynamic grouping function in which a subset of players currently gaming is selected and collected into a group. Casino operators may address a message template to this dynamic subset of current players and send a specific message or messages exclusively to that subset. These messages may be constructed using the dynamic data function. The dynamic grouping function may use criteria specified by the casino and available in the casino's proprietary database systems **170** and criteria generated by live gaming activity to establish a profile that players must meet to be selected. The criteria may comprise loyalty points the player has earned, a player's birthday, length of current gaming session, or other data that is collected by the casino on players and gaming activity.

[0094] The dynamic grouping function may be scheduled to run at time intervals determined by the casino. Each time the interval is reached the promotional gaming server searches for current players that meet the established criteria and builds a dynamic group then sends the assigned message to that group of players exclusively. The gaming devices **160**, remote player device **110**, card readers installed in gaming devices **280** and remote player device **380**, and casino proprietary database systems **170** may provide data to search for players that meet the specified criteria and assemble them into a dynamic group.

[0095] In one embodiment of the invention, the casino may advertise a casino sponsored event. The casino may use a user interface display to construct the message and schedule its delivery start time, duration of the message e.g. number of hours, days, weeks, or months that the message will run, and specific values that weight the message's delivery interval and frequency amongst other promotional messages scheduled in the system. The style of message may also be specified, including but not limited to flashing, scrolling, scroll direction, and the use of custom graphics. The casino operator may also specify the criteria players must meet to receive the message. Once the casino operator accepts the promotional message configuration, the promotional message server may deliver the message across a network to remote player devices **110** or host gaming systems **160**.

[0096] An embodiment of a gaming system **100** may provide for the electronic transfer of funds to a gaming device for the purpose of making wagers. When a player chooses a gaming device **160** to play remotely, funds are electronically transferred to the gaming device and

appear as credits on the gaming device **160**. The player then uses those credits to make wagers on game outcome. When the player is finished, the system transfers any remaining credits on the gaming device back to the source of funds or to an alternate storage. Limitations on the amount of funds transferred may be set for a minimum or maximum amount transferred, a minimum or maximum amount transferred within a given time period, or a minimum or maximum amount transferred for the life of the account, or a combination of any of these. The limitation may also vary between accounts, permitting one account to have a different limitation on transfers than another. When the limitation set is reached, further transactions are prevented until the limitation is resolved. The limitation may be set voluntarily by the player, by the casino, or by a gaming authority. Limitations may be set for all players within a specific jurisdiction or for selected players only. The source of funds used by a player for remote access play may be maintained in a database located on a computer that is directly or indirectly connected to the casino network **150**.

[0097] **FIG. 6** is a flowchart depicting an embodiment of the invention whereby a player transfers funds from a bank account to a player account for the purpose of wagering on games. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at step **601**, a remote player device **110** initiates an electronic funds transfer. Continuing to step **605**, the central gaming controller **180** verifies the remote players banking information. Next at step **610**, if the banking information is valid, control transfers to step **620**, otherwise control moves to step **615**. Continuing at step **620**, the remote player device **110** prompts the player to enter the amount of the transfer. Moving to step **615**, the central gaming controller **180** verifies fund availability. Next at step **630**, if funds are not available control moves to step **615**. Otherwise, control moves to step **635**, where, in a one embodiment, the central gaming controller **180** may consult a casino database **170** and determine whether the remote players total gaming activity exceed limits placed on that activity. Next at step **640**, if the limit is reached control moves to step **615**. Otherwise, continuing at step **645**, the transfer is completed. Returning to step **615**, if the players banking information is not correct, funds are not available or a transfer limit is reached, then the transaction is canceled and control transferred to the end state.

[0098] An embodiment of a gaming system **100** may record the interaction between remote players and host gaming devices **160** during remote gaming sessions for the purpose of resuming games in-progress after a communications failure. If at anytime the connection between the remote player and a gaming device becomes unavailable, the system has a sufficient record of player positions to restart the game as at the time just prior to the failure. Thus an embodiment of a gaming system may record, transfer, and reinstate on a like device an encrypted block of data representing the precise state of a particular gaming device **160** at the time that the data block is requested. The encrypted block of data is generated by the gaming device **160** and transferred

using a communication protocol. The encrypted block of data may be used to continue a game in-progress that was interrupted by a gaming device **160** failure or other system failure. In addition, the payer's wager and credit data along with gaming payout data may be included in the data block. The data may also be transported to another gaming device **160** for the purpose of completing an interrupted game or resuming a gaming session. The destination gaming device **160** receives the encrypted block of data, decrypts it, and loads the game state into its own systems, allowing a game in-progress to complete or a game session to continue.

[0099] **FIG. 8** is a flowchart depicting a method for a gaming device **160** to build and deliver an encrypted block of data representing the complete state of the gaming device. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at **805**, a central gaming controller **180** sends a message to a host gaming device **160** to initiate the build of the encrypted data block. Continuing to step **10**, the gaming device responds with an acknowledgement. Next, at step **815**, the gaming device **160** begins the build process. When finished with the build and encryption process, at step **820**, the gaming device saves the data block to non-volatile memory in the gaming device. Continuing to step **825**, the gaming device **160** sets an indication that may be queried by the central gaming controller **180** as to the status of the build/encryption process. Moving to step **830**, the central gaming controller **180** checks the gaming device's status. Next at step **835**, if the build/encryption process is complete, control continues to step **840**, otherwise control returns to step **830**. Moving to step **840**, the central gaming controller **180** retrieves the data block from the gaming device **160**. Next, at step **845**, when the central gaming controller **180** has retrieved the data block it saves the data block to a database. Continuing to step **850**, the central gaming controller then checks the validity of the saved data block. If the data block is not verified then the central gaming controller initiates another retrieval by returning control to step **840**.

[0100] **FIG. 9** is a flowchart depicting a method for retrieving an encrypted block of data representing the state of a gaming device from a database and loading the encrypted block into a gaming device. Depending on the embodiment, additional steps may be added, others removed, steps merged, or the order of the steps rearranged. Starting at step **905**, the central gaming controller **180** retrieves a saved encrypted data block from the database. Next at **910**, the controller **180** verifies the integrity of the data block. Continuing to **915**, if the data block is verified, control continues to step **925**, if not control moves to step **920**. Returning to the flow of control at **925**, the central gaming controller **180** notifies a target gaming device **160** of an intent to upload the data block. Next, at step **930**, the target gaming device **160** responds with a message indicating whether it is available for the upload. Moving to step **935**, if the target device is ready control moves to step **940**, if not control is diverted to step **920**. Returning back to step **940**, the encrypted data

block is uploaded to the target gaming device **160**. Next at step **945**, the target gaming device **160** verifies the encrypted data block. Moving on to step **950**, if the data block was verified, the gaming device moves on to step **955**, if not verified, control moves to step **920**. Continuing on to step **955**, the gaming device **160** initializes its state to the new state defined by the received data block and the process moves to the end state. Returning back to step **920**, which is reached on error conditions, an error log entry is generated and the requesting process notified.

[0101] **FIG. 10** is a block diagram depicting one embodiment of a gaming system according to the present invention wherein the host gaming devices **160** are available for remote play over a network that connects to a cable modem termination system. The cable modem termination system **1005** is located at the head-end of a cable television provider who makes broadband network connectivity available as a service to its customers. Cable television customers who subscribe to broadband or digital television services access the remote network **120** through a digital home communications terminal (DHCT) **1000**. The remote player device **110** may be a stand-alone cable modem or a set-top box that includes a cable modem and a digital television broadcast decoder. The DHCT **1000** may, in some embodiments include the remote player device **110**. The remote player interface **300** may be any device or combination of devices that remote players operate to interact with the remote player device **110**, for example, a television with remote control or a personal computer. To connect to the central gaming controller **180**, a remote player uses the remote player device **110** to send messages, using, in one embodiment, IP datagrams, through the DHCT and the cable modem termination system **1005**. The cable modem termination system **1005** uses a network router **1004** to route the IP datagrams over a network connection **140** to the central gaming controller **180**. The backbone network connection **140** can be any type of network connection such as a dedicated T1 or fiber optic over which network traffic can be exchanged. In preferred embodiments the backbone network **140** is part of a closed loop network. However, in other embodiments, a public network such as the Internet may form at least a portion of the backbone network. Encryption of the data may be performed, either at the endpoints such as remote player device **110**, at a host gaming device **160**, at a central gaming controller **180**, over network **120**, or only over network **140**.

[0102] Network traffic from the remote network **120** and backbone network **140** travels over a number of virtual local area networks (VLAN) configured using a multilayer network switch **1022**. Segmenting the internal network into VLANs creates security zones whereby only permitted network traffic appears on a given VLAN.

[0103] IP datagrams are received over the backbone network **140** through network router **1020** and firewall **1021**. Network router **1020** filters IP datagrams that are not coded with the configured port for access to the gaming network **150**. If an IP datagram passes the network

router **1020** it then must pass the firewall **1021** in order for the IP datagram to be processed by the request processing server(s) **1023** which comprise a portion of a central gaming controller **180** in this embodiment.

[0104] The firewall **1021** has two network interfaces **1050, 1051**; the external-facing network interface **1050** is connected to the router **1020** and the internal-facing network interface **1051** is connected to the multilayer network switch **1022**. In this configuration the firewall **1021** acts as a type of network switch that may perform additional security checks on the IP datagram, then move the datagram to the internal-facing network interface **1051** where the multilayer network switch **1022** moves the datagram to the VLAN where request processing server(s) **1023** are located.

[0105] Each request processing server **1023** has two network interfaces **1052, 1053**, both connected to the multilayer network switch **1022**. Each network interface **1052, 1053** may be configured on a different VLAN of the multilayer network switch **1022**. The multilayer network switch **1022** moves IP datagrams between the firewalls **1021** internal-facing network interface **1051** and the request processing server(s) **1023** external-facing network interface **1052**. This embodiment provides a layer of protection for the host gaming devices **160** in the event that the request processing server(s) **1023** are compromised.

[0106] When an IP datagram arrives at a request processing servers **1023** external-facing network interface **1052**, the request processing server **1023** interprets the IP datagram and issues commands over its internal-facing network interface **1053** to the application server **1027**. The request processing server **1023** may reject invalid commands or make other determinations as to the appropriateness of a request that prevent the request from being passed on to the application server **1027**. Likewise, the request processing server **1023** may request data from the application server for use in building its own response to the request, which may or may not require an acknowledgement from the remote player device **110** as described below.

[0107] Command messages received by the application server **1027** may be recorded in a database using the database server **1025**. The application server **1027** then executes the command, which may include any function relevant to the operation of the host gaming device **160** and may or may not return data to the request processing server **1023** for delivery to the remote access player. In one embodiment, the database server **1025** may comprise the casino database **170**. In other embodiments the database server **1025** and the application server **1027** may comprise the casino database **170**.

[0108] Some commands may require the remote player device **110** to acknowledge the receipt of information sent from the central gaming controller **180**. For commands that require acknowledgement, the central gaming controller **180** queues the status of the messages that are sent to the remote player device **110**. The status of messages sent but not acknowledged is stored in a

database as "open" using the database server **1025**. When the remote player device **110** receives the message it sends an acknowledgment message back to the central gaming controller, which in turn marks the message in the database as "closed"; indicating that the message has reached its destination and has been acknowledged. If the message is not acknowledged within a specified timeout, the message is resent. **FIG. 4** depicts the sequence of events for the receipt, queuing and response loop for qualifying messages.

[0109] Recording of messages between the remote player device **110** and a host gaming device **160** by the central gaming controller **180** allows each game or transaction, on both the host gaming device **160** and remote player device **110**, to be recorded. This allows each host gaming device or remote player device to be individually auditable using standard accounting practices in the gaming jurisdiction where the game is located. In one embodiment, a third party, such as a gaming authority may be sent the records of games and transactions online by the gaming system **100**.

[0110] When the application server **1027** receives a command request that requires communication with gaming devices **160, 161, 162** it connects to those devices using terminal server **1035**. Terminal server **1035** provides Ethernet connectivity to the RS232 serial interface **1054** of the game. Through that interface the remote player device **110** communicates to the gaming devices **160, 161, 162** using a communications protocol supplied by the gaming machine manufacturer. The protocol includes commands that permit the remote operation of the gaming devices **160, 161, 162** and the reporting of game results so that the application server **1027** can control remote play.

[0111] **FIG. 11** depicts a more detailed network diagram of one embodiment of network **150** and elements of a gaming system **100** connected to network **150**. This includes a host gaming device **160**, and a database **160**. As in the embodiment of **FIG. 10**, a central gaming controller **180** may be comprised of request processing servers **1027** and an application server **1023** connected to one or more VLANs of network **150**.

[0112] While the above detailed description has shown, described, and pointed out novel features of the invention as applied to various embodiments, it will be understood that various omissions, substitutions, and changes in the form and details of the device or process illustrated may be made by those skilled in the art without departing from the spirit of the invention. The scope of the invention is indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

WHAT IS CLAIMED IS:

1. A gaming system comprising:

a data network, wherein the data network is comprised of at least one logical segment, wherein at least one logical segment is a closed-loop network;

a host gaming device connected to the data network, the gaming device configured to execute at least one game wherein the host gaming device in a location approved by a gaming agency;

a plurality of remote player devices connected to the closed-loop network; and

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device and on each of the plurality of remote player devices,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device, and

wherein the host gaming device is configured to provide game information to a predetermined number of permitted remote player devices.

2. A gaming system comprising:

a data network;

a host gaming device connected to the data network, the gaming device configured to execute at least one game; and

a plurality of remote player devices connected to the data network,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device,

wherein the host gaming device is configured to provide game information to a predetermined number of permitted remote player devices, and

wherein at least one of the plurality of remote player devices is permitted based upon, at least in part, the geographic location of the remote player device.

3. The system of Claim 2, wherein the predetermined number is determined by a gaming agency.

4. The system of Claim 2, wherein at least one of the plurality of remote player devices is permitted based upon, at least in part, an age of a user of the remote player device.

5. The system of Claim 2, wherein the data network is, at least in part, the Internet.

6. The system of Claim 2, wherein the data network is comprised of at least one logical segment.

7. The system of Claim 6, wherein at least one logical segment is a closed-loop network.

8. The system of Claim 6, wherein the host gaming device is configured to identify the geographic location of a remote player device based, at least in part, on a logical segment corresponding to the remote player device.

9. The system of Claim 2, wherein the host gaming device is configured to identify the geographic location of a remote player device based, at least in part, on information provided by a mobile communications network.

10. The system of Claim 2, wherein the host gaming device is configured to identify the geographic location of a remote player device based, at least in part, on information provided by a GPS device.

11. The system of Claim 2, wherein the data network is, at least in part, the casino intranet.

12. The system of Claim 2, wherein the data network is, at least in part, the hotel intranet.

13. The system of Claim 2, wherein the data network is, at least in part, a wireless network.

14. The system of Claim 2, wherein the host gaming device is in a location approved by a gaming agency.

15. The system of Claim 2, wherein the host gaming device includes at least one game control configured to provide local use.

16. The system of Claim 15, wherein the host gaming device is configured to disable local use when the host gaming device is providing game information to a remote player device.

17. The system of Claim 2, wherein each of the remote player devices is in a location approved by a gaming agency.

18. The system of Claim 2, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

19. The system of Claim 2, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

20. The system of Claim 2, wherein the gaming information is, at least in part, software.

21. The system of Claim 2, wherein at least one remote player device is coupled to a credential device configured to receive information relating to a user of the remote player device.

22. The system of Claim 21, wherein the information relating to the user is an age of the user.

23. The system of Claim 21, wherein the information relating to a user is a password that is input by the user.

24. The system of Claim 21, wherein the credential device is an input device configured to receive a password from the user.

25. The system of Claim 21, wherein the credential device is a smart card reader.

26. The system of Claim 21, wherein the credential device is a biometric device.

27. The system of Claim 28, wherein the biometric device is a fingerprint reader.

28. The system of Claim 21, further comprising: a database configured to provide information associated with each of a plurality of users of the gaming system.

29. The system of Claim 28, wherein the information associated with a user includes a password.

30. The system of Claim 28, wherein the information associated with a user includes an age of the user.

31. The system of Claim 28, wherein the information associated with a user includes information relating to a fingerprint of the user.

32. The system of Claim 2, wherein the host gaming device is configured to encrypt the game information.

33. The system of Claim 2, wherein the game information is provided via a public email system.

34. The system of Claim 2, wherein the game information is provided via a private email system.

35. The system of Claim 2, wherein the game information is provided through a public messaging system.

36. The system of Claim 2, wherein the game information is provided through a private messaging system.

37. A gaming system comprising:

a data network;

a host gaming device in a location approved by a gaming agency connected to the data network, the gaming device configured to execute at least one game; and

a plurality of remote player devices connected to the data network.

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device, and

wherein the host gaming device is configured to disable local use of the gaming device when providing game information to the remote player devices.

38. The system of Claim 37, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

39. The system of Claim 37, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

40. The system of Claim 37, wherein the host gaming device is configured to allow no more than a predetermined number of remote player devices to concurrently receive game information provided by the host gaming device.

41. A gaming system comprising:

gaming means for executing at least one game, the game providing game information during execution;

local access means for providing local access to the game information for a user in a location approved by a gaming agency;

player means for receiving game information, presenting game information and providing at least one game control;

means for providing the game information over a data network to a predetermined number of receiving means;

means for determining the location of the receiving means; and

means for disabling the local access means.

42. The system of Claim 41, further comprising:

a means for creating an auditable record of gaming transactions on the gaming means.

43. The system of Claim 41, further comprising:

a means for creating an auditable record of gaming transactions on the playing means.

44. The system of Claim 41, wherein the predetermined number is determined by a gaming agency.

45. The system of Claim 41, further comprising:

means for receiving information associated with a user of the gaming system.

46. The system of Claim 45, wherein the information associated with the user includes the age of the user.

47. The system of Claim 45, wherein the means for receiving information associated with a user is a smart card reader.

48. The system of Claim 45, wherein the means for receiving information associated with a user is a biometric identity device.

49. The system of Claim 45, wherein the means for receiving information associated with a user is a keyboard configured to receive a password.

50. The system of Claim 45, wherein the user information includes, at least, a credential for authentication of the user.

51. The system of Claim 50, further comprising:

means for authenticating the credential coupled to means for limiting access to the gaming system.

52. A method of remotely accessing a host gaming device on a remote player device comprising:

establishing access to the host gaming device from the remote player device through a data network;

receiving gaming related information from the host gaming device through the data network;

presenting the gaming related information to a player;

receiving at least one control signal from the player;

sending the control signal to the host gaming device through the data network; and

disabling local use of the host gaming device.

53. The method of Claim 52, further comprising:

recording each gaming transaction occurring on the remote player device.

54. The method of Claim 52, further comprising:

providing a geographic location of the remote player device.

55. The method of Claim 52, further comprising:

providing information relating to a user of the remote player device to the gaming device.

56. The method of Claim 55, wherein the information relating to a user includes, at least, the age of the user.

57. The method of Claim 52, further comprising:

allowing no more than a predetermined number of remote player devices to concurrently establish a gaming session on the gaming device.

58. A method of providing remote access to a host gaming device comprising:

verifying a geographic location of a remote player device;

establishing a gaming session on a host gaming device from a remote player device through a data network;

receiving at least one control signal from the remote player device through the data network;

sending gaming related information from the gaming device through the data network;

59. The method of Claim 58, further comprising:

recording each gaming transaction occurring on the host gaming device.

60. The method of Claim 58, further comprising:

receiving information relating to a user of the remote player device on the gaming device.

61. The method of Claim 60, wherein the information relating to a user includes, at least, the age of the user.

62. The method of Claim 58, further comprising:

disabling local access to the gaming device.

63. The method of Claim 58, further comprising:

allowing no more than a predetermined number of remote player devices to concurrently establish a gaming session on the gaming device.

64. A method of resuming an interrupted gaming session on a first host gaming device comprising:

generating a gaming state of the gaming session on the first gaming device;

encrypting the gaming state;

transporting the encrypted gaming state from the first gaming device;

transporting the encrypted gaming state to a second gaming device;

decrypting the gaming state on the second gaming device; and

loading the game state into a second gaming device to resume the gaming session.

65. A gaming system comprising:

a data network;

a first host gaming device connected to the data network, the gaming device configured to:

execute at least one game,

generate a gaming state based on execution of at least one game;

encrypt the gaming state; and

send the encrypted gaming state over the data network;

a second host gaming device connected to the data network, the gaming device configured to:

receive the encrypted gaming state over the data network;

decrypt the gaming state;

resume executing at least one game from the gaming state; and

a plurality of remote player devices connected to the data network,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device.

66. The system of Claim 65, wherein the remote player devices are each configured to receive an encrypted gaming state from a first gaming device over the data network and to send the encrypted gaming state to the second gaming device.

67. The system of Claim 66, wherein the first gaming device is the second gaming device.

68. The system of Claim 65, wherein the second gaming device is configured to receive an encrypted gaming state from a first gaming device over the data network.

69. The system of Claim 65, wherein the gaming state includes user payment information.

70. The system of Claim 65, wherein the gaming state includes gaming machine payout information.

71. The system of Claim 65, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

72. The system of Claim 65, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

73. A gaming system comprising:

means for executing at least one game;

means for generating a gaming state based on execution of at least one game;

means for encrypting the gaming state;

means for sending the encrypted gaming state;

means for receiving the encrypted gaming state;

means for decrypting the gaming state; and

means for resuming executing at least one game from the gaming state.

74. The system of Claim 73, wherein the gaming state includes user payment information.

75. The system of Claim 73, wherein the gaming state includes gaming machine payout information.

76. The system of Claim 73, further comprising:

a means for creating an auditable record of gaming transactions on the host gaming device.

77. The system of Claim 73, further comprising:

a means for creating an auditable record of gaming transactions on each of the plurality of remote player devices.

78. A method of authenticating a user of a host gaming device comprising:

receiving a security certificate from the smart card;

sending the security certificate to a certificate authority for authentication;

receiving an authentication reply from the authority; and

playing a game in response to the authentication reply.

79. A method of authenticating a user of a remote player device comprising:

receiving an indicia of identity for a user;

sending the indicia of identity to an authenticator device;

receiving an authentication reply from the authenticator device; and

authorizing use of a host gaming device based on the indicia of identity

80. The method of Claim 79, wherein the indicia of identity for a user is provided by a biometric identity device.

81. The method of Claim 79, wherein the indicia of identity for a user is provided by a password input by the user.

82. The method of Claim 79, wherein the indicia of identity for a user is provided by a smart card.

83. A gaming system comprising:

a data network;

a host gaming device interfaced to the data network;

a plurality of remote player devices interfaced to the data network; and

a security device configured to provide player credentials to at least one remote player device,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device,

wherein the host gaming device is configured to provide game information to a predetermined number of permitted remote player devices, and

wherein at least one of the plurality of remote player devices is permitted based upon, at least in part, on player credentials provided by the security device.

84. The system of Claim 83, wherein the security device is a smart card reader.

85. The system of Claim 83, wherein the security device is a biometric device.

86. The system of Claim 83, wherein the security device is an input device.

87. The system of Claim 86, wherein the player credentials are, at least in part, a password.

88. The system of Claim 83, wherein the remote player device is authorized to receive game information provided by the host gaming device based, in part, on the player credentials.

89. The system of Claim 83, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

90. The system of Claim 83, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

91. A method of remotely accessing a gaming device comprising:

establishing a gaming session on a gaming device for a remote player device through a data network;

sending gaming related information from the gaming device through the data network;

receiving at least one control signal from the remote player device through the data network.

creating an auditable gaming session record representing each gaming transaction of a gaming session on the host gaming device;

creating an auditable gaming session record representing each gaming transaction of a gaming session on the remote gaming device; and

sending the record to a third party through the data network.

92. The method of Claim 91 wherein the third party is a gaming authority.

93. A gaming system comprising:

a data network comprised of a plurality of logical segments wherein a security policy controls the flow of data between logical segments;

a host gaming device connected to the data network, the gaming device configured to execute at least one game; and

a plurality of remote player devices connected to the data network,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device, and

wherein the plurality of remote player devices are each configured to control a gaming session established on the gaming device subject to the security policy wherein the security policy is based, at least in part, on the geographic location of a logical segment.

94. The system of Claim 93, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

95. The system of Claim 93, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

96. A gaming system comprising:

a data network;

a promotional message server configured to provide customized promotional messages wherein each message is customized with information associated with a user of the gaming system;

a host gaming device interfaced to the data network; and

a plurality of remote player devices interfaced to the data network,

wherein the plurality of remote player devices are each configured to receive game information provided by the host gaming device and to receive and present promotional messages.

97. The system of Claim 96, wherein the remote player devices are in a location approved by a gaming agency.

98. The system of Claim 96, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

99. The system of Claim 96, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

100. The system of Claim 96, wherein promotional message are comprised of bonus information.

101. The system of Claim 96, wherein promotional message are comprised of jackpot information.

102. The system of Claim 96, further comprising: at least one database configured to provide information associated with a plurality of users of the gaming system.

103. The system of Claim 96, wherein each of the plurality of remote game devices is associated with a user.

104. The system of Claim 96, further comprising a smart card reader configured to provide information associated with a user of the gaming system.

105. The system of Claim 102, wherein the database is configured to provide information which forms, at least in part, the content of the promotional message.

106. The system of Claim 96, wherein each of the plurality of remote player devices is configured to receive and present the promotional message in conjunction with game information provided by the host gaming device.

107. The system of Claim 106, wherein each of the plurality of remote player devices is configured to present the promotional message for an amount of time.

108. The system of Claim 106, wherein the amount of time is based, at least, in part on information associated with the promotional message.

109. The system of Claim 102, wherein the database is configured to provide information which comprises, at least in part, the content of the promotional message.

110. The system of Claim 96, wherein the promotional messages are transported via an instant messaging system.

111. The system of Claim 96, wherein the promotional messages are transported via an email system.

112. A method of displaying information on a remote player device comprising:

receiving a promotional message on a remote player device;

presenting the promotional message in conjunction with gaming information for an amount of time; and

removing the promotional message from the remote player device.

113. The method of Claim 112, further comprising

calculating the amount of time based, at least in part, on information associated with the promotional message.

114. A gaming system comprising:

means for data communication;

means for executing at least one game;

means for providing game information over the data network to a predetermined number of receiving means; and

a plurality of means for receiving game information over the data communication means, each coupled to a means for receiving customized promotional messages.

115. The method of Claim 114, further comprising:

means for presenting customized promotional messages in conjunction with game information.

116. The method of Claim 114, further comprising:

means for sending promotional messages.

117. The method of Claim 114, further comprising:

means for providing data used to select which players receive customized promotional messages.

118. The method of Claim 114, further comprising:

means for providing data which forms, at least in part, the content of promotional messages.

119. The system of Claim 114, further comprising:

a means for creating an auditable record of gaming transactions on the host gaming device.

120. The system of Claim 114, further comprising:

a means for creating an auditable record of gaming transactions on each of the plurality of remote player devices.

121. A gaming system comprising:

a data network;

a host gaming device interfaced to the data network;

at least one remote player device interfaced to the data network;

a video display device in communication with the remote player device; and

a remote control device in communication with the remote player device,

wherein the remote player device is configured to receive game information provided by the host gaming device and the remote control device is configured to control operation of a game.

122. The system of Claim 121, wherein the video display device is a television.

123. The system of Claim 121, wherein the video display device is a computer.

124. The system of Claim 121, wherein the video display device is a control device.

125. The system of Claim 121, wherein the remote player device is coupled to a cable television system.

126. The system of Claim 121, wherein the data network is, at least in part, the Internet.

127. The system of Claim 121, wherein the data network is, at least in part, the casino intranet.

128. The system of Claim 121, wherein the data network is, at least in part, the hotel intranet.

129. The system of Claim 121, wherein the data network is, at least in part, a wireless network.

130. The system of Claim 121, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on the host gaming device.

131. The system of Claim 121, further comprising:

a central gaming controller configured to create an auditable record of gaming transactions on each of the plurality of remote player devices.

132. A method of remotely accessing a host gaming device comprising:

establishing a gaming session on the host gaming device from a remote player device through a data network;

receiving gaming related information from the host gaming device through the data network;

presenting gaming related information to a player via a video display device;

receiving at least one control signal generated by a remote control device for controlling the gaming session; and

sending the control signal to the host gaming device through the data network.

133. The method of Claim 132, further comprising:

recording each gaming transaction occurring on the remote player device.

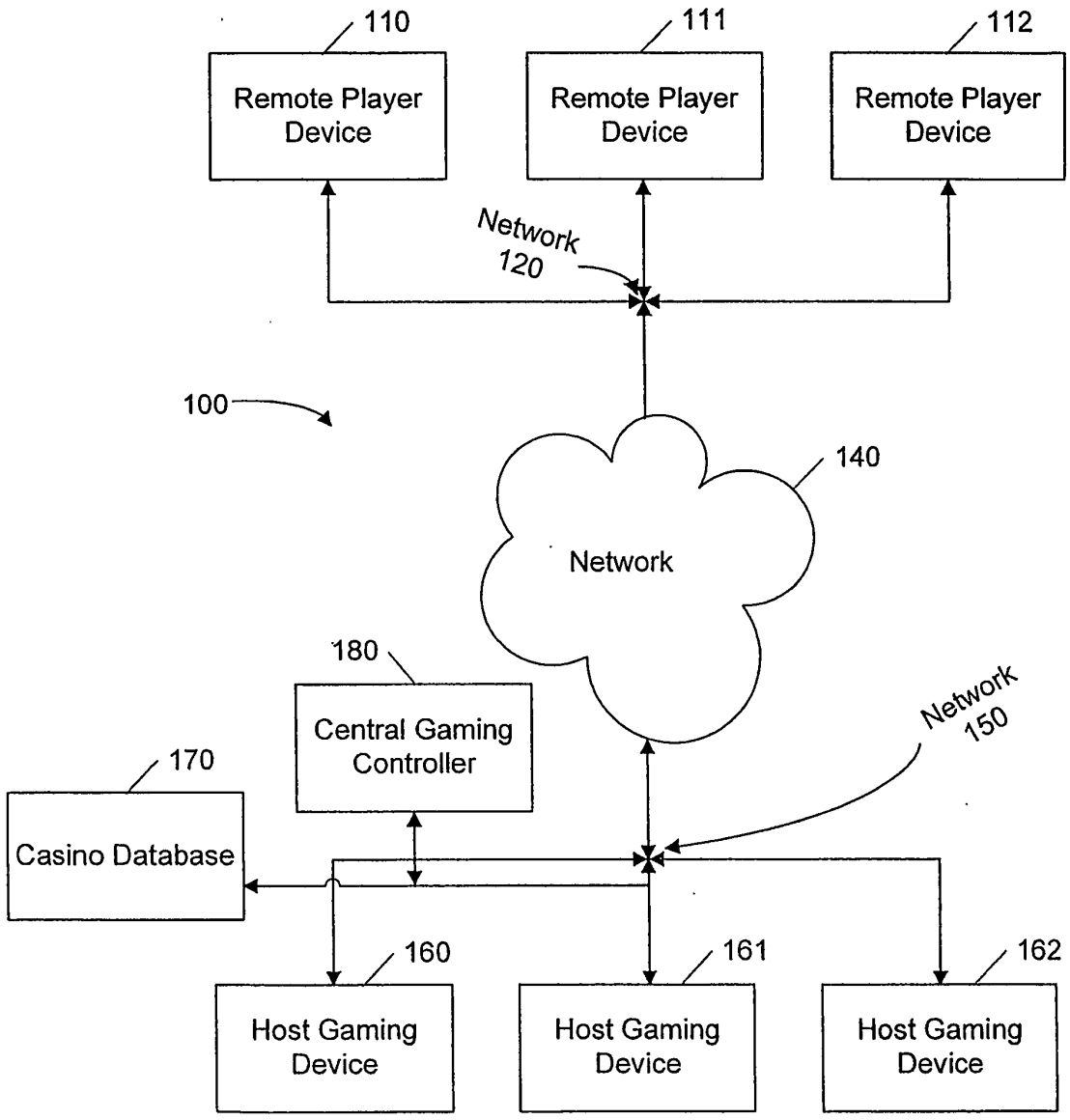

110
Remote Player Device
111
Remote Player Device
112
Remote Player Device
Network 120
100
140
Network
180
Central Gaming Controller
Network 150
170
Casino Database
160
Host Gaming Device
161
Host Gaming Device
162
Host Gaming Device

FIG. 1

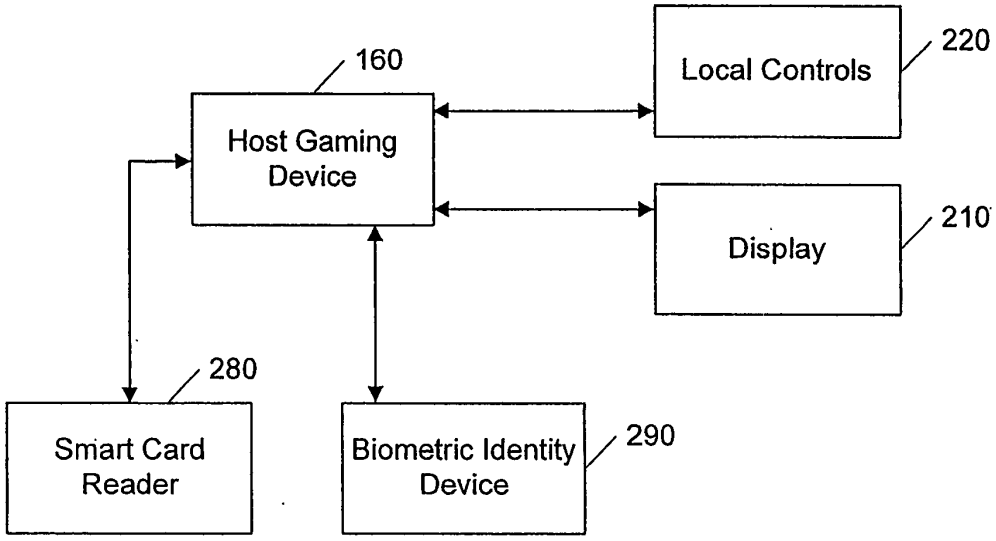

160
Host Gaming Device
Local Controls
220
Display
210
280
Smart Card Reader
Biometric Identity Device
290

FIG. 2

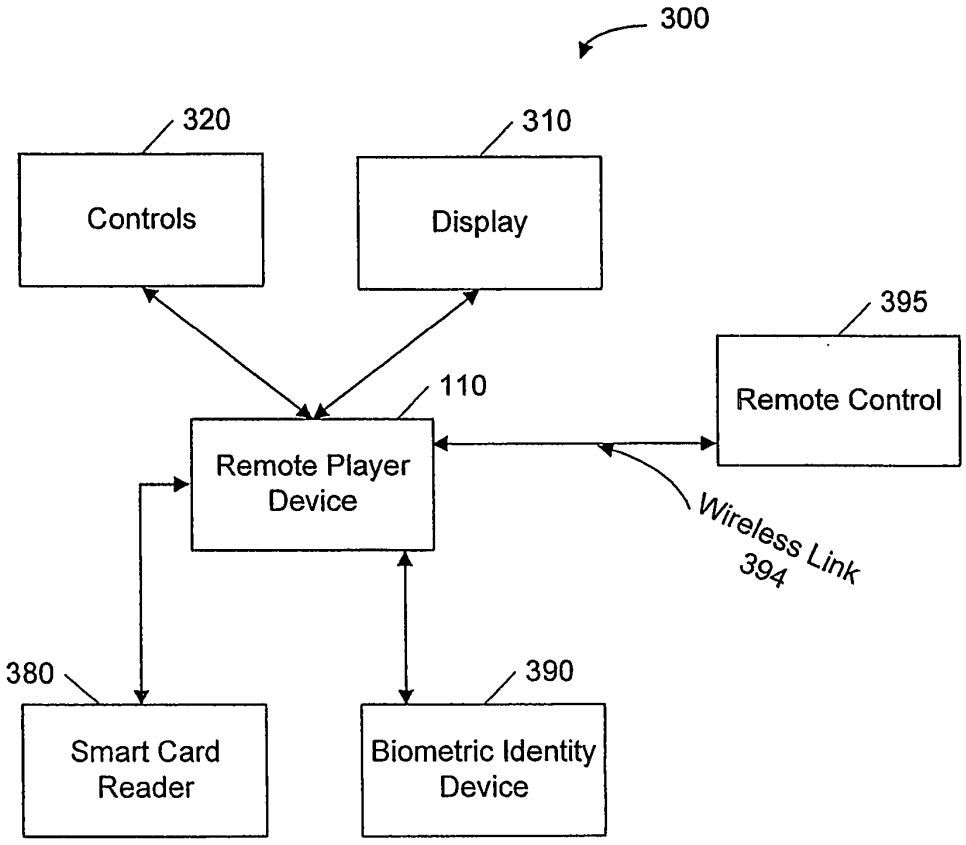

300
320
Controls
310
Display
395
Remote Control
110
Remote Player Device
Wireless Link 394
380
Smart Card Reader
390
Biometric Identity Device

FIG. 3

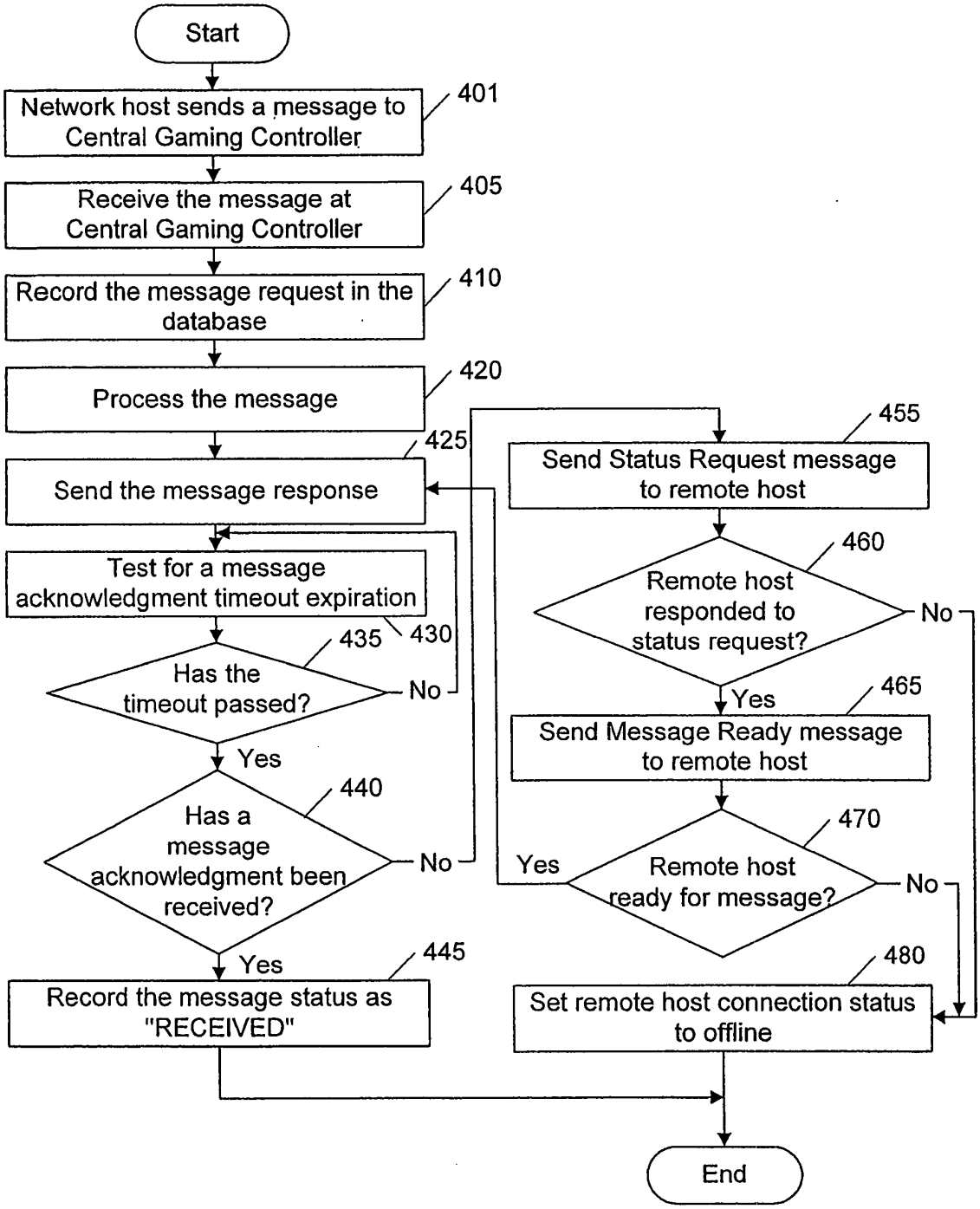

Start
Network host sends a message to Central Gaming Controller
401
Receive the message at Central Gaming Controller
405
Record the message request in the database
410
Process the message
420
Send the message response
425
Test for a message acknowledgment timeout expiration
430
Has the timeout passed?
435
No
Yes
Has a message acknowledgment been received?
440
No
Yes
Record the message status as "RECEIVED"
445
Send Status Request message to remote host
455
Remote host responded to status request?
460
No
Yes
Send Message Ready message to remote host
465
Remote host ready for message?
470
Yes
No
Set remote host connection status to offline
480
End

FIG. 4

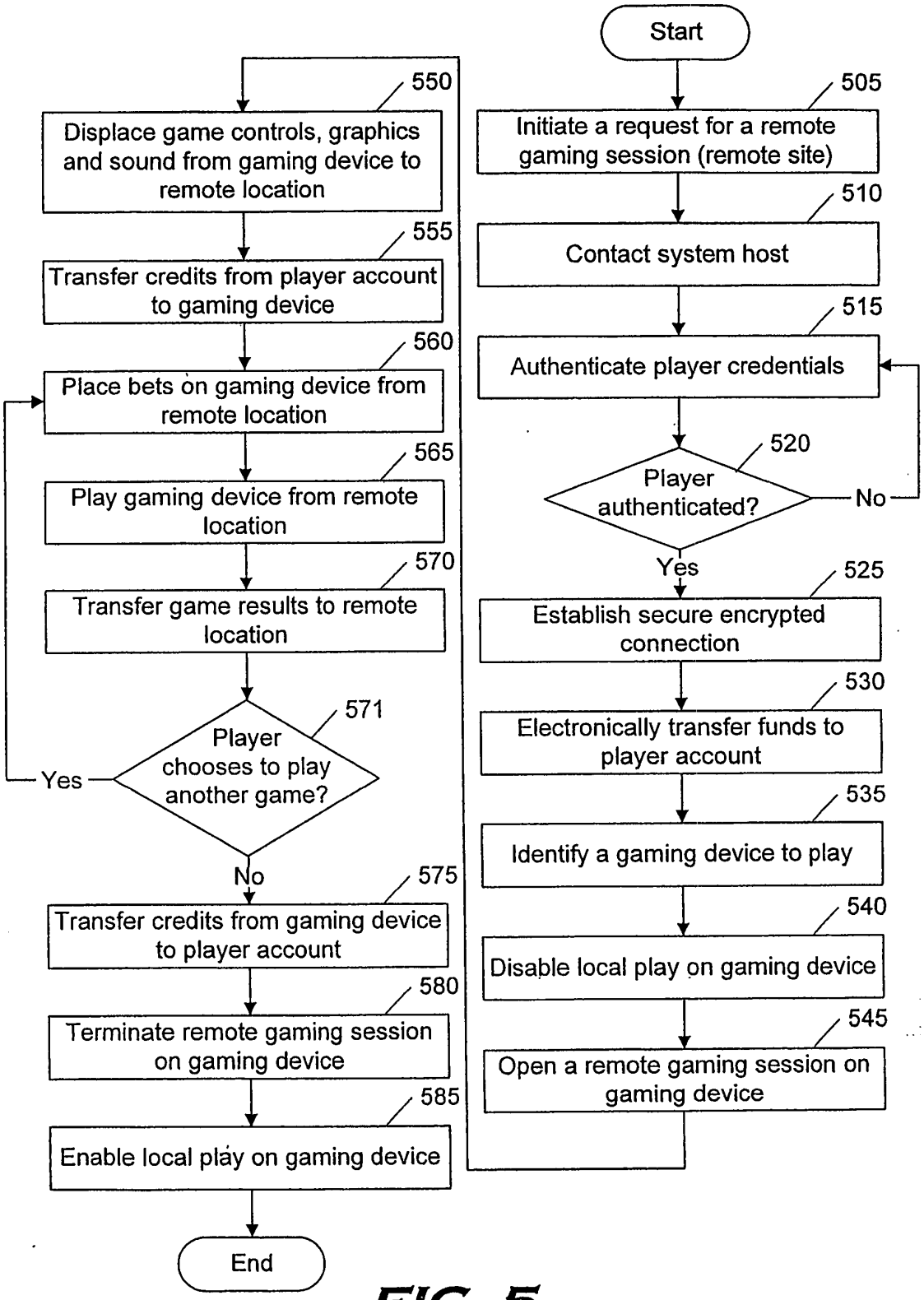

Start
505
Initiate a request for a remote gaming session (remote site)
510
Contact system host
515
Authenticate player credentials
520
Player authenticated?
No
Yes
525
Establish secure encrypted connection
530
Electronically transfer funds to player account
535
Identify a gaming device to play
540
Disable local play on gaming device
545
Open a remote gaming session on gaming device
550
Displace game controls, graphics and sound from gaming device to remote location
555
Transfer credits from player account to gaming device
560
Place bets on gaming device from remote location
565
Play gaming device from remote location
570
Transfer game results to remote location
571
Player chooses to play another game?
Yes
No
575
Transfer credits from gaming device to player account
580
Terminate remote gaming session on gaming device
585
Enable local play on gaming device
End

FIG. 5

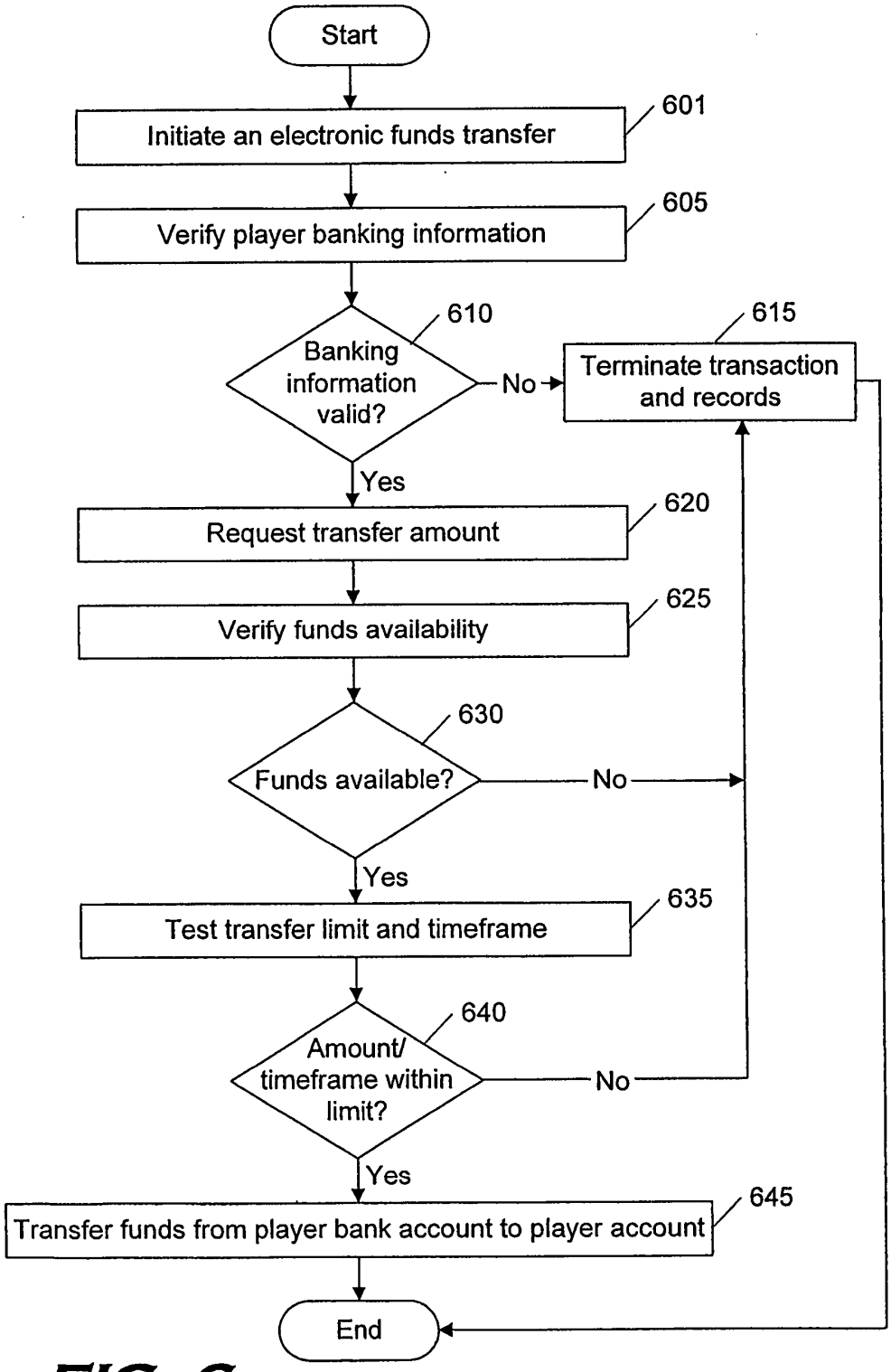

Start
Initiate an electronic funds transfer
601
Verify player banking information
605
Banking information valid?
610
No
Terminate transaction and records
615
Yes
Request transfer amount
620
Verify funds availability
625
Funds available?
630
No
Yes
Test transfer limit and timeframe
635
Amount/ timeframe within limit?
640
No
Yes
Transfer funds from player bank account to player account
645
End

FIG. 6

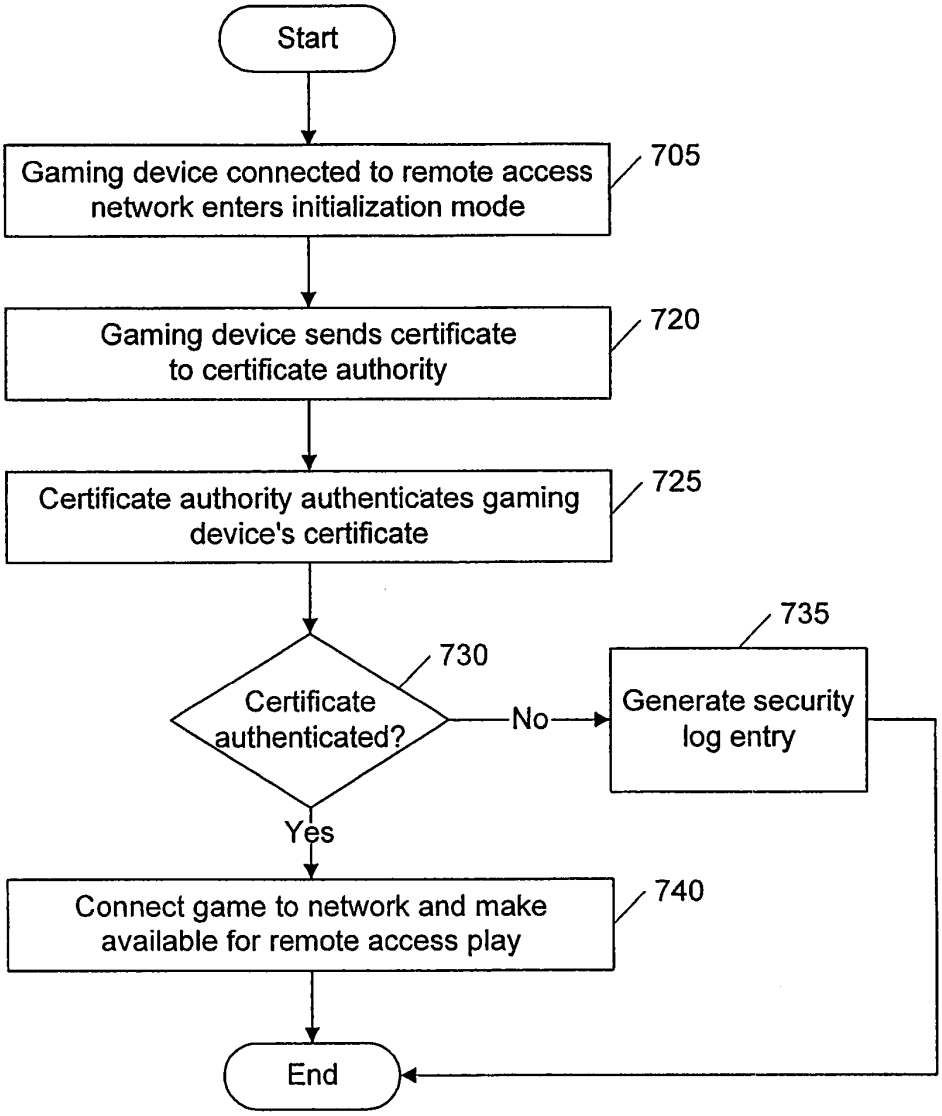

Start
Gaming device connected to remote access network enters initialization mode
705
Gaming device sends certificate to certificate authority
720
Certificate authority authenticates gaming device's certificate
725
Certificate authenticated?
730
No
Generate security log entry
735
Yes
Connect game to network and make available for remote access play
740
End

FIG. 7

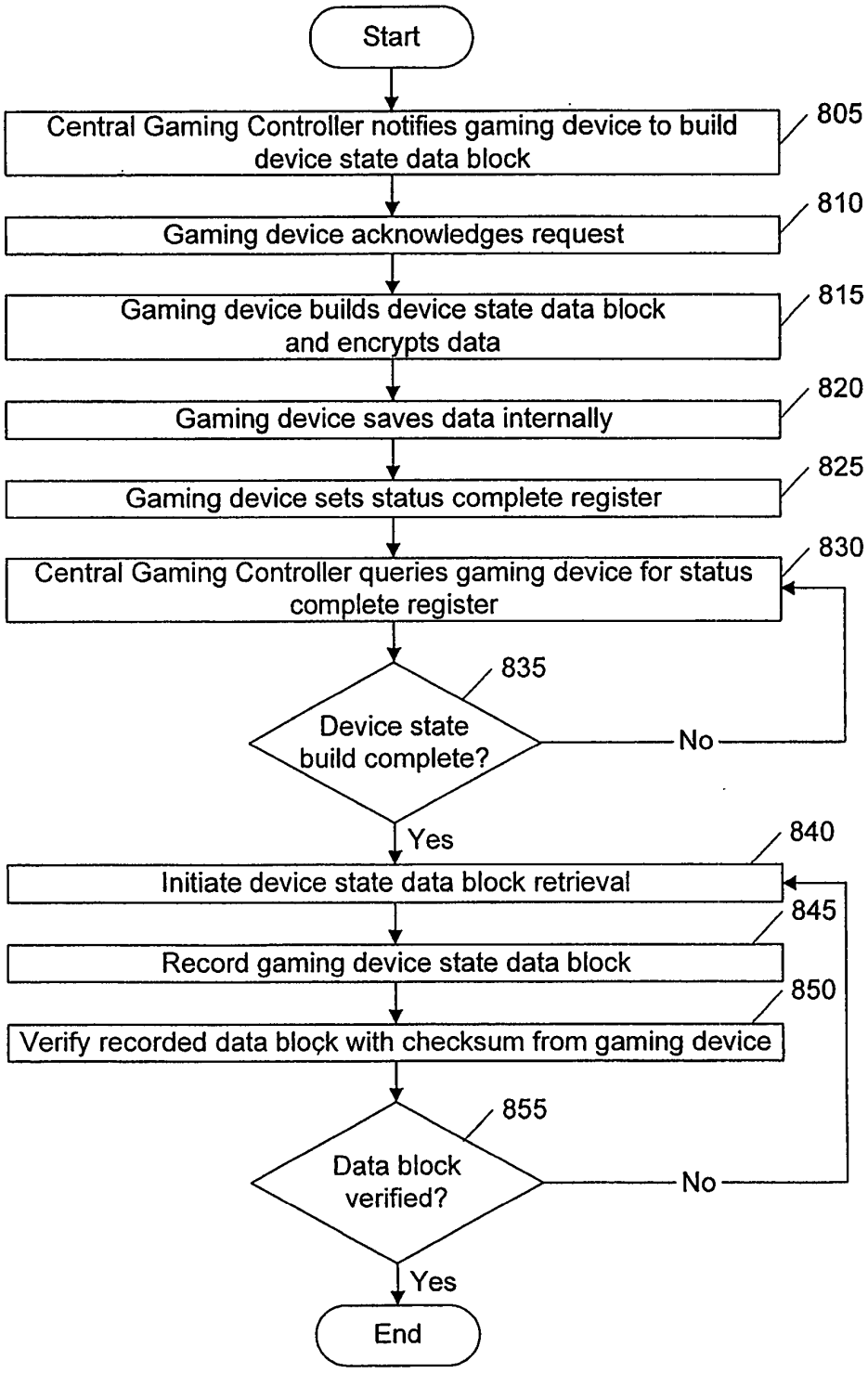

Start
Central Gaming Controller notifies gaming device to build device state data block
805
Gaming device acknowledges request
810
Gaming device builds device state data block and encrypts data
815
Gaming device saves data internally
820
Gaming device sets status complete register
825
Central Gaming Controller queries gaming device for status complete register
830
835
Device state build complete?
No
Yes
840
Initiate device state data block retrieval
845
Record gaming device state data block
850
Verify recorded data block with checksum from gaming device
855
Data block verified?
No
Yes
End

FIG. 8

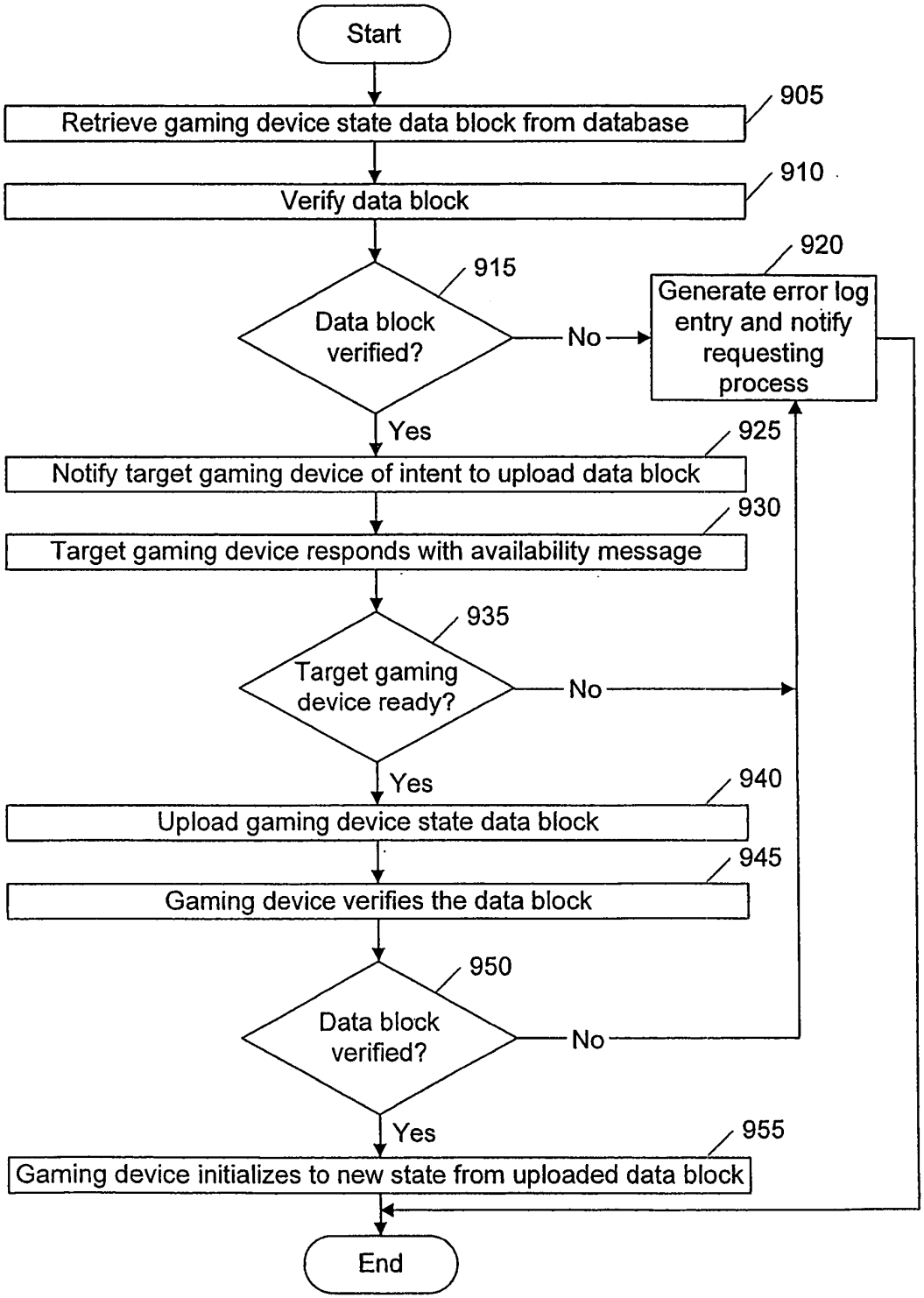

Start
Retrieve gaming device state data block from database
905
Verify data block
910
Data block verified?
915
No
Generate error log entry and notify requesting process
920
Yes
Notify target gaming device of intent to upload data block
925
Target gaming device responds with availability message
930
Target gaming device ready?
935
No
Yes
Upload gaming device state data block
940
Gaming device verifies the data block
945
Data block verified?
950
No
Yes
Gaming device initializes to new state from uploaded data block
955
End

FIG. 9

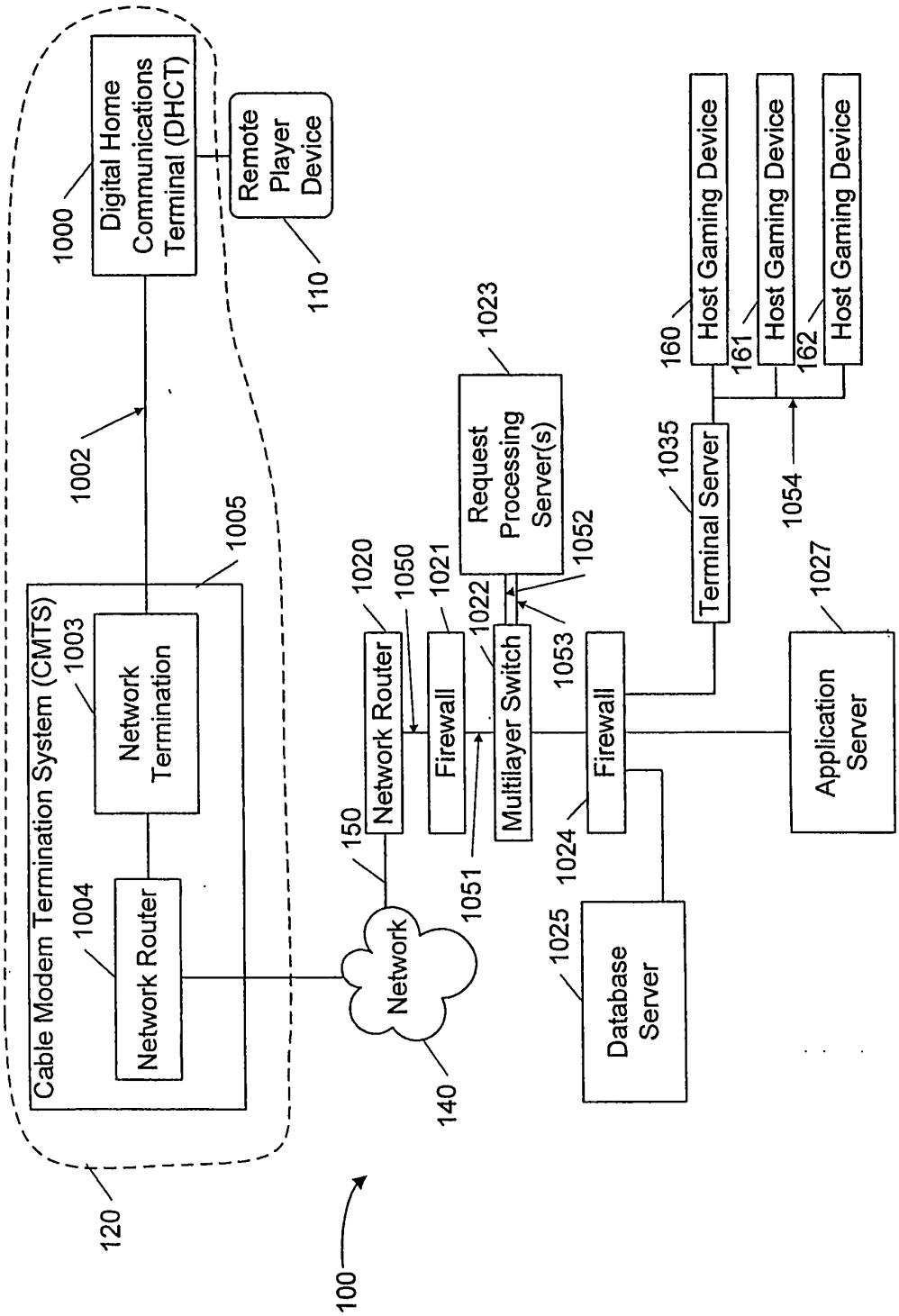
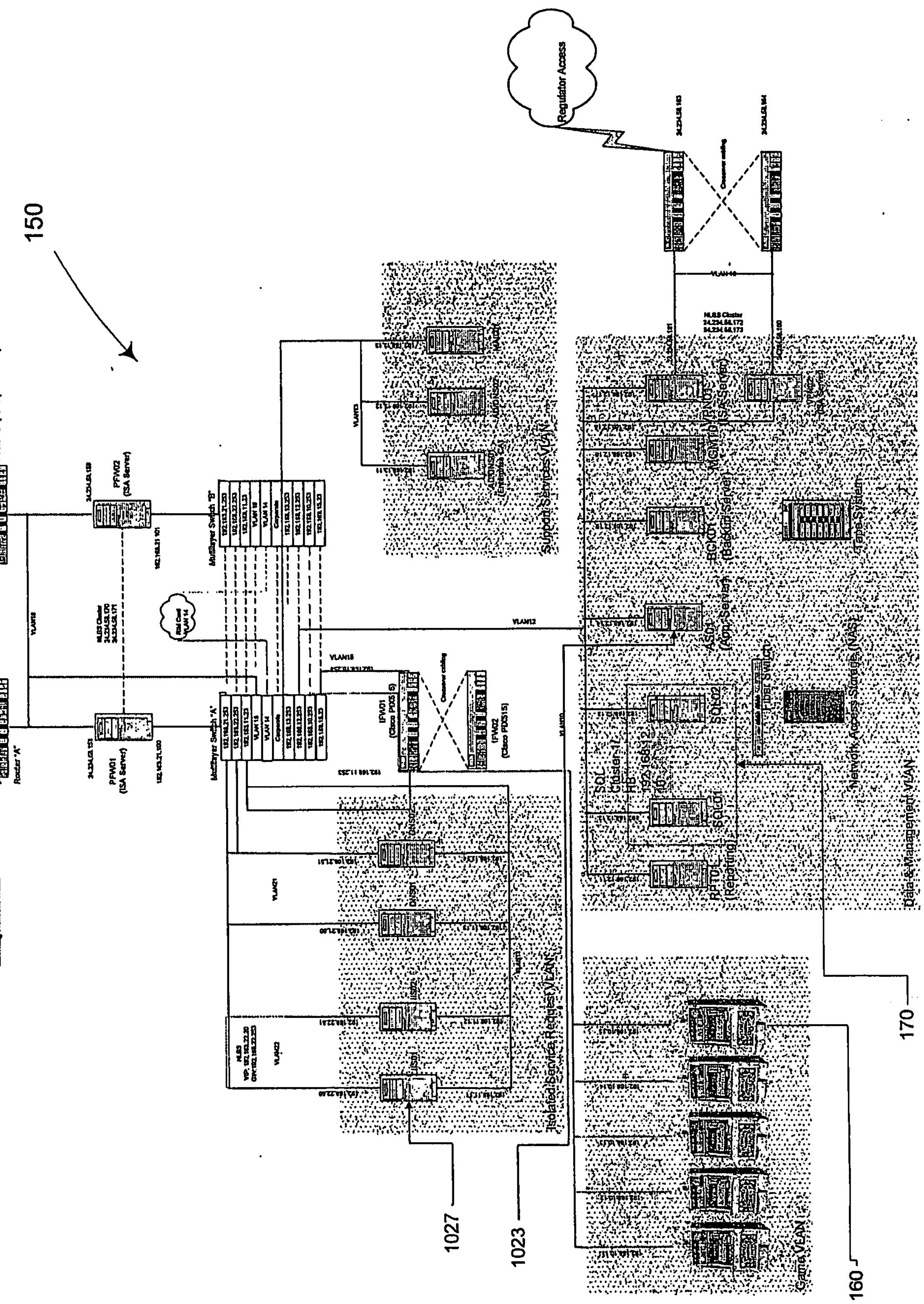

Digital Home Communications Terminal (DHCT)
1000
Remote Player Device
110
1002
1005
Cable Modem Termination System (CMTS)
1003
Network Termination
1004
Network Router
120
100
150
Network Router
1020
1050
Firewall
1021
1051
Network
140
Request Processing Server(s)
1023
1052
Multilayer Switch
1022
1053
Firewall
1024
Database Server
1025
Terminal Server
1035
1054
Application Server
1027
Host Gaming Device
160
Host Gaming Device
161
Host Gaming Device
162

FIG. 10

Figure 11


150
Regulator Access
Support Services VLAN
Isolated Service Request VLAN
Data & Management VLAN
Network Access Storage (NAS)
Game VLAN
Tape System
Multilayer Switch "A"
Multilayer Switch "B"
Router "A"
Incoming Network Traffic
1027
1023
160
170

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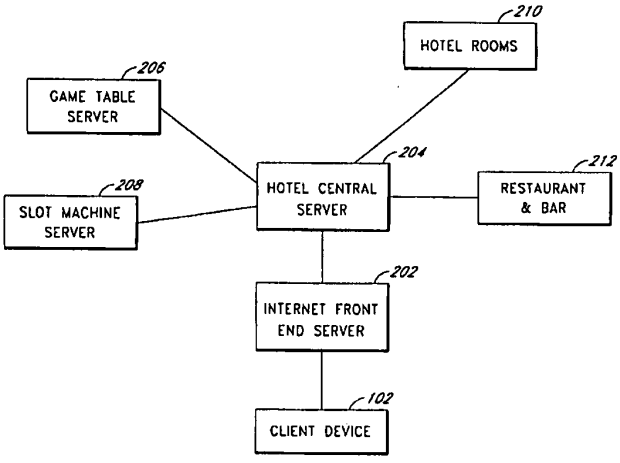


(57) Abstract: Methods and systems of providing real time on-line casino games are disclosed. A remote (408) connects to an on-line server that hosts a game center (108, 110, 112, 114). A flexible security program allows a web site to select one or more user information fields as required verification fields for entering the web site. A card scanner (434) at a game table scans a card and reads a code embedded in the card that indicates the type of the card. Cameras at the game table capture the video images of the game table (402). The video images and the type of the card are transmitted by the server to the remote player (408). Playing instructions from the remote player (408) are transmitted to the game table (402) and displayed by a remote instruction system at the game table (402). Slot machine statistics such as amount and frequency of recent winnings are provided to help players select a favorite slot machine to play.

WO 01/91866 A1

METHODS AND SYSTEMS OF PROVIDING REAL TIME ON-LINE CASINO GAMES

Background of the Invention

Field of the Invention

This invention relates to methods and systems of providing real time on-line casino games.

Description of the Related Art

On-line casinos have been established to allow remote players to enter a web site and play simulated casino games. Since the casino games are simulated by computer, the remote players do not have the realistic experience of playing at a real casino with real dealers and interacting with other players. The remote players cannot rely on a real dealer to deal real cards, but must rely on a computer algorithm to generate virtual cards. Players cannot be assured that the virtual cards are generated fairly.

To provide a more realistic experience to remote players, and to alleviate their concern of a computer generating virtual cards to disfavor the players, video images at a game table of a real casino can be transmitted to remote players. Because remote players can see the video images of the game being played, they will find the experience more realistic. However, video images captured by typical cameras may not be able to reliably and automatically capture images of the cards being dealt. In addition, transmitting video images may not be suitable for a remote player with limited bandwidth connection. Although a human operator can determine and enter information such as the types of cards dealt or the types of dices rolled to be transmitted to a remote player, such a process may be time consuming and vulnerable to human error. Therefore, it is desirable to read cards reliably and to automatically determine the type of every card being dealt, and to transmit such information in a space-saving non-video format to remote players.

Almost all casinos have slot machines. Many players believe that selecting the "right" slot machine can improve one's chance of winning. Many players believe that the ideal slot machine is one that has been played a lot recently but has not awarded large winnings. Since a large amount has been entered into the slot machine but the slot machine has not returned a large winning, it is believed that this slot machine is primed to return a large winning. Other players believe that a slot machine that has frequently awarded winnings in a recent period is an ideal machine. Therefore, many players spend time to observe slot machines before they select one to play. However, making such observations requires time and patience. For remote players, it is difficult, if not impossible, to observe slot machines at a casino. Therefore it is desirable to provide player with statistics on slot machines, such as the amount of money entered into the slot machine within certain time intervals, the amount of winning returned by the slot machines within certain time intervals, the amount and the time of the last large winning, and so forth. Statistics on real slot machines as well as computer simulated slot machines can both be stored and made available.

Credit cards are often used to make on-line purchases. Using credit cards carries security risks, because once a victim's name, card number and expiration date are obtained, a third person can use the victim's credit card account to make purchases. A smart card provides security against credit card fraud. Commercial embodiments of smart cards include the Blue Card from American Express. To use a smart card to make a purchase at a web site, a user typically inserts the smart card into a smart card drive connected to the user's personal computer. For example, a Blue Card user can insert the card into a compatible card drive that connects to an USB port of the user's personal computer. A user can also swipe the smart card at a smart card reader connected to a game center. The smart card reader can be located at an ATM machine, a remote gaming kiosk at a shopping mall, a game table local console at the game center, and so forth. After inserting or swiping the smart card, the user is usually prompted to enter a pin number for identification. A chip in the smart card stores information about the user. The web site retrieves user information stored on the smart card. The web site may optionally retrieve additional information about the user at a database, for example a database maintained by a credit card company. Since the user needs both the smart card and a pin number to use the smart card, smart cards are safer than credit cards. To alleviate the cost of buying and installing smart card drives, smart disks allow smart card information to be stored on the smart disks and to be read by floppy disk drives.

Although smart cards and smart disks are safer than credit cards, they do not provide flexibility and security at the same time. For applications that only require a low level of information, requiring users to enter pin numbers may be too inconvenient to the users. For applications that require a high level of information, requiring users to enter pin numbers may not provide enough security, since pin numbers are typically only four digits in length and can be cracked through trial and error, especially if an automated process is used to try different pin number combinations. If users are required to enter a pin number of greater length, the users will be further inconvenienced when they use the smart card/smart disk to access applications that do not require strict security. What is desired is a flexible solution that provides sufficient security for different types of applications without adding inconvenience to the users.

Summary of the Invention

One aspect of the invention relates to a game table for a remote player to participate in a card game, the game table including a card scanner configured to scan a card and to determine a type of the card, the card having an embedded code that indicates the type of the card, the card scanner being connected to a server, the server being configured to transmit the type of the scanned card to the remote player, one or more cameras connected to the server, the cameras being configured to capture video images of the game table, the server being further configured to transmit the captured video images to the remote player, and a remote instruction system configured to receive playing instructions from the remote player through the server, and to display the received playing instructions at the game table in visual or audio form.

Another aspect of the invention relates to a method of enabling a remote player to select a slot machine to play, the method including storing statistics of a first slot machine and statistics of a second slot machine, displaying

to the player at least a summary of the stored statistics of the first slot machine, displaying to the player at least a summary of the stored statistics of the second slot machine, and prompting the player to select a slot machine from a plurality of slot machines, the plurality of slot machines including the first slot machine and the second slot machine.

Another aspect of the invention relates to a method of creating security requirements at a web site, the method including displaying a plurality of available verification fields to an administrator of the web site, prompting the administrator to select one or more verification fields from the plurality of available verification fields, and prompting a user to enter data into the selected verification fields when the user requests entry into the web site.

Another aspect of the invention relates to a method of enabling a remote player to participate in a game at a physical game center, the method including prompting the remote player to connect to a server that hosts the physical game center, verifying that the remote player is permitted by his/her jurisdiction to play at the game center,, verifying that the remote player is financially qualified to play at the game center, identifying a financial account of the remote player, prompting the remote player to enter playing instructions, receiving the entered playing instructions at the game center, playing a game at the game center according to the received playing instructions, transmitting a status of the played game to the remote player, optionally transmitting video images of the played game to the remote player, and updating a balance of the identified financial account of the remote player.

Another aspect of the invention relates to a method of a player playing a game at a remote physical game center, the method including connecting to a server that hosts the game center, entering verification information to satisfy legal requirements, entering playing instructions to a game to be played or being played at the game center, receiving a status of the played game from the server, and optionally receiving video images of the played game from the server.

Another aspect of the invention relates to a method for enabling a remote player to participate in a game played in a casino remotely located from said remote player and providing the remote player with a realistic game experience that substantially captures the visual and audio feel and excitement of the casino. The method includes transmitting images to the remote player of a game in progress, transmitting to the remote player sounds of the game and voices of a dealer and on-site players, identifying a financial account of the remote player, prompting the remote player when it is the remote player's turn to play to enter playing instructions during the game, receiving at the casino the entered playing instructions from the remote player while the game is being played, receiving from the remote player an amount of wager specified by the remote player, communicating to the remote player the ongoing status of the game in substantially real time, and communicating to the remote player an amount of balance retained by the remote player.

Brief Description of the Drawings

FIGURE 1 is a diagram showing one embodiment of users connecting to game centers.

FIGURE 2 is a diagram showing one embodiment of users connecting to a hotel game center.

FIGURE 3 is a flowchart showing one embodiment of the verification process.

FIGURE 4 is a diagram showing one embodiment of a game table.

FIGURE 5 is a diagram showing one embodiment of a system for delivering data to remote players.

FIGURE 6 is a flowchart showing one embodiment of a process of allowing a user to play a slot machine.

FIGURE 7, comprising FIGURE 7A and FIGURE 7B, is a flowchart showing one embodiment of a remote player playing process.

FIGURE 8 is a flowchart showing one embodiment of a process of a remote player playing a game of chess against another player.

FIGURE 9 is a diagram showing one embodiment of a client device display.

Detailed Description of the Preferred Embodiment

Overview

FIGURE 1 is a diagram showing one embodiment of users connecting to game centers. Users use client devices 102 to connect by wire or wirelessly to an on-line central gaming server 104 through a network. The client devices 102 may include personal computers, network appliances, mobile phones, televisions, video game consoles, custom gaming devices, a gaming console on a passenger airline or a cruise ship, and so forth. Video game consoles include devices such as Sony Playstation, Nintendo Gameboy, Microsoft X Box, and so forth. Custom gaming devices include devices custom designed for playing one or more casino games. For example, one custom gaming device may include buttons of "hit", "stay", "double", "split", and "buy insurance", etc., corresponding to instructions in playing a Black Jack game. Another custom gaming device may include selection buttons for the user to select playing instructions displayed on a screen of the device. The network can be the Internet or an Intranet. The game server 104 verifies that the user is legally allowed and financially able to play. In one embodiment, the verification is performed by a verification server 106. The verification server 106 can be connected to a financial institution such as a bank or a credit bureau. In another embodiment, the verification is performed by the central gaming server 104. More details of the verification process are described below in connection with FIGURE 3.

The central gaming server 104 is connected to game centers, including a virtual casino 108, a first casino 110, a second casino 112, and a cruise ship gaming facility 114. In one embodiment, a virtual casino 108 is a casino with real dealers and real game tables but only accepts remote players. In another embodiment, a virtual casino 108 is a computer-simulated casino, it has no real dealers or real game tables. Each game center may be hosted by secondary servers that are connected to the central gaming server 104. The dealers receive playing instructions from remote players and play the games at the game tables according to the instructions. The first casino 110 and the second casino 112 are casinos with physically present players but also equipped to allow playing by remote users. A casino can also include a chain of casino establishments linked by a network. A cruise ship gaming facility 114 can be connected wirelessly to the central gaming server 104.

Through the central gaming server 104, a user selects a game center 108, 110, 112, or 114 to play. In another embodiment, the user directly connects to a game center server without accessing the central gaming server

104. The user identifies from the client device 102 a game to be played at the game center. The identified game that includes the user is then started at the game center. The game of blackjack is described in the specification as an example. Throughout the game, game information such as the cards dealt to the user, to the dealer, and to other players at the table, and/or video images of the table, the dealer, the other players and the surrounding environment are transmitted by the central gaming server 104 or a game center server from the game center to the user's client device 102. User instructions such as hit, hold, split, double, or purchase insurance are transmitted through the central gaming server 104 or a game center server to the game center. User instructions may also include instruction to tip the dealer. A dealer at the game center then follows the user's instructions in playing the game. More details of transmitting game information are described below in connection with FIGURE 4.

FIGURE 2 is a diagram showing one embodiment of users connecting to a hotel game center. A user connects from the client device 102 to an Internet front end server 202. In one embodiment, the Internet front end server 202 is maintained or monitored by a government agency to ensure fairness. The Internet front end server 202 verifies the user and connects the user to the hotel central server 204, which is connected to a game table server 206 and a slot machine server 208. In another embodiment, the Internet front end server 202 uses an additional verification server connected to a third party such as a financial institution to verify the user. The user can then choose to play a table game such as Black Jack, Caribbean Studs, Roulette, and so forth, or play a slot machine. The game table server 206 facilitates the remote playing of the table games. The slot machine server 208 facilitates the remote playing of the slot machine games. In another embodiment, the user can also choose to play other types of games, for example trivia games such as Jeopardy, Who Wants to be a Millionaire, and so forth, board games such as Chess and Monopoly, computer games and wagering on future outcomes such as sporting events. The hotel central server 204 also connects to hotel rooms 210 and restaurants and bars 212. Hotel patrons can access the hotel central server 204 to play table games or slot machines from their hotel rooms, using devices connected to the hotel central server 204, such as televisions with remote controls, video game appliances, or custom gaming devices. Patrons at restaurants and bars 212 can also access the hotel central server 204 to play table games or slot machines, using devices connected to the hotel central server 204, such as televisions, video game appliances, or custom gaming devices.

Verification

FIGURE 3 is a flowchart showing one embodiment of the verification process. A start block 302 proceeds to block 304. At block 304, a server prompts a user to insert the user's smart card into a smart card drive connected to the client device 102. In another embodiment, instead of inserting the card into a smart card drive, the user inserts a smart disk that stores the user's smart card information into a floppy disk drive. In yet another embodiment, the user swipes the smart card on a smart card reader connected to the game center. Block 304 proceeds to block 306. At block 306, the server prompts the user to enter a pin number associated with the smart card. Block 306 proceeds to block 308. At block 308, the server prompts the user to enter additional verification information, such as the user's

address, social security number, or other personal information. In one embodiment with a low level of information requirement, the server does not prompt the user for additional verification information. Block 308 proceeds to block 310. At block 310, the server compares the user-entered information including the pin number and the additional verification information against the data stored on the smart card. In another embodiment, the server compares the user-entered information against user data stored at a database, such as the database of a credit card company or a casino. If the user-entered information does not match the data stored on the smart card or data stored at the database, then block 310 proceeds to block 312. In one embodiment of block 312, the server prompts the user to enter verification information again. In another embodiment of block 312, the server denies the user request for game play. The server may take additional steps such as notifying organizations such as the user's credit card company, the company that issued the smart card, and/or the game center.

Still referring to FIGURE 3, if the user-entered information matches the user data stored on the smart card or the database, then block 310 proceeds to block 314. At block 314, the server examines the user demographics information stored in the smart card or stored at the database, such as the age of the user and the jurisdiction of the user against a legal database stored at the server or connected to the server. The legal database stores information on whether a jurisdiction permits its residents or citizens to participate in on-line gaming, and the age over which its residents or citizens are permitted to participate in on-line gaming. The legal database can store additional information about each jurisdiction, such as the jurisdiction's regulations on different types of on-line gaming. For example, a jurisdiction may have different rules regarding on-line gaming for non-profit purposes as compared to on-line gaming for profit. For another example, a jurisdiction may permit its residents or citizens to only play in game centers organized or monitored by its government. For yet another example, a jurisdiction may limit its residents or citizens to playing with a certain credit limit or playing certain types of games. The information obtained from the legal database can be used by the server to make jurisdiction-specific accommodations, for example, to only offer certain games permitted by the jurisdiction to its residents or citizens, and to limit the type and amount of credit that can be used by its residents or citizens in gaming. If the examination determines that the user is not permitted by its jurisdiction to join the game center, then block 314 proceeds to block 312, where the server informs the user and denies the user request to join.

Still referring to FIGURE 3, if the user demographics information clears the legal database, then block 314 proceeds to block 316. At block 316, the server examines the user against information stored on the smart card, information stored at a financial database of the game center, or information stored at a financial database of a third party financial organization such as a bank or a credit card company. In one embodiment, the server examines the user information against a financial database of people who are financial risks. In another embodiment, the server checks the user's financial information stored on the smart card and/or stored at the financial database, such as the user's available credit, to ensure that the user has sufficient funds to join game play. In one embodiment, the user is prompted to designate an account, such as a smart card account, a digital cash (or e-wallet) account, a credit card account, or a debit card account as the account from which wager amounts will be drawn and winnings will be transferred to.

In one embodiment in which the server checks user information against a financial database, the server preferably terminates connection with the financial database after it obtains required information from the financial database. In one embodiment, the server re-establishes connection with the financial database after the user has finished playing and is ready to exit the game center, and updates the user's account balance or other user information at the financial database. If the user is deemed not financially qualified to play, then block 316 proceeds to block 312 to deny the user request to join. Otherwise block 316 proceeds to block 318, where the server grants the user's request to join the game center. The server can also make adjustments based on the information of the user. For example, having known the country of the user, the server can recommend games that are popular within that country to the user, or display a user interface in the language of the country. Block 318 proceeds to an end block 320.

The user is optionally prompted to designate a playing limit, so that when the user's playing loss or playing loss plus the current wager has reached the playing limit, the user is reminded of the playing limit and asked to exit the game center. In one implementation, the user is allowed to increase the playing limit when the limit has been reached. In one embodiment, the user is optionally prompted to designate a playing limit in terms of playing frequency or playing time. For example, the user can limit his/her playing limit to a maximum of five hours within a seven-day period, or no more than once within a day. When the user's playing time or playing frequency exceeds the limit, the user is asked to exit the game center. In one implementation, the user is allowed to increase the playing limit when the limit has been reached. The playing limit option can be used to prevent excessive gaming and/or excessive gaming loss. The playing limit can be stored on a database connected to the server or a smart card or smart disk of the player. In one embodiment, the playing limit is enforced by all the game centers hosted by the server, so that the player cannot move to another game center to circumvent the playing limit.

Smart Card Program Providing Multiple Levels of Security

A smart card program can be installed by web sites that use smart cards or smart disks to verify users. The smart card program specifies multiple levels of security. In one embodiment, three levels of information requirements are specified. The first level requires reading the smart card by a smart card drive or smart card reader, or reading the smart disk by a floppy disk drive. It does not require the user to enter a pin number. The second level requires reading the smart card/smart disk and the entering of a pin number. The third level requires reading the smart card/smart disk, the entering of a pin number, and the entering of additional verification information, for example the user's social security number, address, full name, and/or date of birth. Information such as the user's pin number, address, full name, date of birth, and purchase history can be stored on the smart card or at a user database of a credit card company or game center. In one embodiment, a web site verifies user-entered information against information stored on the smart card. In another embodiment, a web site uses the user identification information entered by the user or stored on the smart card to find a user's records at the user database. The web site then verifies user-entered information against the user's information stored at the user database.

After the smart card program is installed on a web site, the level of information required for the web site or for each sub-site of the web site is determined. For example, for reading a member-only newspaper article, the first level of information may be applied to allow ease of access by members. For logging into a personal email account, the second level of information may be applied to provide the right balance of security and ease of access. For buying an expensive item on-line, the third level of information may be applied to ensure security. A web site can be categorized into multiple sub-sites, for example a member-only sub-site and a public area sub-site. Each sub-site includes one or more web pages of the web site.

In one embodiment, a web site administrator installs the smart card program and selects from a list of verification fields the fields to be used for each level of information. For example, the user's date of birth can be selected as the required entry field for the second level of information, and the user's zip code and pin number can be selected as the required entry fields for the third level of information. In theory, every field of information that is stored on the smart card/smart disk can be used as a verification field. If the web site connects to a database for verification, every field of user information stored on the database can also be used as a verification field. Using the smart card program, the web site administrator can specify a security level for each sub-site or each web page of the web site.

Game Table Devices

FIGURE 4 is a diagram showing one embodiment of a game table. In the example illustrated by FIGURE 4, a Black Jack game is played by a dealer 404, a physical player 406, and a remote player at the game table 402. The remote player is represented by the remote instruction system 408. In one embodiment, the remote instruction system 408 includes a screen, which displays the remote user's playing instructions. In another embodiment, the remote instruction system 408 includes multiple display buttons titled "hit", "stay", "double", "split", "buy insurance", and so forth. Corresponding display buttons are activated according to the remote user's playing instructions.

In one embodiment, the player instruction system 408 also displays video images of the remote player. Video images of the remote player are captured by a camera connected to the remote player's client device 102. Displaying video images of the remote player provides the dealer 404 and the physical player 406 with more comfort toward the remote player. It also deters fraudulent and underage players. In another embodiment, a remote player transmits a photo file from the client device 102 to the player instruction system 408 as his/her identification. A remote player can also select an image representation as an avatar of himself/herself.

In one embodiment, the player instruction system 408 includes a speaker, which plays audio signals of playing instructions from the remote player. In one implementation, the playing instructions are transmitted from the client device 102 to the game center in non-audio format as text or numerical information. Transmitting playing instructions in non-audio format reduces the bandwidth and storage space requirements. The playing instructions are then converted into audio format to be played by the play instruction system 408. Since the number of playing instructions for a game is limited, a limited number of corresponding audio files can be played to represent the playing

instructions. In another implementation, the player instruction system 408 receives playing instructions in audio format but in a foreign language spoken by the remote player. The player instruction system 408 then automatically translates the playing instructions into the default language used by the game center. Since the vocabulary associated with game play instructions is very limited, a translation module with limited memory and high processing speed can be provided to provide fast and accurate translation. The translation can also be performed by a server, which then transmits the translated audio to the player instructions system 408.

The dealer 404 deals cards out of a card shoe 432. Each card is embedded with a code, which is scanned by a card scanner 434. The card scanner 434 can be placed inside the card shoe 432, on the game table 402, or above the game table 402. The card scanner 434 determines the type of the card. The card information is then transmitted to the remote user. More details of card scanning are described below in the section titled "card scanning methods and devices."

A number of cameras can be used to capture video images to be transmitted to the remote player. For example, an overhead camera 412, a dealer camera 414 facing the dealer 404, and a physical player camera 416 facing the physical player 406, can be used to capture video images. A plurality of cameras can be placed such that each camera aims at a seat of the game table 402. The cameras can be turned on when the dealer or a physical player occupies the seat. A microphone 422 can be used to record audio signals at the game table 402 to be transmitted to the remote user. The microphone 422 can be used to record the voices of the dealer 404 and physical players 406, and sounds of the game such as the sound of cards being dealt or a wheel being spun. In one embodiment, video phones are used to transmit images and audio signals between the remote player 408 and the game table 402. The video phone at the game table 402 can be aimed to capture images of the cards dealt to the remote player 408. More details of providing video images are described below in the section titled "providing video images to the player."

In one embodiment, each physical player 406 uses a local console 410 at the game table to play the game. In one embodiment, the local console 410 and the remote instructions system 408 are interchangeable, because each includes the features of the other. Therefore each device occupies a fixed location at the game table 402, and functions as a local console 410 or a remote instructions system 408 depending on whether a physical player or a remote player is using the device. The local console 410 allows the physical player 406 to enter play instructions such as "hit", "stand", and so forth. The physical player 406 enters play instructions, for example by pressing buttons on the local console 410, clicking a mouse of the local console 410, or by speaking voice commands to the local console 410. The local console 410 can be integrated into the game table 402. For example, the buttons, display screen, or microphone of the local console 410 can be placed on the game table 402. In one embodiment, the entered instructions are transmitted to the server, which transmits the information to the remote player. Therefore the remote player can be informed of the plays of physical players at the game table 402.

Requiring physical players 406 to enter instructions into local consoles 410 has another advantage. Since hand signals representing instructions such as "hit" and "stand" are subject to interpretation, physical players in occasion have challenged dealer's interpretation of their hand signals as incorrect. Requiring physical players 406 to

use local consoles 410 reduces the need for dealer interpretation and the possibility of player challenge. In one embodiment, the local console 410 is also configured to allow the physical player 406 to participate in conversation with remote players at the game table 402, for example by using a chat room or an instant messaging service. Each game table 402 can be organized as a chat room. Game tables 402 that play the same type of game can also be organized as a chat room. To provide better visual representation, a three-dimensional chat room can be used by remote and physical players. Players can be represented by three-dimensional avatars that can change motions or expressions. The local console 410 can also be equipped with a credit card reader or a smart card reader to accept the physical player 406's credit card or smart card, so that the physical player 406 can use his/her credit card or smart card account to play the game.

In another embodiment, the plays of physical players 406 are captured by cameras 412 and 416 and/or the microphone 422. The video and/or audio data is then transmitted from the server to the client devices 102 of the remote players, to inform the remote players of the plays of the physical players 406.

Card Scanning Methods and Devices

Cards are often dealt quickly by a dealer 404 from a card shoe 432 to the game table 402, making capturing video images of the cards difficult. In addition, a remote user may contest that because the video image is unclear, he/she had mistaken the displayed video image of one card as another card. For remote players with limited bandwidth connection, transmitting video images of cards may result in delay. It is therefore advantageous to scan cards to quickly and reliably determine the type of card dealt without controversy, and to transmit such information to remote players in a space-saving non-video format.

In one embodiment, each card is embedded with a code that indicates the type of the card, such as Spade of Seven, Ace of Heart, and so forth. The code is preferably unreadable by humans. In one embodiment, a code is printed on the face up side of a card, so that a human can only see the code when he/she holds the card face up.

In one embodiment, the humanly unreadable code is embedded in a low-cost miniature chip. Commercial embodiments of a miniature chip cost as low as several cents. The code embedded in the chip is read by a chip reader, for example a chip reader that reads the code by transmitting a radio signal to the chip and receiving a returned radio signal that identifies the embedded code. In another embodiment, the code can also be embedded in a bar code, and a bar code scanner scans the bar code as the card is removed from the card shoe 432. In yet another embodiment, the code is embedded as an invisible bar code in the card, and an infrared scanner scans the code as the card is removed from the card shoe 432. Making the bar code invisible not only further prevents player fraud, but also improves aesthetics of the cards. The scanning device connects to the server. The server transmits the card-type information to the client device 102. The client device 102 receives the card-type information and advantageously uses a display application such as a Java applet to display the card in a graphic form to the user.

Referring to FIGURE 4, in operation at a game table 402, a server determines the number of physical and remote players that participate in the game. The number of physical players 406 can be determined and entered into

the server by the dealer 404 of the game table 402. The number of physical players 406 can also be determined by using video images of the cameras at the game table 402, or by counting the number of active local consoles 410 at the game table 402. As a card is removed from the card shoe 432 and scanned by a card scanner 434, the destination of the card (i.e., dealt to the dealer 404, dealt to a remote player, or dealt to a physical player 406) is immediately determined, because the number of players have been determined and the order of dealing cards (clock wise or counter clockwise at the game table 402) is fixed. The server then displays to the remote players the cards dealt to each party at the game table 402. In embodiments in which a player typically only read his/her own cards, for example in Caribbean Studs, single-deck Black Jack, Pai-gow, and Let It Ride, the server then only displays to a remote player the cards dealt to him/her. After a game ends, the type of cards dealt to other players can be transmitted to the remote player to ensure him/her that the game has been played fairly. In one embodiment, the dealer flips every dealt card on the game table 402 to be face up, the video images of the flipped cards and/or the scanned card type information of the flipped cards are transmitted to remote players.

In some games at least a dice is rolled. For example, in the game of Craps, two dices are rolled. In one embodiment, a human operator records the resulting number(s) of the dice(s) on a recording device connected to the server. For example, the human operator enters a number from one through six for each rolled dice on the recording device, or selects a button from the buttons "one" through "six" of the recording device for each rolled dice. In another embodiment, an overhead camera captures an image of the rolled dice(s). For each rolled dice, a pattern recognition program analyzes the image of the rolled dice to determine the resulting number of the dice. Since only up to six possible outcomes are associated with each dice, and since each of the six possible outcome images are relatively simple, a pattern recognition program can be programmed to quickly and reliably determine the result of the rolled dices.

In another embodiment, information such as cards dealt and dices rolled are captured as video images by cameras at the game table 402 and sent to the remote player. However, doing so requires relatively high clarity video images. Therefore large bandwidth is required for connecting the player to the network, and the player may experience a delay time in seeing the images. In yet another embodiment, the scanned card/dice information and the video images of cards/dices are both displayed to the remote player. Therefore the player can use the scanned information for clear viewing and quick playing. The video images provide realistic feelings to the player of being physically present at the game table.

Providing Video Images to the Player

Video cameras are placed at the game center to capture video images to be streamed to the client device 102. Audio data can also be recorded by microphones and streamed to client devices 102. The microphones can be placed at game tables 402 or on dealers 404.

In one embodiment, when a remote player starts playing at a particular game table 402, the video images captured by the overhead camera 412 at the game table 402 is streamed to the player's client device 102. Since most

game centers already have overhead cameras installed for monitoring purposes, the existing overhead cameras simply need to be connected to a server to stream video images to remote player.

In another embodiment, a plurality of cameras are placed at each game table 402. For example, one camera 412 is directed at the game table 402, another camera 414 is directed at the dealer 404, other cameras 416 are each directed at a physical player 406 at the game table 402. The video images captured by the plurality of cameras are streamed to the user's client device 102. The video images captured by the plurality of cameras can be displayed at one combined picture, or as multiple pictures each within an individual window. The remote user 408 at the client device 102 is therefore able to have a realistic experience, because the user is able to watch the images of the dealer 404 and the physical players 406 at the game table 402. A camera can also be used to capture images of multiple physical players 406 at the game table 402. For example, a camera can be programmed to aim at a physical player 406 or the dealer 404, and then switch aim to a different physical player 406 after every three seconds. A motion sensitive camera or a voice sensitive camera can also be used to aim at the physical player 406 or the dealer 404 that spoke or moved.

As described above in connection with FIGURE 4, remote players can capture video images of themselves by using cameras connected to their client devices 102. The video images are then transmitted to the server. When multiple remote players 408 are playing at the same game table 402, video images of the remote players 408 can be used to enhance interaction between the remote players 408. In one embodiment, video images of the remote player 408 is displayed at its remote instruction system 408, and captured by a camera that is aimed at the remote instruction system 408. The video images captured by the camera can then be transmitted to other remote players 408. In another embodiment, the server receives the original video images of remote players 408 and transfers them directly to the client devices 102 of the other remote players 408 at the same game table 402. Additional interaction features, such as chat rooms or instant message services, can also be provided. Instead of video images, a remote player 408 can also use a photo to represent his/her presence at the game table 402.

In addition to video images and photos, a holographic image can be displayed at a game table 402 to represent the presence of a remote player 408. A holographic image is a three-dimensional image formed by the interference between a coherent laser beam and the light scattered by the object being imaged. The image can be viewed when illuminated by the same light that formed the image. In one embodiment, holographic images of the dealer 404, the cards being dealt, the physical players 406 and/or the game table 402 are recorded at the game center and transmitted to the remote player's client device 102. The client device 102 then reproduces the holographic images. In another embodiment, a remote player 408 is prompted at his/her client device 102 to select a default holographic image from a list of default holographic images. The list of default holographic images represents different types of persons, for example persons of different gender, age, and ethnicity combinations. The default image selected by the player is then displayed at the game table 402 to represent the remote player 408. By using default holographic images, the remote player 408 does not need to record a holographic image of himself or herself. The remote player 408 also does not need to transmit his/her image data from the client device 102 to the server. Only the

remote player's selection of an image needs to be transmitted. According to the received user selection, the selected default holographic image is then displayed at the game table 402. In yet another embodiment, a holographic system at the remote player's location records a holographic image of at least a portion of the remote player 408, for example the remote player's head. A holographic image can be recorded by illuminating the target with laser. The image record is then transmitted to the server and used to reproduce a three-dimensional holographic image of the remote player 408 at the game table 402.

Streaming video images requires substantial bandwidth. In one embodiment, a server adjusts delivery rate depending on the bandwidth of the client device 102. For example, if a client device 102 is connected to the server by a T-1 line, the server then streams video images to the client device 102 at a high rate, such as equal to the camera refresh rate of the cameras at the game table 402. If a client device 102 is connected by a 28.8Kb modem, then the server streams video images to the client device 102 at a lower rate. In another embodiment, the remote player is allowed to adjust video image delivery rate. A higher delivery rate provides a more realistic experience, but a lower delivery rate typically still provide sufficient information for game play. In one embodiment in which video images from a plurality of cameras can be streamed to the user, the remote player is allowed to select video images from only some of the plurality of cameras to be streamed or displayed. For example, instead of video images of the dealer 404 and other physical players 406, the remote player 408 may choose to have only video images of the game table 402 streamed or displayed. The remote player 408 may choose to have video images transmitted only after a card is dealt.

FIGURE 5 is a diagram showing one embodiment of a system for delivering data to remote players 408. The original media server 502 is connected to a cache server 504, which is connected to multiple local servers 506. Each local server 506 stores at least a portion of the original media server 502's data. When a client device 102 requests data, the cache server 504 selects a particular local server 506 to deliver data to the client device 102. In one embodiment, the local server 506 with the shortest physical distance to the client device 102 is selected. In another embodiment, the local server 506 with the shortest network distance to the client device 102 is selected. In yet another embodiment, the local server 506 with the least network congestion to the client device 102 is selected. Commercial embodiments of cached delivery and delivering data to the "edge" of the network have been provided by companies such as Netcache, Inktomi, Akamai, and so forth.

Commercial software-on-demand applications such as Extent's EXEtender allow software to be transmitted to the client device 102 without installation. For example, in one embodiment in which the client device 102 is a personal computer, software for providing a remote player-game center game interface is transmitted from a server to the memory of the personal computer for execution, without the need for installing the software on the hard drive of the personal computer. Therefore software can be executed almost instantaneously, without the time consuming installation process and the need for storing the software on the hard drive. The likelihood of unauthorized copying is also reduced. Software can be streamed to the client device, so that at any particular moment only a necessary portion of the software is streamed to the client device 102. Therefore client devices 102 with limited storage space can execute large software programs.

Providing Slot Machine Statistics to the Player

The statistics associated with a real or virtual slot machine can be displayed to the player. The statistics can include the last time the slot machine awarded a winning to a player, the last time the slot machine awarded a large winning (such as above $100) to a player, the amount of winnings, the total amount of winnings awarded by the slot machine in certain time intervals, the total amount of money entered into the slot machine in certain time intervals, the result of the last 100 plays, and so forth. Although the statistics are advantageously stored and displayed to players automatically, statistics can also be entered by operators who observe playing slot machines. Although human data entry may be labor intensive, it can be limited to, for example, recording statistics only for high roller slot machines that require large amounts to play, or only recording certain statistics such as the occurrence of large winnings. The slot machines of the game center can be linked together, or linked to slot machines of other game centers, to increase the potential jackpot amount. The slot machine statistics provide the players with information and incentive to play. The player is enabled to select a slot machine to play after reviewing the statistics. The statistics data can also be used to comply with government regulations, to monitor the fairness of the slot machine operation, and to provide tax, auditing and reporting information to the game center or investors.

FIGURE 6 is a flowchart showing one embodiment of a process of allowing a player to play a slot machine. A start block 602 proceeds to block 604. At block 604, the server displays statistics associated with each slot machine to the player. In one embodiment, the slot machines are virtual slot machines, i.e., computer simulated slot machines. The statistics of each virtual slot machine are stored after every play. The statistics are sent from the server to the player's client device 102. In another embodiment, the slot machines are physical slot machines in the game center. The statistics of each slot machine are sent from a statistics storage medium through the server to the player's client device 102. In one implementation of this embodiment, the slot machines for on-line play are located in an on-line play area not available to physical players of the game center. In another implementation, the slot machines of the game center can be shared by physical players and virtual players. A display panel on a physical slot machine or next to a physical slot machine displays statistics of the slot machine to the physical players.

Block 604 proceeds to block 606. At block 606, the server prompts the player to select a slot machine to play. In another embodiment, the server prompts the player to select a slot machine from slot machines that are available to be played. In yet another embodiment, a record is kept storing the identifier of a slot machine as the personal favorite slot machine of the player. For example, the slot machine last played by the player on a previous visit to the game center can be identified as the player's favorite machine. A slot machine that awarded the most recent winnings to the player on a previous visit can also be identified as the player's favorite machine. Block 606 proceeds to block 608. At block 608, the server determines if the selected slot machine is available to be played. The slot machine is not available if it is currently being played by another virtual or physical player, or if it is being taken off-line for maintenance. If the slot machine is not available, then block 608 returns to block 606 to prompt the player to select another slot machine. Otherwise block 608 proceeds to block 610.

Still referring to FIGURE 6, at block 610, the server receives playing instructions on playing the next hand at the selected slot machine. Playing instructions may include instruction to "spin the wheel", instruction to double the bet, instruction to triple the bet, and so forth. Block 610 proceeds to block 612. At block 612, a determination is made as to whether the use has finished playing. If the player has finished playing, for example if the player has entered a "finish" instruction at block 610, or if the player has not entered playing instructions within a specified time limit, then block 612 proceeds to an end block 618. Otherwise block 612 proceeds to block 614.

At block 614, the slot machine plays the received player instructions. In one embodiment, the received player instructions are automatically sent to the slot machine to be played. In another embodiment, a human operator plays the slot machine according to received player instructions. Although using human operators may be labor intensive, it may provide more of a realistic feeling to remote players. Using human operators can be limited to high roller slot machines to reduce the number of human operators required. Depending on the result of the play, either a winning is awarded to the player or no winning is awarded. Block 614 proceeds to block 616. At block 616, the statistics of the slot machine is updated to reflect the current progress. For example, winnings paid out by the slot machine and amounts entered into the slot machine are recorded with corresponding date and time. For a physical slot machine, its statistics is stored in a storage medium located within the slot machine or connected to the slot machine. The storage medium can be a volatile memory or a static memory. The statistics of multiple slot machines can be stored in the same storage medium as separate units of data. A display panel can be used to retrieve statistics from the storage medium and to display to physical players at the game center. In one embodiment in which multiple slot machines are connected by a slot machine server, the statistics for the each of the connected slot machines is stored in a database of the server. A virtual slot machine is simulated by a simulation computer. The virtual slot machine's statistics is stored in a database. The database is stored in a storage medium located within or connected to the simulation computer. Block 616 returns to block 610 to receive the player playing instructions on playing the next hand of the slot machine.

Remote Player Playing Process

FIGURE 7 is a flowchart showing one embodiment of a remote player playing process. FIGURE 7 is separated into figures 7A and 7B for ease of illustration. Referring to FIGURE 7A, a start block 702 proceeds to block 704. At block 704, the client device 102 connects to a server serving a game center, and the remote player is prompted to provide verification information to the server. Details of one embodiment of a verification process have been described above in connection with FIGURE 3. After the server verifies the player and grants the player's request to enter, block 704 proceeds to block 706. In one embodiment, based on the player's information such as country of origin, age, and/or gender, etc., a custom interface is presented to the player. For example, for a player that is identified as Chinese, a Chinese language interface can be presented to the player. For another example, based on the player's previously played games at the game center, or based on the most popular games played by other players from the same country and/or of the same age and gender, one or more games can be identified as the games mostly likely

to be played by the remote player. These games can be displayed in prominent positions in the interface presented to the player. At block 706, the client device 102 receives from the server and displays video images of the game center. In one embodiment in which multiple game centers are connected to the server, the player is prompted to select a game center.

Block 706 proceeds to block 708, where the player is prompted to buy chips. After the player specifies the amount of chips to buy, the amount of chips remaining to the player is advantageously displayed on the client device 102 at all times, to remind the player of the amount of chips left. The amount of remaining chips is updated through the player playing process, depending on the player's winnings and loss.

In one embodiment, the player is prompted to buy chips when the player selects a game table to play. The purchase request is transmitted to the server, which transmits the request to the dealer at the selected game table. The server reduces the player's account balance by the purchase amount, and the dealer places the chips at the game table next to the player instructions system 408 that represents the player. When the player exits the game and the game table, the server increases the player's account balance by the amount of chips remaining at the game table, and the dealer removes the chips from the table. In another implementation, when the player exits the game and the game table, the server does not update the player's account balance, but keeps a record of the amount of remaining chips of the player. Therefore the player is able to virtually "carry the chips" to other game tables or other game centers that honor the same chips. When the player is ready to exit the game center or the server, the server "redeems" the player's remaining chips by increasing the player's account balance by the chip amount. The player is also provided with the option to keep the remaining chips at the player's game center account to be used next time at the game center. To encourage the player to keep the remaining chips with the game center, the game center can provide incentives to the player, such as awarding interests to the player on the remaining chips or adding free chips to the player's remaining chips.

In another embodiment, the player is prompted to enter a wagering amount for every wagering opportunity (such as every hand of cards) in a game. The wagering amount is transmitted to the server, which verifies the amount against the player's account balance. If the player has sufficient funds to make the wager, then the wager request is granted. Otherwise the wager request is denied and the player may be prompted to enter a lower wagering request. If the player's jurisdiction has specified a wagering amount limit or a casino credit limit for players, the server also verifies that the player's wager does not exceed his/her jurisdiction's limit.

Still referring to FIGURE 7A, block 708 proceeds to block 710. At block 710, the player is prompted to select a game area in which a game is played, such as a game table in which a Black Jack game is played, a room in which Keno is played, a Wheel of Fortune wheel, or a slot machine. In one embodiment, the player is prompted to select a game table from the displayed images of the game center. In another embodiment, the player is prompted to select a game type such as Black Jack or slot machine, and is automatically assigned an available game table or slot machine that plays the selected game type. In a Wheel of Fortune game, a dealer spins the wheel and waits for the wheel to come to a final stop at a wheel landing area. The game of Black Jack is described below as an example.

Block 710 proceeds to block 712. At block 712, the client device 102 receives and displays images of the selected game table. Details of providing images of a game table to remote players have been described above in the section titled "providing video images to the player."

Block 712 proceeds to block 714. At block 714, a determination is made as to whether the player has started playing a game at the selected game table. If the player is already in the process of playing a game, block 714 proceeds to block 720. Otherwise block 714 proceeds to block 716. At block 716, the player is prompted to indicate that he/she is ready to participate in the next game. The player indication is transmitted to the dealer at the game table. The remote instructions system 408 is then activated at the game table to represent the player. Block 716 proceeds to block 718. At block 718, a game module is advantageously activated at the client device 102 or transmitted from the server to the client device 102. The game module includes instructions related to the game and allows the player to play the game according to the rules. The game module can be transmitted to the client device using a software-on-demand application described above. Block 718 proceeds to block 720.

At block 720, the cards dealt by the dealer are displayed at the client device 102. In one embodiment described above in the section titled "card scanning methods and devices," a code embedded in each of the cards dealt by the dealer is scanned. The server then transmits the type of the card as text data or numerical data to the client device 102. A display application such as an applet is advantageously utilized to display a card at the client device 102 according to the received card type information. The display application may be downloaded from the server to the client device 102. Block 720 proceeds to block 722. At block 722, the player is prompted to enter instructions, such as "hit", "stay", "double", "split", and so forth. In one embodiment, the player speaks a voice command into a microphone connected to the client device 102. The client device 102 receives the voice command and uses a voice recognition program to recognize the instructions. The recognized instructions are then transmitted to the game table. In one implementation, the player trains the voice recognition program prior to starting the game. The player speaks a voice command, advantageously in his/her native language, and identifies to the voice recognition program the instruction that the voice command represents. After one or more iterations of training, the voice recognition program is able to recognize the player's voice commands. The player can also interact with the dealer, physical players and other remote players by entering and transmitting audio comments, by entering and transmitting video images of himself/herself, by entering and transmitting chat messages or instant messages, and so forth. Block 722 proceeds to block 724. At block 724, the player instructions are transmitted to the server, which transmits the player instructions to the remote instructions system 408 at the game table. Other data such as audio data, video image data, chat messages, instant messages, and so forth can also be transmitted. The dealer then executes the received player instructions. Block 724 proceeds to block 730.

Failure situations can occur during a game. For example, the communication link between a remote player and the server may be interrupted or disconnected by the remote player or by network error. A remote player may fail to enter playing instructions within a specified time limit during a game. Rules are set to determine that a failure has occurred. For example, a network monitoring program can be used to determine whether the network communication

between the remote player and the server is functioning properly. A time limit such as ten seconds can be specified as the time limit under which the remote player must enter playing instructions. If a failure is determined to have occurred, contingency rules are used to continue the game at the game table 402. In one embodiment, a failed remote player is considered as having entered a "surrender" instruction for the current game. A "surrender" instruction orders the dealer to stop playing the player's hand, collect part of the player's wager for the game center, and return the other part of the player's wager to the player. The game center and the player usually each takes half of the player's wager. In another embodiment, a failed remote player is considered to be entering contingency instructions for the remainder of the game. Contingency instructions are computer-generated instructions to be played in the absence of player instructions. For example, contingency instructions such as "hit on 16 or less, stay on 17 or more" can be used as the failed remote player's instructions in a Black Jack game. In one implementation, the remote player can select, modify, or create contingency instructions for himself/herself prior to a game. For example, a conservative remote player may prefer contingency instructions such as "stay on 16 or more." For another example, a player may select, modify, or create contingency instructions such as "split two 8's." In the event of a failure, the server retrieves the remote player's contingency instructions to continue the current game.

Remote players can also back-bet on a game. A remote player selects a game table 402 and receives video images and/or audio signals of the game table 402. In one embodiment, car type information of each direct player and dealer at the game table 402 is transmitted to the remote player. In another embodiment, the remote player selects a direct player at the game table 402 and receives card type information of the selected direct player. A direct player is a remote or physical player that directly plays at the game table 402. An indirect player is a player that back-bets on a game at the game table 402. The indirect player transmits an instruction indicating he/she wishes to back-bet, a direct player selection, and a wager amount from the client device 102 to the server. If the indirect player back-bets on a game such as Black Jack or Roulette, then the indirect player does not enter further playing instructions. The direct player enters playing instructions or the dealer rolls the dices, and the indirect player's winning or loss is determined accordingly. If the indirect player back-bets on a game such as Caribbean Studs, the indirect player can choose to copy the direct player's playing instructions or enter instructions of his/her own. The indirect player's winning or loss is determined by the indirect player's playing instructions. Since the number of back-betting remote players at a game table 402 is not limited by physical space near the game table 402, and since a server instead of a dealer can receive back-betting instructions and determine results, a potentially unlimited number of remote players can back-bet at a limited number of game tables 402.

Referring to FIGURE 7B, at block 730, a determination is made as to whether the player is exiting the game table. A player can indicate that he/she will not play the next game at the table by entering, for example, a "exit game table" instruction at the client device 102. In one embodiment, the player is determined to be exiting the game center if he/she has not placed a new wager within a specified time frame. If the determination is negative, i.e., if the player wishes to keep playing at the game table, then block 730 returns to block 712 to keep playing. Otherwise block 730 proceeds to block 732. At block 732, a determination is made as to whether the player is ready to exit the game

center. A player can enter an instruction at the client device 102 to indicate he/she is ready to leave the game center. If the player is not ready to exit the game center, then block 732 returns to block 706. Otherwise block 732 proceeds to block 734. At block 734, the chips remaining with the player is redeemed. The server redeems the chips by increasing the player's account balance by the amount of the chips. In one embodiment in which the player did not purchase chips to play, the amount of winning or loss of the player is calculated, and the player's financial account is updated accordingly. When the player exits the game center, the server connects to a database of the game center or a database of a third party financial organization, and updates the player's financial account. In other embodiments, the player's financial account at the database can also be updated after the player exits a game table, after a game at the game table, or after each play. Block 734 proceeds to an end block 736. In another embodiment, the player may exit a game center but enter another game center hosted by the server to continue playing.

Player Rewards Program

The playing information of remote players can be recorded by a server and stored into a user playing history database. The stored playing information can be used in a player rewards program. The playing information can include the name of the player, the identifier of the player, the amount of winning made by the player, the amount of money spent by the player, date and time of playing, the types of games played by the player, and so forth. Multiple casino chains or multiple casino locations within the same casino chain can share the same rewards program. In addition to being used for a player reward program, the information can also be used for other purposes, for example in making recommendations of product and services to the player, in determining the amount of casino credit to provide the player, and in determining whether to grant the player a VIP or preferred guest status. The information can also be used to comply with government reporting regulations and to ensure qualify of customer service.

In one embodiment, every time a remote player plays at a casino, the server checks the user against the user playing history database. If the amount of money spent by the player has reached a certain triggering amount, then the server announces a winning reward to the player. The server then prompts the player to designate an account to receive the winning, or transfers the winning amount to a default account of the player. In another embodiment, a fixed percentage of rebate is automatically credited to the player every time the player plays at the casino. Incentives can also be provided to the player in the form of extra play opportunities, such as prompting the player to "play a free hand!" at the expense of the game center, or informing the player that "the casino doubles this wager for you!" The playing information stored in the database can also be used to conduct drawings to award large prizes to one or more players. The drawings can be random, or partially correlated to the playing information, such as the amount of money a player has spent and the player's playing frequency. The player reward program can also replace or compliment the existing bonus program at a hotel or casino. For example, the money a player has spent on gaming can be used to earn bonus points toward free stays at the hotel. The money a player has spent at other services of the casino can earn cash points to be spent on gaming at the casino.

In another embodiment, physical players at the casino can also join in the player rewards program. For example, referring to FIGURE 4, physical players can enter personal identification information on local consoles 410 at the game table 420. The rewards currently available to the physical player can be displayed on the local console 410. For example, as the player continues playing, the player can view on the local console 410 the increasing amount of bonus points or entitled prize winning. For remote players, the rewards information can be displayed on their client devices 102.

Computerized Monitoring

A monitoring program can be used to replace or compliment human "pit bosses". The monitoring program is designed to watch for irregularities, such as a physical player or remote player winning abnormally large amounts of money or winning constantly. In one embodiment, the monitoring program uses pattern recognition to analyze video images from cameras at the game table. For example, the monitoring program can be trained to distinguish normal dealer and physical player motions from abnormal dealer and physical player motions. If the video image of a dealer shows abnormal motions, such as the dealer reaching into his/her pocket, the monitoring program alerts a human security supervisor.

The monitoring program also acts as a coach or supervisor to the human dealer. Using information such as the types of cards dealt, the monitoring program can instruct the dealer on actions such as whether to hit or stand on the dealer's hand. When the monitoring program detects a card dealt to the dealer as an "Ace", the monitoring program reminds the dealer to ask players if they wish to buy insurance. The monitoring program can issue warnings if the dealer makes an error, for example continuing to deal a card to the dealer after dealer's hand exceeds 17. A training device such as a device similar to the local console 410 can be placed next to the dealer 404 on the game table 402, to provide real time instructions to train an inexperienced dealer 404. The training device displays the playing instruction such as "hit" or "stand" regarding the dealer's hand, and displays the total count of every player's cards. The training device also displays the amount of money to be paid to or collected from each player after a game.

Since information such as the wining and losing amount on each player and dealer at every game table can be collected by the server, statistical data on winnings and losing can be used to provide tax, auditing and reporting data to the game center, to government regulatory bodies, and to players. The game center can use statistical data to analyze the popularity and profitability of various game types and game centers.

To prevent players, especially remote players from counting cards, cards can be shuffled frequently, such as every game, every other game, or every five games. A card shuffler can be used to shuffle cards, so that the dealer need not shuffle the cards. A large number of decks of cards, such as four, six, or eight decks of cards can be used. A continuous card shuffler can be integrated with the card shoe to shuffle cards after every game. After every game, the dealer retrieves the dealt cards and places them into the continuous card shuffler, which shuffles all cards in the shuffler. The dealer then deals cards from the shuffler. Since the cards are shuffled after every game, only a small number of decks of cards need to be used.

Other Games

In addition to games in which players play against the game center, remote players can use the on-line system at a game center to play among themselves. The game center provides the on-line communication system and optionally the game table and the dealer. The game center charges the players a flat fee, a percentage of the total wager, or a percentage of the winnings. The game center obtains the financial account information from each player and ensures that each player has the sufficient fund that he/she wagers. The game center serves as an escrow service to ensure that the losing players cannot refuse to pay the winning players.

For example, remote players can join an on-line game center to play the game of poker. Referring to FIGURE 4, the remote players select a game table 402 to play. A real dealer 404 at the game table 402 deals cards face down to the remote players, each represented by a remote instructions system 408. Each card is scanned, and the card information is transmitted to the remote player for whom the card is dealt. The remote players can interact through video, audio, chat room messages, instant messages, and so forth. The playing instructions, video images, audio signals, messages, and so forth are transmitted from the originating remote players through the server to the destination remote players.

For another example, remote players can join an on-line game center to play a board game such as chess or monopoly. FIGURE 8 is a flowchart showing one embodiment of a process of a remote player playing a game of chess against a remote or physical player. A start block 802 proceeds to block 804, where a remote player enters a chess room of the game center. The remote player is verified to ensure that he/she is permitted by law and financially capable of playing a wagered game. Details of one embodiment of a verification process have been described above in connection with FIGURE 3. The chess room can be a computer simulated room or a real room with real chess boards. In one embodiment, a real chess board is located on a game table, such as the game table 402 illustrated in FIGURE 4, to enable a physical player to play against a remote player. A human referee moves the chess pieces on the real chess board according to playing instructions from the remote player. In another embodiment, a chess board is displayed on a computer screen located on a game table, such as the game table 402 shown in FIGURE 4. The physical player or remote player issues instructions to move the pieces on the chess board on the computer screen.

Still referring to FIGURE 8, block 804 proceeds to block 806, where the remote player broadcasts his/her intent to find an opponent to play. The remote player's message can be broadcast to the entire chess room or the entire game center. The remote player may also limit the message receiver to his/her friends identified by player name or player identifier. Additional information, such as the remote player's rating, win/loss record at the chess room, video image, photo image, and so forth, can also be broadcast. Block 806 proceeds to block 808, where the remote player waits for an opponent's response, evaluates the opponent, and accepts or rejects the opponent. The remote player may evaluate the opponent by reviewing the opponent's information transmitted to the remote player, such as the opponent's name, rating, win/loss record, video image, photo image, and so forth. The opponent can be another remote player, or a physical player at the chess room. The remote player may also interact with the opponent using

video images, audio conversation, chat messages, instant messages, and so forth. A physical player can interact with the remote player using an on-line device, for example the local console 410 illustrated in FIGURE 4. If the remote player rejects the opponent, then the remote player continues waiting and evaluating other opponents until one opponent is accepted. Block 808 then proceeds to block 810.

At block 810, the remote player and his/her opponent determines a wager amount for each party. The parties may communicate using video images, audio conversation, chat messages, instant messages, and so forth. The parties may agree to enter unequal wager amounts. For example, party A, who is believed to be the stronger player, wagers (thus stands to lose) $100, while party B, who is believed to be the weaker player, wagers (thus stands to lose) $50. The server verifies that each party has sufficient funds to cover the wager. The parties also determine who starts first, for example by mutual agreement or by rolling a real or computer-generated dice. Block 810 proceeds to block 812, where the remote player starts the game and transmits his/her move to the opponent. Other information, such as his/her video images, photo images, chat messages, instant messages, audio comments, etc., can also be transmitted to the opponent. Block 812 proceeds to block 814, where the remote player receives the opponent's move and other information such as video images of the remote opponent, or video images of the game table where the physical opponent is located. In one embodiment in which the other player starts the first move of the game, the orders of block 812 and block 814 are reversed.

Still referring to FIGURE 8, block 814 proceeds to block 816, where a determination is made as to whether the game has ended. The game ends when the parties agree to a draw, or when one party resigns. If the game has not ended, then block 816 returns to block 812 to continue playing. Otherwise block 816 proceeds to block 818, where the losing party pays out his/her wager to be collected by the winning party. The server transfers the wagered amount from the losing party's account to the winning party's account. The server also collects a flat fee or a percentage of the wager from the losing party or both parties. Block 818 proceeds to an end block 820.

For yet another example, remote players can join an on-line game center to play a computer game, such as a combat game, a role playing game, a strategy game, or a sports game. A plurality of player, for example dozens or hundreds of players, can play in the same game. In one embodiment, each player pays a wager amount to play the game, and the server transfers the losing players' wager amounts to the account(s) of the winning player(s). The server also transfers a flat fee or a percentage of the wager amounts to the game center.

Remote players can also join an on-line game center to place bets on a future outcome such as a sporting event. The betting events need not be limited to sporting events, but can be any events whose outcome can be reliably determined. In one embodiment, the remote players bet against each other, with the game center taking a percentage of the total wager or the winning. For example, remote players each enter a wager to predict the winner of the next World Cup Soccer tournament. The images of the events such as sporting events can be transmitted to the players, using the above-described devices. For example, the video images of a boxing match held at a casino can be transmitted to the players who have bet on the match. The television images of a sporting event can also be transmitted to players who bet on the event.

In another embodiment of betting on a future outcome, the game center sells or auctions the virtual ownership of a sports team, a race horse, a race car, or an athlete to one or more players at a price. The price is deducted from the financial accounts of the purchasing players and credited to the game center. The purchasing players become virtual owners. Different teams, horses, cars, and athletes can be purchased at different prices, depending on their expected chance of success. After a sporting event, the game center pays winning amounts to the virtual owners of the winning teams, horses, cars, and athletes. This embodiment provides to the players a sense of ownership and therefore great incentive.

In addition to real sporting events, a sporting event can be simulated and displayed. For example, based on the team and individual player statistics of NBA teams, such as team win-loss percentage, team average scoring per game, player average rebounds per game, player shooting percentage, and so forth, a computer simulates the plays of a 48-minute basketball game between two NBA players. The simulated game can be displayed as a pre-game show prior to the start of the real game. Physical and remote users can enter wagers to predict the result of the simulated game.

FIGURE 9 is a diagram showing one embodiment of a client device display. A display screen for Black Jack is shown as an example. The display screen 902 on the client device 102 includes a card section 904, an instruction section 906, a wager section 908, and an image section 910. The card section 904 displays graphic representations of the types of cards being dealt to the remote player and the dealer. The instruction section 906 displays the playing instructions available to the player. The remote player enters playing instructions by selecting instructions in section 906 or speaking an audio command. The wager section 908 displays the amount of the player's current wager and the player's remaining balance for game play. The player can specify a wager amount by entering an amount in section 908. Section 910 displays a video image of the game table 902 transmitted from the game center.

This application incorporates by reference in its entirety the Australian provisional application # PQ7841/00 titled "METHOD OF AND SYSTEM FOR PROVIDING AN ON-LINE CASINO GAME" and filed on May 29, 2000.

This invention may be embodied in other specific forms without departing from the essential characteristics as described herein. The embodiments described above are to be considered in all respects as illustrative only and not restrictive in any manner. The scope of the invention is indicated by the following claims rather than by the foregoing description.

WHAT IS CLAIMED IS:

1. A game table for a remote player to participate in a card game, the game table comprising:

a card scanner configured to scan a card and to determine a type of the card, the card having an embedded code that indicates the type of the card, the card scanner being connected to a server, the server being configured to transmit the type of the scanned card to the remote player;

one or more cameras connected to the server, the cameras being configured to capture video images of the game table, the server being further configured to transmit the captured video images to the remote player; and

a remote instruction system configured to receive playing instructions from the remote player through the server, and to display the received playing instructions at the game table in visual or audio form.

2. The game table of Claim 1, wherein the card scanner is configured to scan a card using a radio signal.

3. The game table of Claim 1, wherein the card scanner is configured to scan a card using an infrared signal.

4. The game table of Claim 1, wherein the card scanner is configured to scan a card using a barcode reader.

5. The game table of Claim 1, wherein the cameras comprise an overhead camera configured to capture video images of an overhead view of the game table.

6. The game table of Claim 1, wherein the cameras comprise a dealer camera configured to capture video images of a dealer of the game table.

7. The game table of Claim 1, wherein the cameras comprise a physical player camera configured to capture video images of a physical player of the game table.

8. The game table of Claim 1, further comprising a local console configured to allow a physical player at the game table to enter playing instructions.

9. The game table of Claim 1, further comprises a microphone connected to the server, the microphone being configured to record audio signals at the game table, the server being further configured to transmit the recorded audio signals to the remote player.

10. A physical slot machine configured to display playing statistics, the slot machine comprising:

a storing medium located within the slot machine or connected to the slot machine, the storing medium being configured to store a result for each of a plurality of plays at the slot machine; and

a display device located at the slot machine or connected to the slot machine, the display device being configured to display at least a summary of the stored results.

11. The slot machine of Claim 10, wherein the physical slot machine is connected to another physical slot machine.

12. A method of enabling a remote player to select a slot machine to play, the method comprising:

storing statistics of a first slot machine and statistics of a second slot machine;

displaying to the player at least a summary of the stored statistics of the first slot machine;

displaying to the player at least a summary of the stored statistics of the second slot machine; and

prompting the player to select a slot machine from a plurality of slot machines, the plurality of slot machines including the first slot machine and the second slot machine.

13. The method of Claim 12, wherein each of the plurality of slot machines is a physical slot machine located at a physical game center.

14. The method of Claim 12, wherein each of the plurality of slot machines is a virtual slot machine simulated by a computer program.

15. A method of creating security requirements at a web site, the method comprising:

displaying a plurality of available verification fields to an administrator of the web site;

prompting the administrator to select one or more verification fields from the plurality of available verification fields; and

prompting a user to enter data into the selected verification fields when the user requests entry into the web site.

16. The method of Claim 15, further comprising verifying user entered data to determine whether to allow the user to enter into the web site.

17. The method of Claim 16, wherein verifying user entered data comprises comparing user entered data against user information stored in a user information database connectable to the web site.

18. The method of Claim 16, further comprising prompting the user to insert a smart card into a smart card drive when the user requests entry into the web site.

19. The method of Claim 16, further comprising prompting the user to insert a smart disk into a disk drive when the user requests entry into the web site.

20. The method of Claim 18, wherein verifying user entered data comprises comparing user entered data against data stored on the smart card.

21. The method of Claim 19, wherein verifying user entered data comprises comparing user entered data against data stored on the smart disk.

22. A method of creating security requirements at a web site having a plurality of sub-sites, the method comprising:

displaying a plurality of available verification fields to an administrator of the web site;

for each of the plurality of sub-sites of the web site, prompting the administrator to select one or more verification fields from the plurality of available verification fields; and

prompting a user to enter data into the selected verification fields when the user requests entry into a sub-site of the web site.

23. A method of enabling a remote player to participate in a game at a physical game center, the method comprising:

prompting the remote player to connect to a server that hosts the physical game center;

verifying that the remote player is permitted by his/her jurisdiction to play at the game center;

verifying that the remote player is financially qualified to play at the game center;

identifying a financial account of the remote player;

prompting the remote player to enter playing instructions;

receiving the entered playing instructions at the game center;

playing a game at the game center according to the received playing instructions;

transmitting a status of the played game to the remote player;

optionally transmitting video images of the played game to the remote player; and

updating a balance of the identified financial account of the remote player.

24. The method of Claim 23, wherein verifying that the remote player is permitted by his/her jurisdiction to play comprises comparing the remote player's age against his/her jurisdiction's age limit.

25. The method of Claim 23, wherein verifying that the remote player is financially qualified to play comprises examining the remote player's financial information stored in a smart card of the remote player.

26. The method of Claim 23, wherein verifying that the remote player is financially qualified to play comprises examining the remote player's financial information stored in a smart disk of the remote player.

27. The method of Claim 23, wherein verifying that the remote player is financially qualified to play comprises examining the remote player's financial information stored in a financial database of the game center.

28. The method of Claim 23, wherein verifying that the remote player is financially qualified to play comprises examining the remote player's financial information stored in a financial database of a third party financial organization.

29. The method of Claim 23, wherein identifying a financial account of the remote player comprises identifying a smart card account of the remote player.

30. The method of Claim 23, wherein identifying a financial account of the remote player comprises identifying an e-wallet account of the remote player.

31. The method of Claim 23, wherein identifying a financial account of the remote player comprises identifying a bank account of the remote player.

32. The method of Claim 23, wherein identifying a financial account of the remote player comprises identifying a credit card account of the remote player.

33. The method of Claim 23, further comprising prompting the remote player to select a game to play.

34. The method of Claim 23, further comprising prompting the remote player to select a game area to play.

35. The method of Claim 34, wherein prompting the remote player to select a game area comprises prompting the remote player to select a game table.

36. The method of Claim 34, wherein prompting the remote player to select a game area comprises prompting the remote player to select a slot machine.

37. The method of Claim 23, wherein prompting the remote player to enter playing instructions comprises prompting the remote player to speak audio commands.

38. The method of Claim 23, wherein receiving the entered playing instructions comprises:

receiving the entered playing instructions in a first format at the server;

converting the playing instructions in a first format into playing instructions in a second format; and

transmitting the playing instructions in the second format from the server to the game center.

39. The method of Claim 38, wherein the first format is a non-audio format and the second format is an audio format.

40. The method of Claim 38, wherein the first format is an audio format in a first language and the second format is an audio format in a second language.

41. The method of Claim 23, wherein transmitting a status of the played game comprises transmitting a type of a card of the played game.

42. The method of Claim 23, wherein transmitting a status of the played game comprises transmitting a number of a rolled dice of the played game.

43. The method of Claim 23, wherein transmitting a status of the played game comprises transmitting a type of a wheel landing area of the played game.

44. The method of Claim 23, wherein optionally transmitting video images of the played game comprises optionally streaming the video images to the remote player.

45. The method of Claim 23, wherein playing the game comprises using a human operator to carry out the received playing instructions from the remote player.

46. The method of Claim 23, further comprising connecting the game center to another game center.

47. The method of Claim 23, wherein updating a balance of the identified financial account comprises updating the balance when the remote player is ready to exit the game center.

48. The method of Claim 23, wherein updating a balance of the identified financial account comprises updating the balance when the remote player is ready to exit a game area.

49. The method of Claim 23, wherein updating a balance of the identified financial account comprises updating the balance when the result of a bet entered by the remote player has been determined.

50. A method of a player playing a game at a remote physical game center, the method comprising:

connecting to a server that hosts the game center;

entering verification information to satisfy legal requirements;

entering playing instructions to a game to be played or being played at the game center;

receiving a status of the played game from the server; and

optionally receiving video images of the played game from the server.

51. The method of Claim 50, wherein the game is a slot machine game, the method further comprising receiving statistics of the slot machine.

52. The method of Claim 50, wherein receiving a status of the played game comprises receiving a type of a card of the played game.

53. The method of Claim 52, wherein receiving a type of a card comprises receiving a type of a card scanned by a card scanner connected to the server.

54. The method of Claim 50, wherein receiving a status of the played game comprises receiving a number of a rolled dice of the played game.

55. The method of Claim 50, wherein receiving a status of the played game comprises receiving a type of a wheel landing area of the played game.

56. The method of Claim 50, further comprising receiving player rewards information from the server.

57. A method for enabling a remote player to participate in a game played in a casino remotely located from said remote player and providing the remote player with a realistic game experience that substantially captures the visual feel and excitement of the casino, the method comprising:

transmitting images to said remote player of a game in progress;

identifying a financial account of said remote player;

prompting said remote player when it is said remote player's turn to play to enter playing instructions during the game;

receiving at said casino the entered playing instructions from said remote player while the game is being played;

receiving from said remote player an amount of wager specified by said remote player; and

communicating to said remote player the ongoing status of the game in substantially real time.

58. The method of Claim 57, further comprising transmitting to said remote player sounds of the game and voices of a dealer and on-site players.

59. A method for enabling a remote player to participate in a game played in a casino remotely located from said remote player and providing the remote player with a realistic game experience that substantially captures the visual and audio feel and excitement of the casino, the method comprising:

transmitting images to said remote player of a game in progress;

transmitting to said remote player sounds of the game and voices of a dealer and on-site players;

identifying a financial account of said remote player;

prompting said remote player when it is said remote player's turn to play to enter playing instructions during the game;

receiving at said casino the entered playing instructions from said remote player while the game is being played;

receiving from said remote player an amount of wager specified by said remote player;

communicating to said remote player the ongoing status of the game in substantially real time; and

communicating to said remote player an amount of balance retained by said remote player.

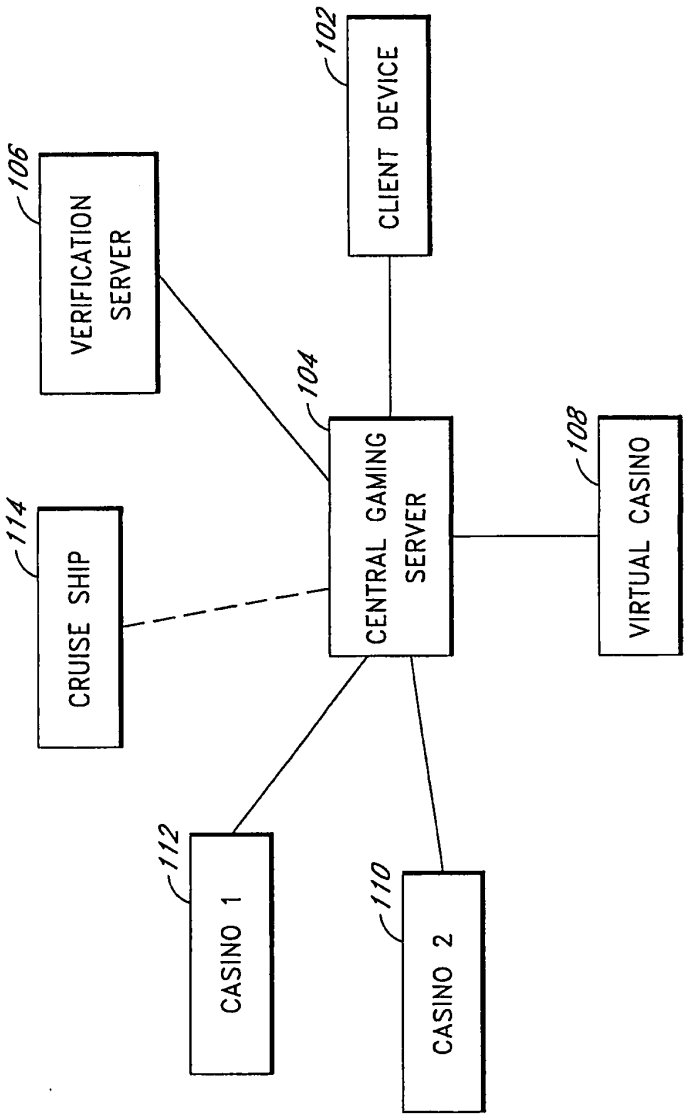

102
CLIENT DEVICE
106
VERIFICATION SERVER
104
CENTRAL GAMING SERVER
108
VIRTUAL CASINO
114
CRUISE SHIP
112
CASINO 1
110
CASINO 2

FIG. 1

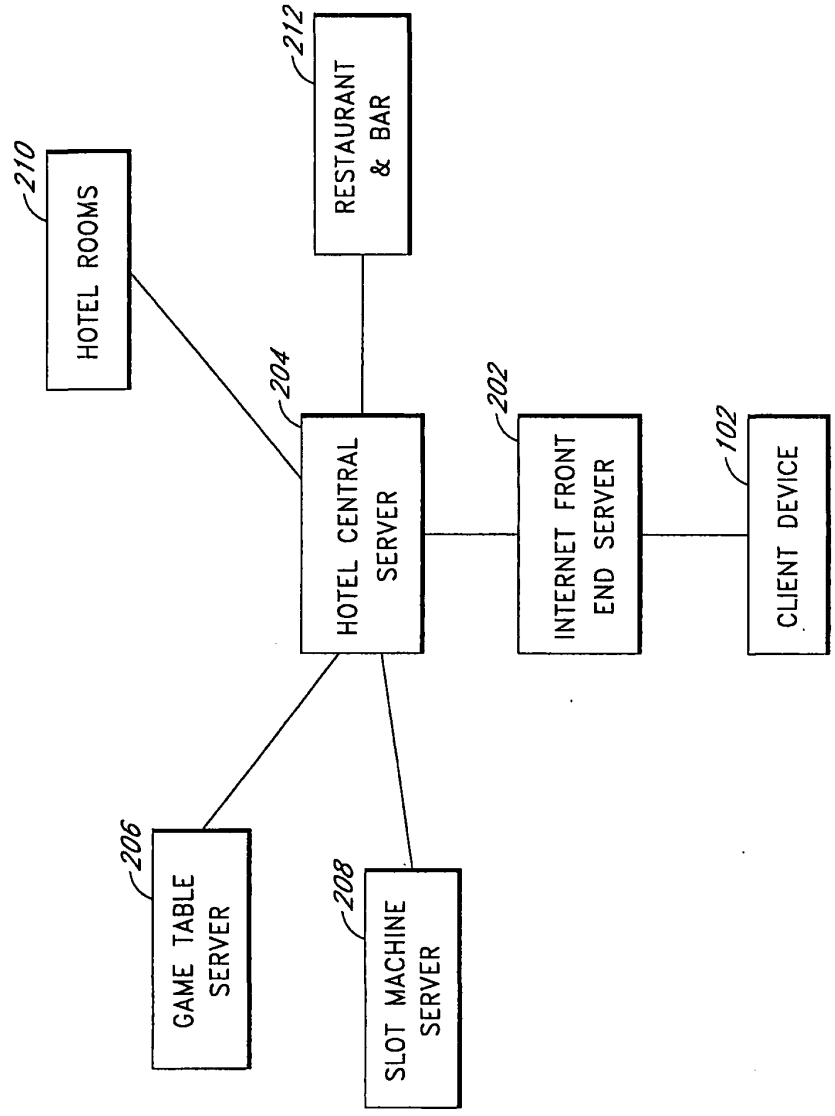

212
RESTAURANT & BAR
210
HOTEL ROOMS
204
HOTEL CENTRAL SERVER
202
INTERNET FRONT END SERVER
102
CLIENT DEVICE
206
GAME TABLE SERVER
208
SLOT MACHINE SERVER

FIG. 2

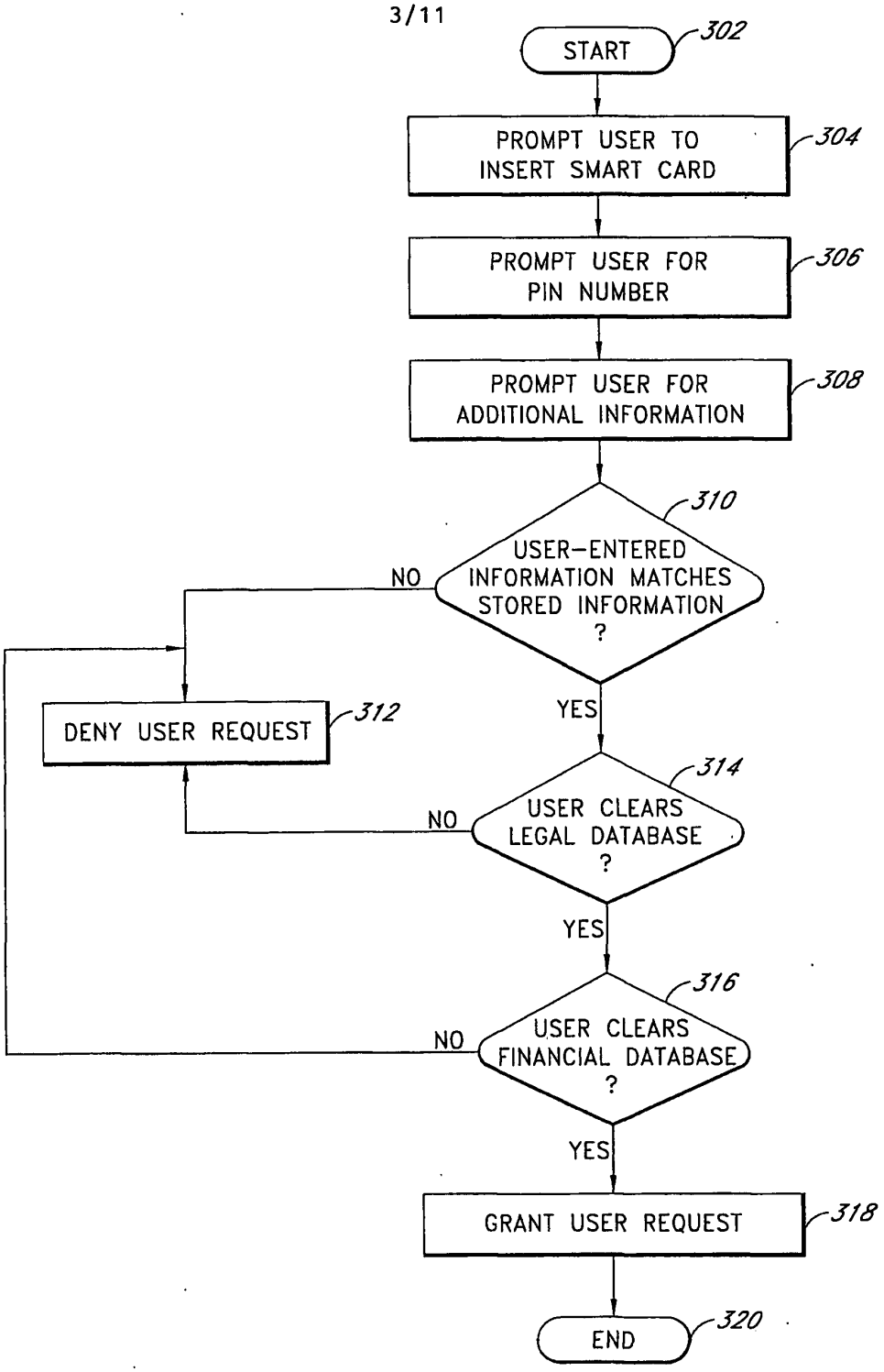
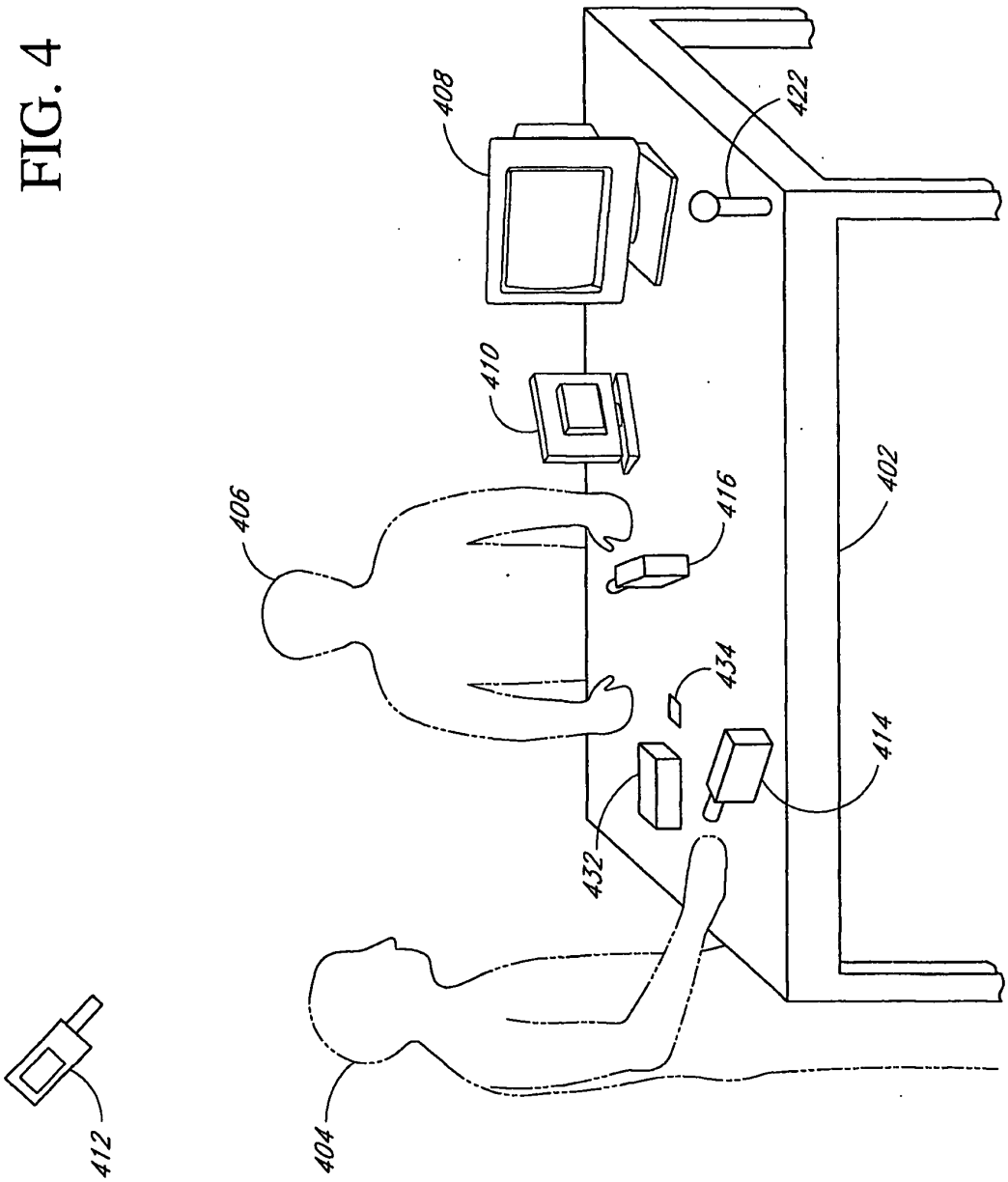

START
302
PROMPT USER TO INSERT SMART CARD
304
PROMPT USER FOR PIN NUMBER
306
PROMPT USER FOR ADDITIONAL INFORMATION
308
USER-ENTERED INFORMATION MATCHES STORED INFORMATION ?
310
NO
YES
DENY USER REQUEST
312
USER CLEARS LEGAL DATABASE ?
314
NO
YES
USER CLEARS FINANCIAL DATABASE ?
316
NO
YES
GRANT USER REQUEST
318
END
320

FIG. 3

FIG. 4



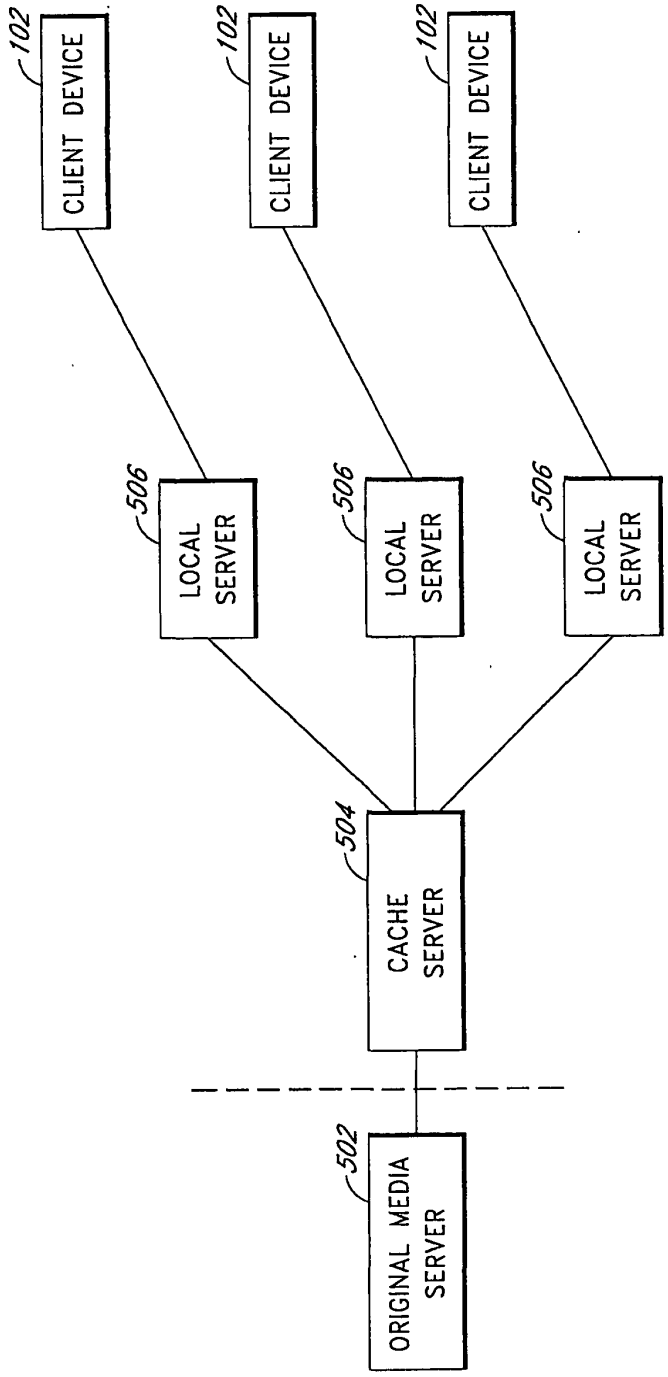

102
CLIENT DEVICE
102
CLIENT DEVICE
102
CLIENT DEVICE
506
LOCAL SERVER
506
LOCAL SERVER
506
LOCAL SERVER
504
CACHE SERVER
502
ORIGINAL MEDIA SERVER

FIG. 5

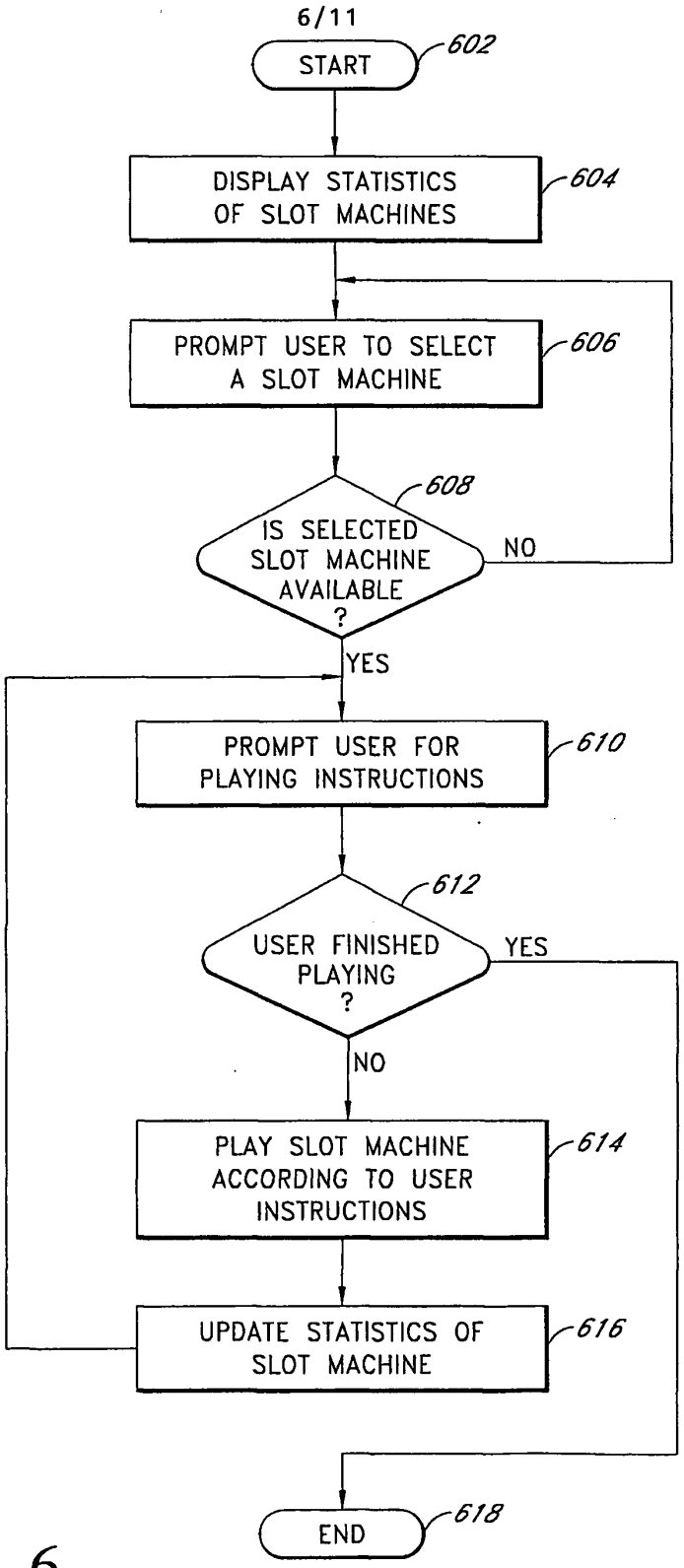

START
602
DISPLAY STATISTICS OF SLOT MACHINES
604
PROMPT USER TO SELECT A SLOT MACHINE
606
IS SELECTED SLOT MACHINE AVAILABLE ?
608
NO
YES
PROMPT USER FOR PLAYING INSTRUCTIONS
610
USER FINISHED PLAYING ?
612
YES
NO
PLAY SLOT MACHINE ACCORDING TO USER INSTRUCTIONS
614
UPDATE STATISTICS OF SLOT MACHINE
616
END
618

FIG. 6

FIG. 7

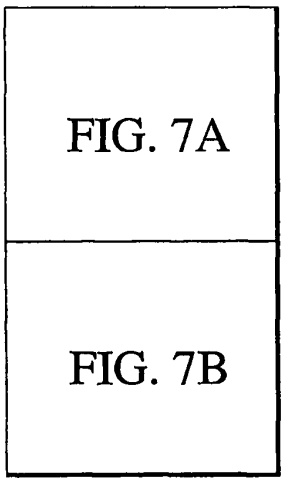
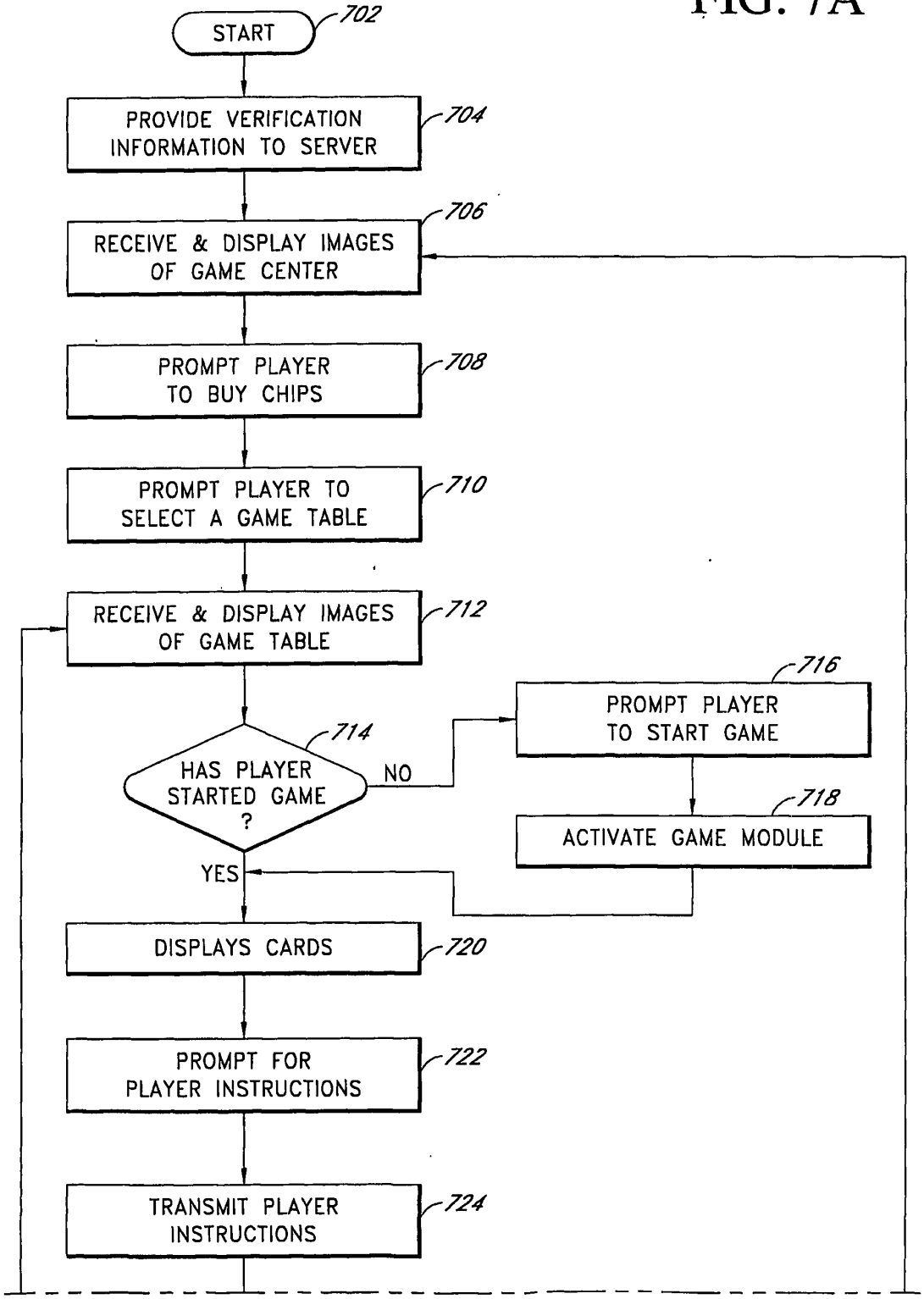


FIG. 7A


START
702
PROVIDE VERIFICATION INFORMATION TO SERVER
704
RECEIVE & DISPLAY IMAGES OF GAME CENTER
706
PROMPT PLAYER TO BUY CHIPS
708
PROMPT PLAYER TO SELECT A GAME TABLE
710
RECEIVE & DISPLAY IMAGES OF GAME TABLE
712
HAS PLAYER STARTED GAME ?
714
NO
PROMPT PLAYER TO START GAME
716
ACTIVATE GAME MODULE
718
YES
DISPLAYS CARDS
720
PROMPT FOR PLAYER INSTRUCTIONS
722
TRANSMIT PLAYER INSTRUCTIONS
724

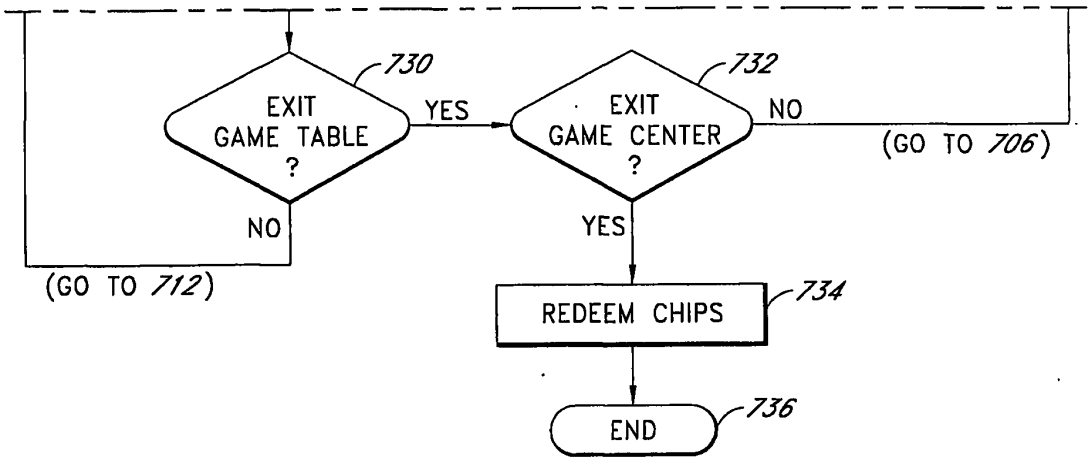

730
EXIT GAME TABLE ?
YES
732
EXIT GAME CENTER ?
NO
(GO TO 706)
NO
(GO TO 712)
YES
REDEEM CHIPS
734
END
736

FIG. 7B

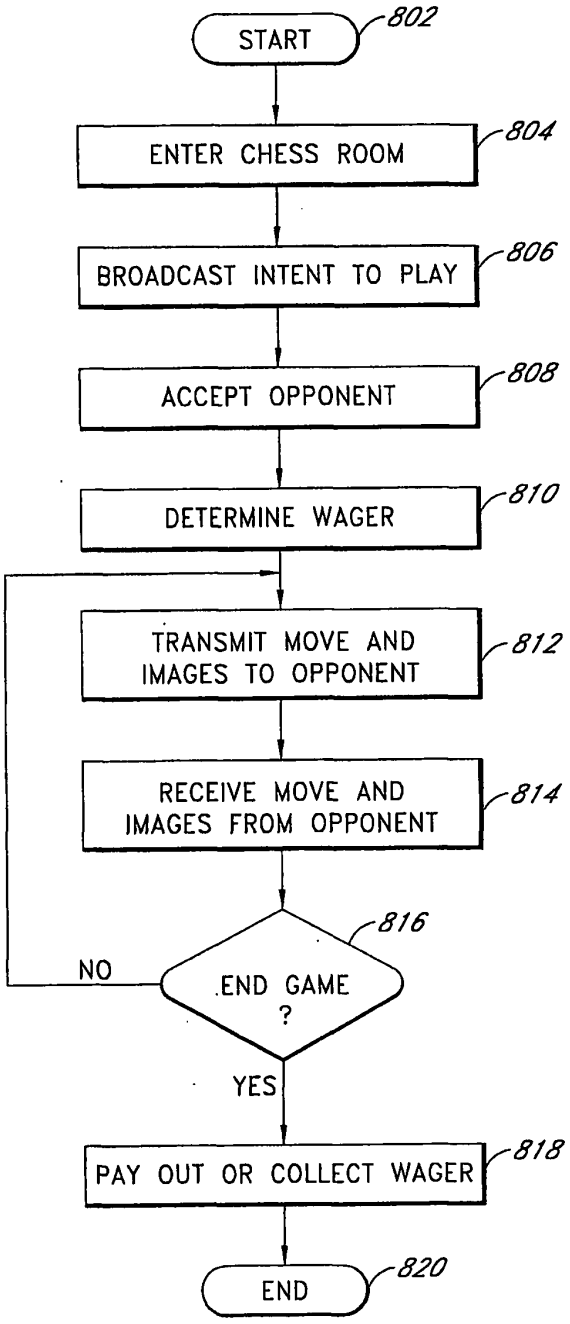

START
802
ENTER CHESS ROOM
804
BROADCAST INTENT TO PLAY
806
ACCEPT OPPONENT
808
DETERMINE WAGER
810
TRANSMIT MOVE AND IMAGES TO OPPONENT
812
RECEIVE MOVE AND IMAGES FROM OPPONENT
814
816
NO
END GAME ?
YES
PAY OUT OR COLLECT WAGER
818
END
820

FIG. 8

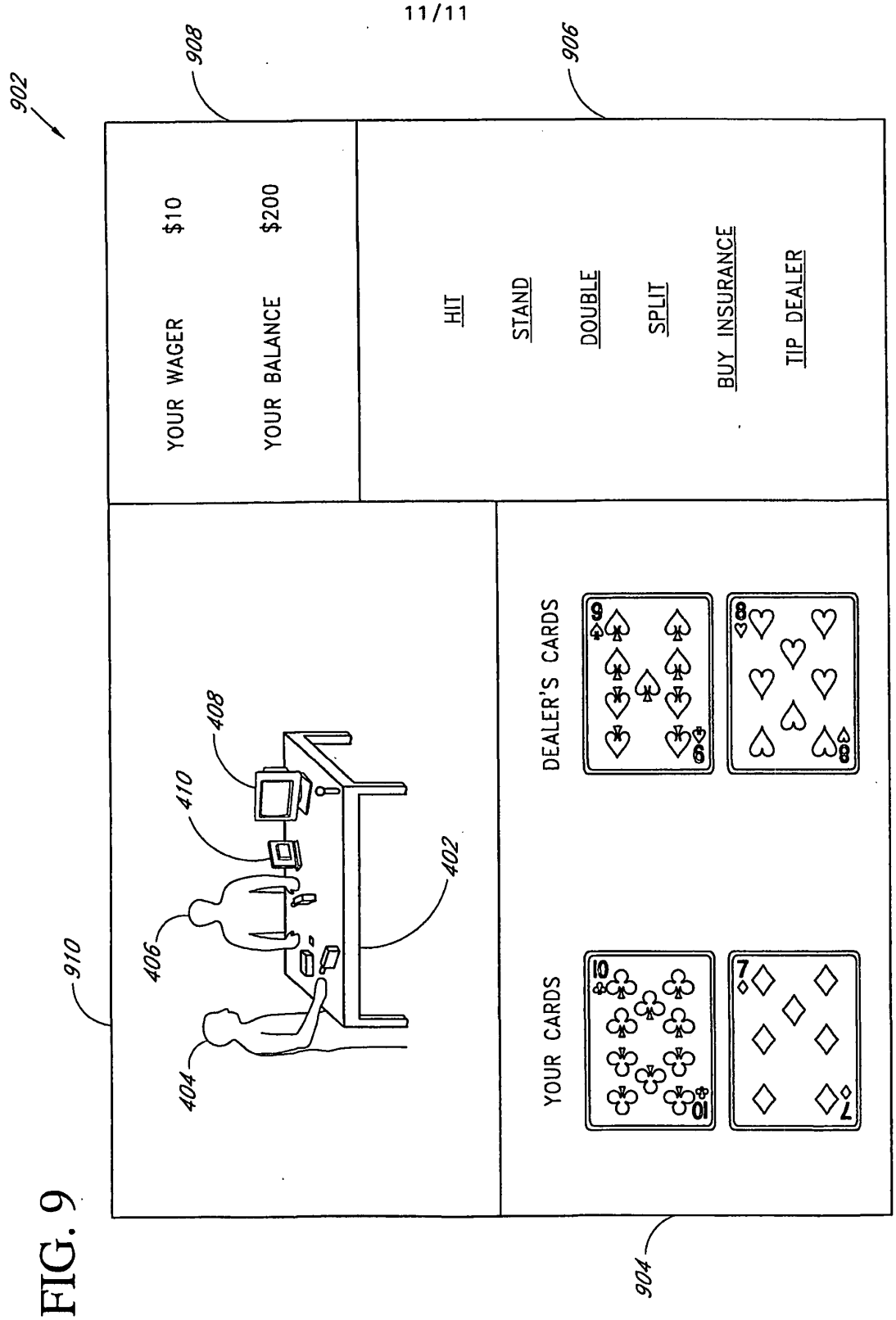

902
908
906
YOUR WAGER $10
YOUR BALANCE $200
HIT
STAND
DOUBLE
SPLIT
BUY INSURANCE
TIP DEALER
DEALER'S CARDS
YOUR CARDS
408
410
402
406
404
910
904

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17285

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A63F 6/24

US CL :Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 709/200, 203, 217-219; 273/148R, 149R, 149P; 463/30, 34, 40-42

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

West, ACM

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,397,133 A (Penzias) 14 March 1995, See col 1-col 5	1-9
Y	US 6,001,016 A (Walker et al) 14 December 1999, See col 1-col 12	1-9
Y	US 5,127,651 A (Okada) 07 July 1992, See col 1-col 7	10-11
Y	US 6,026,433 A (D'Arlach et al) 15 February 2000, See col 1-col 11	15-22
Y	US 5,878,417 A (Baldwin et al) 02 March 1999, See col 1- col 4	15-22

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 05 SEPTEMBER 2001	Date of mailing of the international search report 10 OCT 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer For VALENCIA MARTIN-WALLACE Telephone No. (703) 308-4119

Sheila Veney
Paralegal Specialist
Technology Center 3700

Form PCT/ISA/210 (second sheet) (July 1998)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17285

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Fernandez et al Catching the Boat with Strudel: Experiences with a Web-Site Management System, ACM May 1998	15-22
Y	US 4,373,719 A (Nelson et al) 15 February 1983, col 1-col 11	23-59

Form PCT/ISA/210 (continuation of second sheet) (July 1998)★

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17285

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17285

A. CLASSIFICATION OF SUBJECT MATTER:
US CL :

709/200, 203, 217-219; 273/148R, 149R, 149P; 463/9-13, 16, 20, 30, 34, 40-42

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING
This ISA found multiple inventions as follows:

Group I - drawn to a game table having a card scanner, one or more cameras, and a remote instruction system ...., claims 1-9.
Group II - drawn to slot machine configuration having a memory and a display device ..., claims 10-11.
Group III - drawn to a method for remotely selecting a slot machine for play....., claims 12-14
Group IV - drawn to creating security for a web site....., claims 15-22.
Group V - drawn to enabling remote player to participate in a game at a physical game center.....,claims 23-59.

This application contains groups of claims drawn to different categories of invention not permitted by Rule CFR 1.475(b) and (d) and therefore do not share a special technical relationship. These categories of invention are deemed to lack Unity of Invention because they are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for more than one inventions to be searched, the appropriate additional search fees must be paid.

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Form PTO-1449 (modified)	Atty. Docket No. 247079-00077USPT	Serial No. 09/688,501
List of Patents and Publications for Applicant's **INFORMATION DISCLOSURE STATEMENT**	Applicants Shridhar P. Joshi	
Page 1 of 1	Filing Date: October 16, 2000	Group: 3714

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date if App.
	A01	4,339,798	07/13/1982	Hedges et al.	364	412	
	A02	5,762,552	06/09/1998	Vuong et al.	463	25	
	A03	5,980,384	11/09/1999	Barrie	463	16	
	A04	6,089,982	07/18/2000	Holch et al.	463	42	
	A05	6,098,985	08/08/2000	Moody	273	292	
	A06	6,183,366	02/06/2001	Goldberg et al.	463	42	
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	B02	EP 1078667	02/28/2001	Europe	A63F	13/12	
	B03	EP 1177822	02/06/2002	Europe	A63F	13/12	

Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation

EXAMINER:	DATE CONSIDERED:

EXAMINER: INITIAL IF REFERENCE CONSIDERED, WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.

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(12) EUROPEAN PATENT APPLICATION

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(54) NETWORK GAME SYSTEM

(57) A system to play a game through network to be used for attracting customers to stores or shopping malls by identifying game participants, proceeding the game only once a day and limiting the period of time.

Each shop is provided with one or more POS terminal 1 also acting as a game terminal or a terminal exclusively for games and connected to a game server 3 in the center through internet. A magnetic card is issued to each game participant for identifying the individual. A customer coming to the store inserts his/her magnetic card into a POS terminal 1 to receive one lucky number of the bingo game. If the lucky number is equal to one of the numbers on his/her bingo card, such information is sent to the center. Such operation is repeated no more than once a day and a prize will be awarded if BINGO is established within 30 days. Similarly, in addition to the bingo game, "sugoroku" game or other games can be played. Since the game can proceed no more than once a day, customers are encouraged to come to the store everyday, thereby making it effective for customer attraction.

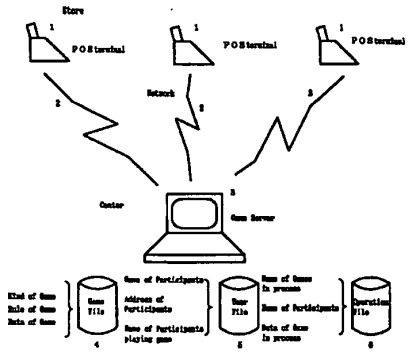

Figure 1

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Description

(Field of Invention)

[0001] The present invention relates to a network game system, more specifically to a system for identifying each game participant and proceeding the game once or several times a day until the game is terminated in a predetermined period of time.

(Prior Art)

[0002] Many games such as bingo games are popular among not only adults but also children. As shown in FIG.12, bingo games are played using cards having written numbers in matrix on a paper card. Disclosed in, for example, JP-A -7-328178 (328178/'95), is a bingo game to be played with a copy type card. Also known is an electronics bingo game to be joined through network. Disclosed in JP-A -5-317485 (317485/'93) is a bingo game system using a conventional number selection drum and also electronic technique for reading numbers, displaying numbers in arrays, summing up the numbers. JP-A-7-136311 (136311/'95) discloses a technique for sequentially printing symbols on a card whenever a user (or customer) buys something, thereby proceeding a bingo game. JP-A-8-501236 (501236/'96) discloses a technique for transmitting and receiving data between a base station and terminals to proceeds a bingo game through network.

[0003] However, such conventional game systems computerizes any game using paper cards, thereby continuously playing the game over indefinite time. They are effective to speed up the process of the game and to make the game enthusiastic. However, the players are bored in a shorter time, thereby spoiling the game. Also, since the game is played by any participant in the conventional game system, it is impossible that the game is played by identified participants for a specified period of time.

[0004] The present invention is directed to a network game system played by identified players, proceeding at a controlled pace, limited to a predetermined period of time and maintaining the enjoyment of the game over a long time.

(Means to Solve the Problems)

[0005] For this end, the network game system according to the present invention comprises means for identifying game participants, means for limiting the process of the game to once to several times a day and means for setting the time to terminate the game.

[0006] The aforementioned construction of the game will help the game participants to enjoy it over a long time. Also, identifying the game participants or players will help to limit the players. If the game is applied to customers (or buyers) of shops of a large chain-stores or shopping malls (referred to as stores below), the game system will be effective as a customer attraction event.

(Brief Description of Drawings)

[0007]

(FIG.1) A system configuration of a first embodiment of the network game system according to the present invention.

(FIG.2) An initial screen display of the first embodiment of the network game system according to the present invention.

(FIG.3) A game selection screen of the first embodiment of the network game system according to the present invention.

(FIG.4) A flowchart showing how the bingo game of the first embodiment of the present invention proceeds.

(FIG.5) A system configuration of the second embodiment of the network game system according to the present invention.

(FIG.6) A flowchart showing how the "we'd like to visit distant places" game of the second embodiment according to the present invention proceeds.

(FIG.7) A first screen display of the "we'd like to visit distant places" game of the second embodiment according to the present invention.

(FIG.8) A second screen display of the "we'd like to visit distant places" game of the second embodiment according to the present invention.

(FIG.9) A flowchart showing how the "sugoroku" game of the second embodiment according to the present invention proceeds.

(FIG.10) A first screen display of the "sugoroku" game of the second embodiment according to the present invention.

(FIG.11) A second screen display of the "sugoroku" game of the second embodiment according to the present invention.

(FIG.12) A card for the bingo game.

(Description of Preferred Embodiments)

[0008] Now, the invention as defined in claim 1 comprises a central unit for controlling how to proceed a game or games and a plurality of terminals connected to the central unit through network. The network game system provides a game to participants through the terminals interconnected through network. Each terminal includes means for identifying individual game participant. The central unit includes means for registering the game participants, means for recording numbers picked by each game participant and means for controlling the

process of the game by predetermined times a day. The network game system provides customers to the store with enjoyment or excitement of the game over a long period of time.

[0009] The invention as defined in claim 2 is the network game system of claim 1, wherein each of the terminals is a POS (point of sales) terminal capable of giving enjoyment of a game or games to customers coming to the store over a long period of time.

[0010] The invention as defined in claim 3 is the network game system of claim 1, wherein the central unit is provided with means for terminating the game when a predetermined time is lapsed so that customers to the store can play the game only for the predetermined period of time.

[0011] The invention as defined in claim 4 is the network game system of claim 1, wherein each of the terminals is provided with means for transferring to the central unit the amount of money that each game participant has spent and the central unit is provided with means for giving a right to each customer to proceed the game once whenever he/she spends in excess of a predetermined amount of money, thereby providing the customers with enjoyment of the game whenever they purchase over a predetermined amount of money.

[0012] Now, detailed descriptions will he made on preferred embodiments of the present invention by reference to FIGs.1 through 12.

(First Embodiment)

[0013] A first embodiment of the present invention is a network game system m which a game server installed in a center is connected to a POS terminal or terminals at each shop of a store through internet. The network game system identifies game participants, controls the process of a bingo game once a day and terminates the bingo game when a predetermined time has lapsed.

[0014] Illustrated in FIG.1 is a network game system configuration according to a first embodiment of the present invention. POS terminals 1 are installed at shops of a store to act not only as conventional POS terminals but also as terminals to identify game participants by allowing magnetic game cards to pass through the terminals and to communicate with a game server 3 in the center to proceed the game.

[0015] The POS terminals 1 are connected to the system basically for management of the sales. However, such basic portion is omitted in FIG.1. The communication lines 11 are internet communication lines but can be other lines or wireless lines. The game server 3 is a computer installed in the center for controlling the process of the game in communication with the POS terminals 1. A game file 4 is a file storing data such as rules of the game. A user file 5 is a file for storing data such as names of the game participants. An operation file 6 is a file for storing data such as the game in process.

[0016] Now, reference is made to FIG.2 showing an initial screen display of the system for choosing games and other information access. FIG.3 is a game selection screen for selecting the game system and selecting a preferred game out of a plurality of games. FIG. 4 is a flowchart showing how the bingo game proceeds. Now, reference is made to FIGs.1 through 4 to describe the operation of the first embodiment of the network game system according to the present invention.

[0017] Prior to initiation of the game, the POS terminals 1 are used to register game participants. Registration data such as names and addresses of the game participants are entered and transferred to the center for recording and managing the user file 5. Upon completion of the registration, magnetic cards are issued to the game participants to be used for identifying the game participants by allowing the cards to pass through the POS terminals 1 when playing the game.

[0018] When the game starts, the magnetic card is inserted into the POS terminal 1 to select the bingo game. At the beginning of playing the bingo game, participants must choose 24 numbers to fill a bingo game card as illustrated in FIG. 12. If automatic mode is chosen, the game server 3 in the center randomly choose the numbers to fill the card. After choosing the numbers, participant data and the data for a bingo game are registered in the operation file 6. Subsequently, the game proceeds and is managed in accordance with the data in the operation file 6. Rules and the like of each game are registered in the game file 4 in advance.

[0019] Game participants come to any shop and choose the game on the initial screen display as shown in FIG.2. While the game selection screen of FIG.3 is displayed, the magnetic card is allowed to pass through the POS terminal 1 for identifying the game participants. .The data on the magnetic card will be transferred to the center. If there are any corresponding data in the operation file 6, the game server 3 notifies the POS terminal 1 to permit entry. After identifying individual participant, the game in process will be displayed on the selection screen of the POS terminal 1. If the bingo game is chosen by the participant, a bingo game card for the participant and a lucky number are displayed. The bingo game participants look at their bingo game cards and the lucky number on the screen. If there are any coincidence of the lucky number with the number on the bingo game card, the number on the bingo game card is touched by a finger. Negligence of the coincidence will invalidate the number. The data will be sent from the POS terminal 1 to the center so that the game server 3 in the center can check and record if BINGO is established. The lucky number will be generated and sent to the POS terminals 1 once a day from the center in a random manner.

[0020] The game participants can proceed the bingo game only once a day. The game server 3 in the center refers to the operation file 6 and checks the date

when the game participant played the game last time so that the game does not proceed no more than once a day. Also, the date when each participant started the game is checked so that the game is not played longer than a predetermined period of time.

[0021] For example, if a participant comes to a shop only 10 days in 30 days period, the participant can gain only 10 lucky numbers. In the bingo game, a prize will be awarded only if 4 numbers (for any row passing through the center) or 5 numbers (for any row other than passing through the center) coincide with the lucky number If a participant is lucky, BINGO will be established on the 4^{th} day. Unfortunately, if no BINGO is established in 30 days, he/she is a loser and may be awarded a consolation prize to terminate the game. The game server 3 in the center manages the times of the game played by each participant within the predetermined period of time. If not played 10 or more times, no consolation prize is awarded Since the bingo game is a kind of simple lottery, it can excite both adults and children.

[0022] As apparent from the above description, the first embodiment of the network game system according to the present invention comprises a game server in the center and a plurality of POS terminals installed in the shops and connected to the game server through internet. Any participant to the game is identified and the game is managed to proceed once a day and to terminate within a predetermined period of time. As a result, game participants among customers coming to the shops can play the bingo game everyday. This is effective to attract customers because they can gain a prize of the bingo game when they go shopping to the shops.

[0023] Although the game participants are identified by their magnetic cards to be passed through the POS terminals in the first embodiment of the network game system, it is also possible to use appropriate ID numbers or any other hi-tech personal identification means such as, for example, a finger print reference system. Since it is only necessary to identify individuals with certain reliability, any commonly used ID means is sufficient for this purpose.

(Second Embodiment)

[0024] Now, a second embodiment of the present invention comprises a game server in the center and POS terminals installed in shops and connected through internet. The network game system identifies game participants, provides the customers (participants) with a right to proceed the game once whenever they buy more than a predetermined amount of money. The game can be played only once a day and is terminated within a predetermined period of time.

[0025] The second embodiment of the network game system differs from the foregoing first embodiment of the network game system in that the amount of money spent by the customers or game participants is a condition to proceed the game.

[0026] Illustrated in FIG.5 is system configuration of the network game system according to the second embodiment of the present invention. Since the game server in the center does not differ from that in the first embodiment, files are omitted in FIG.5. The POS terminals installed in a shop may be a POS terminal also acting as a game terminal if the shop is small and the number of customers is relatively limited. On the other hand, a larger shop having many customers should have one main POS terminal 1 acting as a POS server and a plurality of POS terminals (client terminals) are installed and connected by LAN (local area network) so that the game can be played without disturbing normal business. These additional POS terminals may be provided with various guides and some other functions other than the games.

[0027] Illustrated in FIG.6 is a flowchart showing how a "we'd like to visit distant places" game proceeds. FIG.7 is a first screen display of the "we'd like to visit distant places" game. FIG.8 is a second screen display of the "we'd like to visit distant places" game. FIG.9 is a flowchart of a "sugoroku" game. FIG.10 is a first screen display of the "sugoroku" game while FIG.11 is a second screen display of the "sugoroku" game.

[0028] Now, the operation of the second embodiment of the network game system according to the present invention will be described by reference to FIGs.5 through 11.

[0029] Game participants enter their names, addresses, phone numbers, etc. through any POS terminal 1 in any shop. Upon completion of entering all necessary input data, they are registered in the center and magnetic cards are issued for the game participants. The above operation is identical to the first embodiment.

[0030] Whenever the game participants buy in excess of a predetermined amount of money, they gain certain points representing a right to proceed one or more game. For example, one point is gained at every 1,000 yen shopping. This means that 5 points are gained when they spend 5,000 yen. The magnetic card is passed through the POS terminal 1 when paying at the cashier and the acquired paints are registered in the user file in the center, thereby permitting the customer to proceed the game depending on the points at any time. However, the participants are allowed to proceed one kind of game only once a day. In other words, the customers are allowed to proceed one game once a day when they gained 1 point and they can proceed second and third games when they gained two and three points, respectively. Some games require two or three points to proceed the games once. Also, different games can be programmed to be terminated in different periods of time.

[0031] When the game participants go to any shop to play the game, they are supposed to touch with a finger icon of the games as displayed on the initial screen

of FIG.2 for choosing the game. A magnetic card is passed through the POS terminal 1 to identify the participant while the game selection screen in FIG.3 is displayed. The data on the magnetic card is transferred to the center. If corresponding data is found in the operation file, the POS terminal 1 is notified for permission of data entry. Upon completion of identifying the individual participant, a pending game selection screen is displayed on the POS terminal 1. The participant can choose one of the games. It is preferable to prepare a bingo game and some other relatively simple games that will be described hereinafter. Since number of points required to play a certain game is predetermined, displayed on the screen are only the games that can be played with the points currently acquired by the participant. The participant can choose any game displayed on the selection screen. It is possible to choose one or more games to proceed in parallel.

[0032] The center retrieve the user file based on the data on the magnetic card. Upon confirmating registration of the user (participant), the operation file is retrieved to read out the pending (or proceeding) game or games, points acquired by the user and the current status to be transferred to the POS terminal for being displayed.

[0033] FIG.6 is a flowchart of the "we'd like to visit distant places" game to proceed the game by answering series of quizzes. This game proceeds by touching with a finger any desired place on a map displayed on a screen as shown in FIG.7. A quiz relating to the selected place is displayed on the screen as shown in FIG.8. If the answer is correct, a predetermined mileage is ranted depending on difficulty of the quiz and the time to reach the answer. A prize will be awarded depending on the mileage acquired within 30 days.

[0034] Upon touching with a finger any place on the map, the data is transferred from the POS terminal to the center. The center retrieve the game file to transfer a quiz relating to the place to the POS terminal. When the game participant chose one of optional answers by touching with a finger, the selected answer is transferred to the center to determine if the answer is correct. If the answer was wrong, the POS terminal displays "Sorry; you are wrong." On the other hand, if the answer is correct, the mileage of the quiz is granted. However, if it took more than one half of the time limit to reach the correct answer, one half of the mileage is granted. If it took longer than the time limit to reach the correct answer, it is deemed to be "unanswered" and no mileage is granted. Acquired mileage is saved in the operation file in the center and a prize is awarded when the acquired mileage reaches a predetermined level. If the predetermined mileage is not reached within 30 days, only consolation prize is awarded. No consolation prize is awarded if the game is not played 10 or more times.

[0035] FIG.9 is a flowchart showing how the "sugoroku" game proceeds. As shown in FIG.9, this game is played by choosing any number of 1-6. A randomly generated number is, then, transferred from the center. You can move forward the number of steps equal to the transferred number minus the chosen number. The game server 3 in the center randomly generates 1-6 numbers in equal probability and forwards the number added to the number from the POS terminal. A prize will be awarded if a goal is reached within 30 days by challenging once a day. Shown in FIG.10 is a first screen display of the "sugoroku" game. Like a typical "sugoroku" game, this game includes such steps as "take a rest once", "move back two steps", "return to the start point", etc. FIG.11 is a second screen display of the "sugoroku" game when fallen into a pitfall.

[0036] Although the game can proceed only once a day in the above embodiment. it is possible to proceed two to three times a day depending on games.

[0037] As described above, the second embodiment of the network game system according to the present invention comprises the game server in the center and one or more POS terminal installed in each shop of a store and interconnected through internet. The game server identifies individual game participant and grants a right to proceed the game once when his/her purchase exceeds a certain amount of money. The game continues once a day and terminates within a predetermined period of time. Customers can play the game when he/she buys a certain amount, thereby encouraging customers to come for shopping as often as possible.

[0038] Although the above mentioned second embodiment of the network game system grants a right to proceed the game upon purchase in excess of a predetermined amount, it is possible to apply the game to a "pachinko" game to save extra balls so that he/she can proceed the game once when the saved balls reach a predetermined number.

(Advantage of the Invention)

[0039] As apparent from the above description, the network game system according to the present invention can provide enjoyment of the game over a long period of time because the game participants are identified and allowed to proceed the game once a day over a predetermined period of time.

[0040] In case of applying the network game system to a service event for a shopping mall, it will help to encourage customers (shoppers) to come to the shopping mall as frequently as possible for proceeding the game once a day, thereby significantly increasing the number of customers.

[0041] Since the period of time to proceed the game is restricted, the game participants may revisit the shops more frequently in such period of time.

[0042] The use of POS terminals as game terminals, even smaller scale of stores can provide the customers with enjoyment of the game without installation of additional game terminals, thereby attracting custom-

ers with minimum expense for facilities.

[0043] For larger scale stores, a plurality of POS terminals tied to LAN system can be used not only for the games but also for other events such as sales promotion.

Claims

1. A network game system including a central unit for controlling the way of proceeding a game or games and a plurality of terminals connected to said center unit through network for enabling customers to play the game through said terminals, characterized in that: said terminals include means for identifying each game participant, and said central unit includes means for registering the game participants , means for recording numbers and characters entered by the participants and means to proceed the game predetermined times a day.

2. A network game system of claim 1, wherein said terminals are POS terminals.

3. A network game system of claim 1, wherein said central unit includes means for terminating the game when a predetermined period of time has lapsed.

4. A network game system of claim 1, wherein said terminals include means for transferring the amount of money spent for shopping by each game participant to said central apparatus and said central apparatus includes means for proceeding the game once when the game participant spends in excess of a predetermined amount of money.

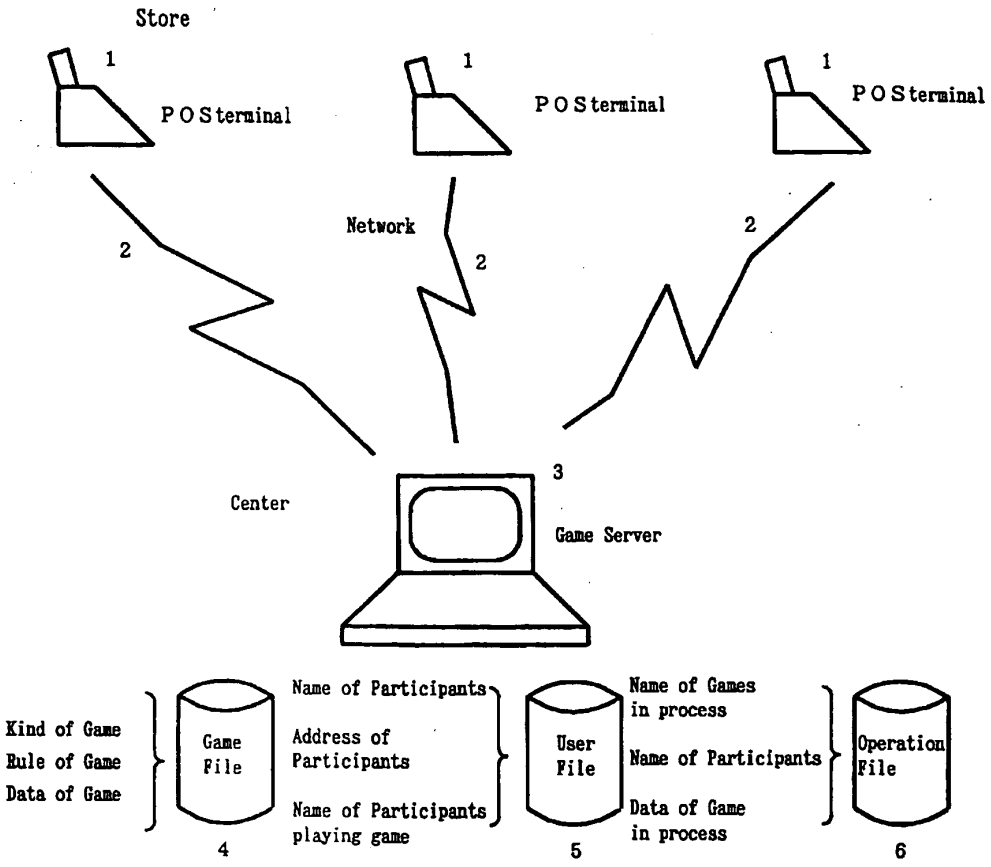

Figure 1

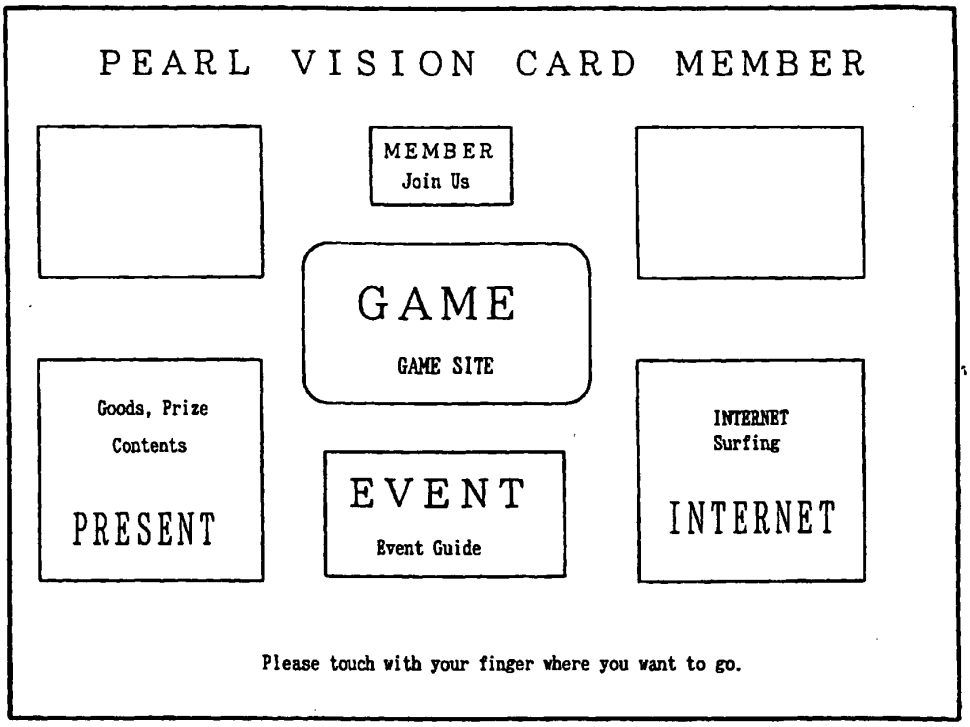

Figure 2

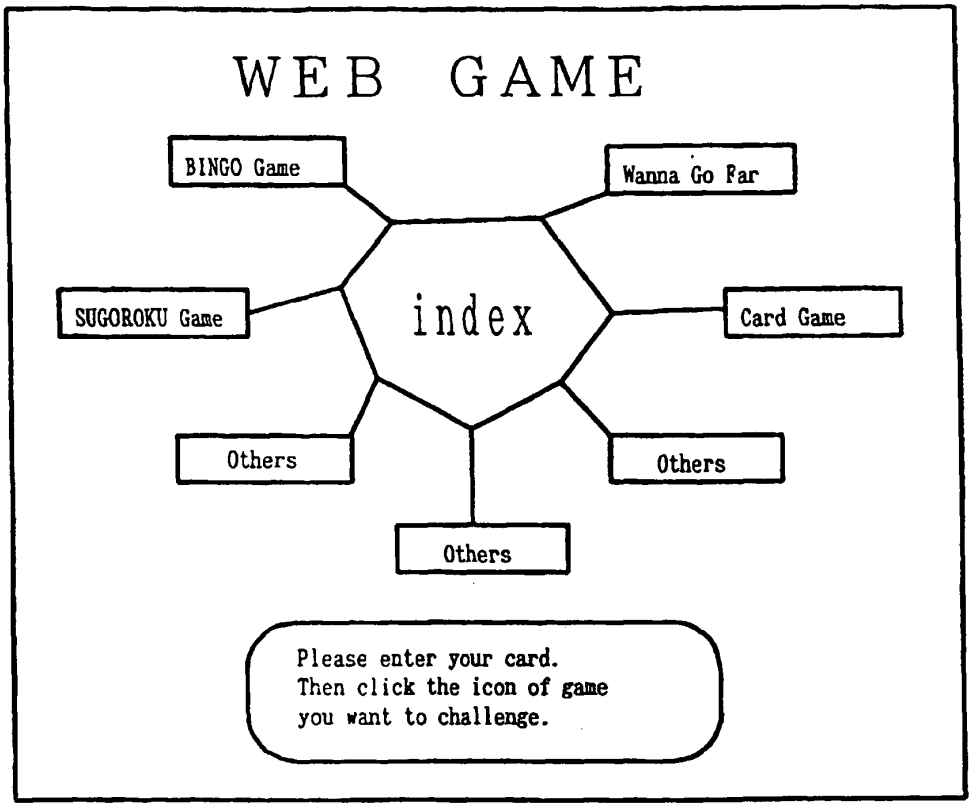

Figure 3

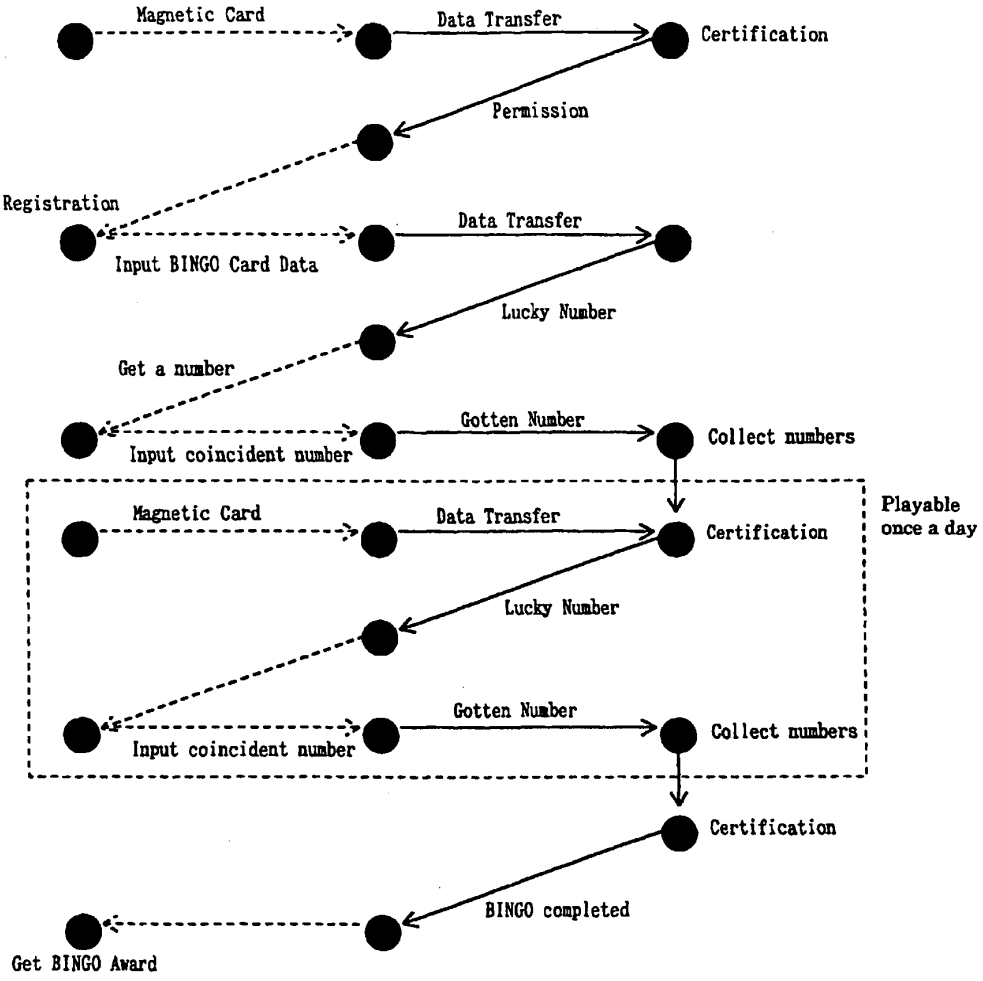

Figure 4

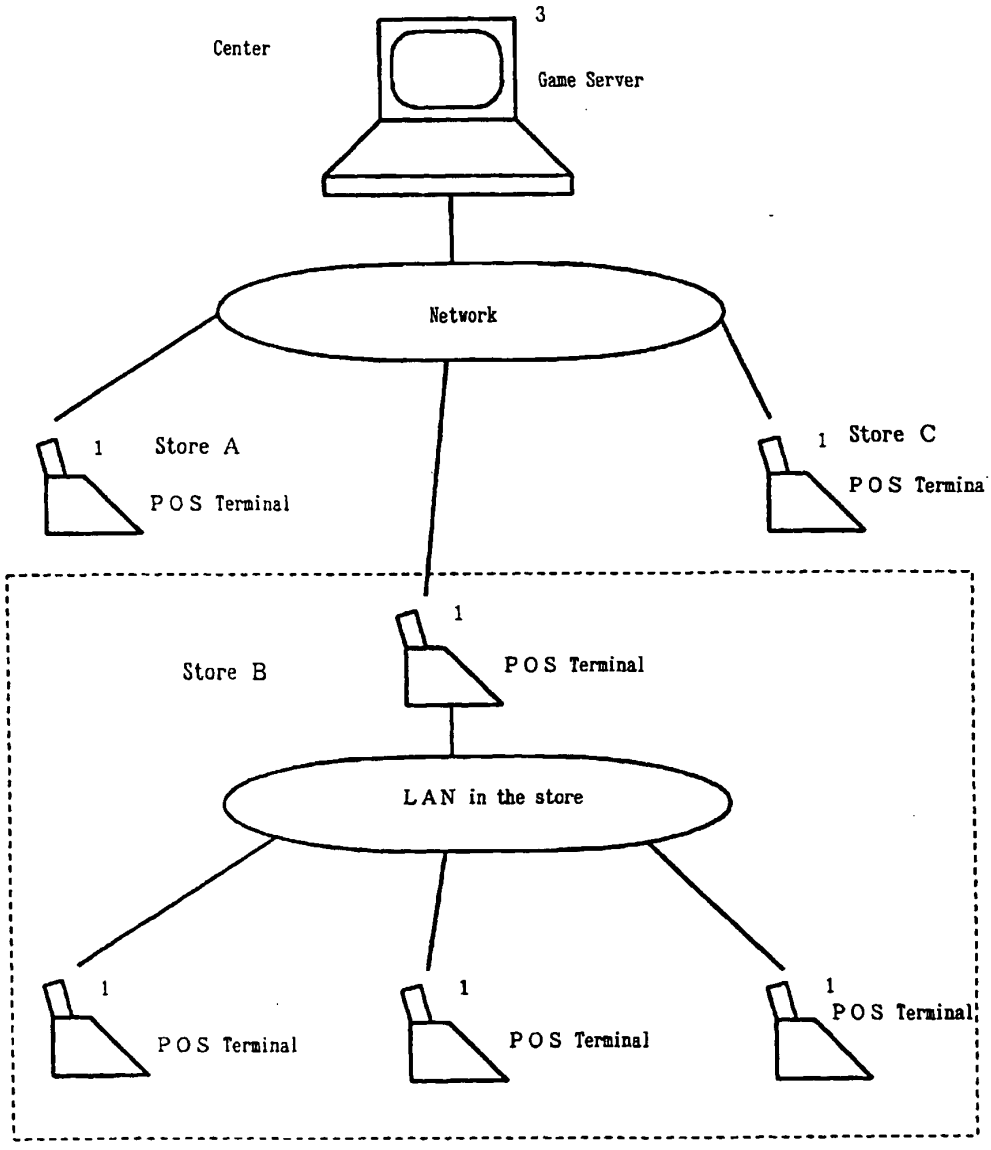

Figure 5

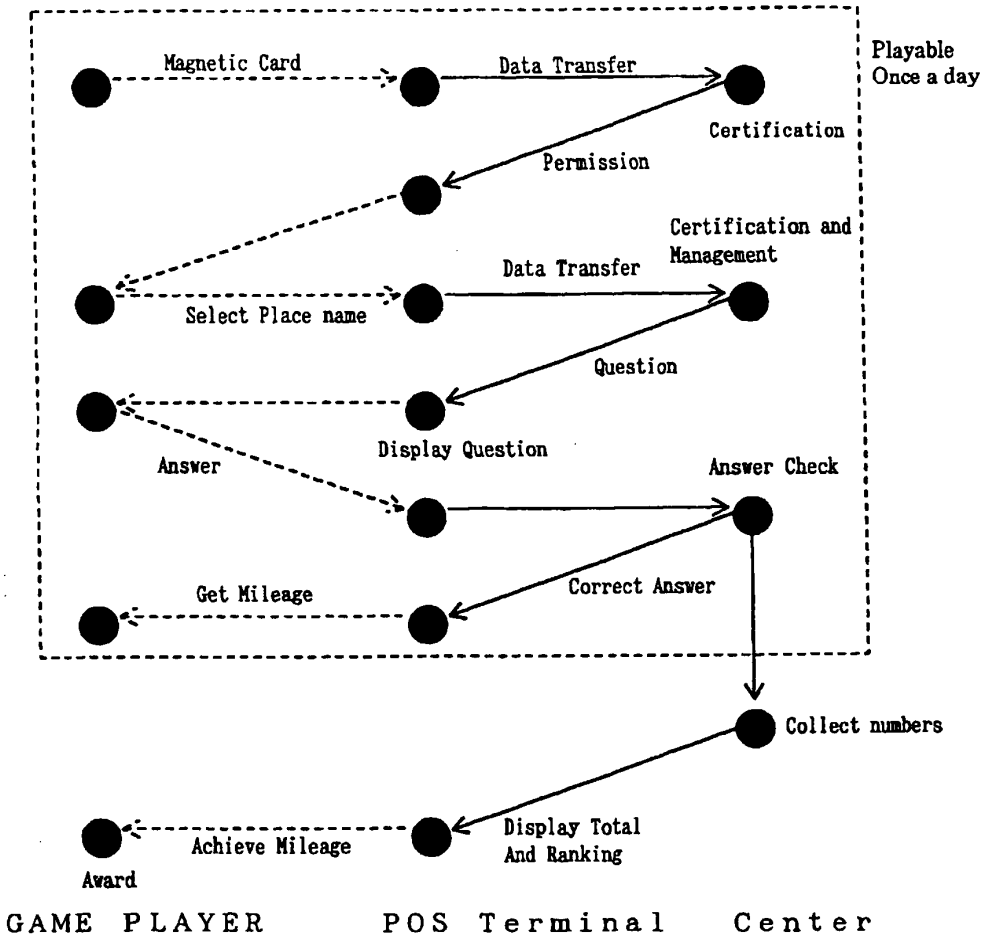

Figure 6

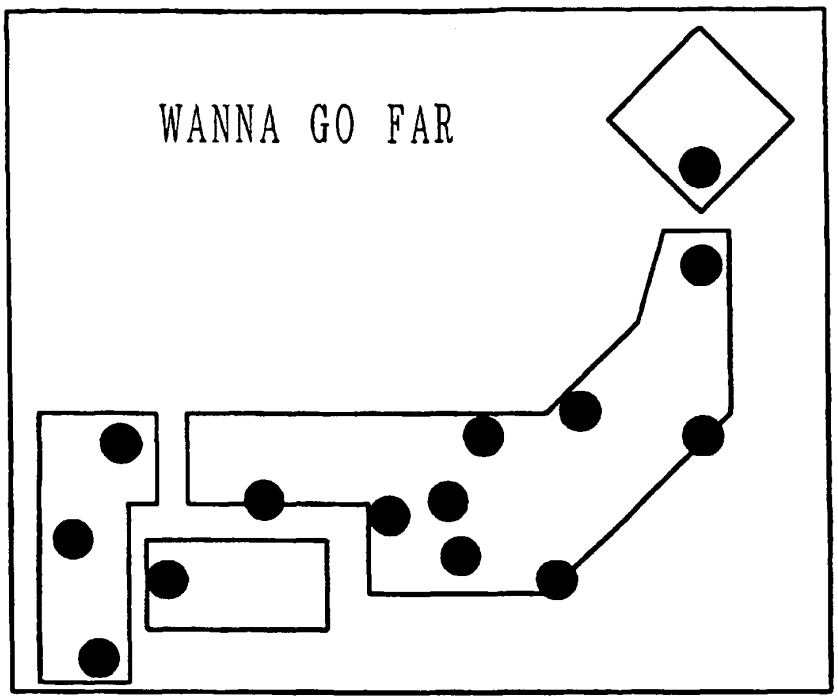

Figure 7

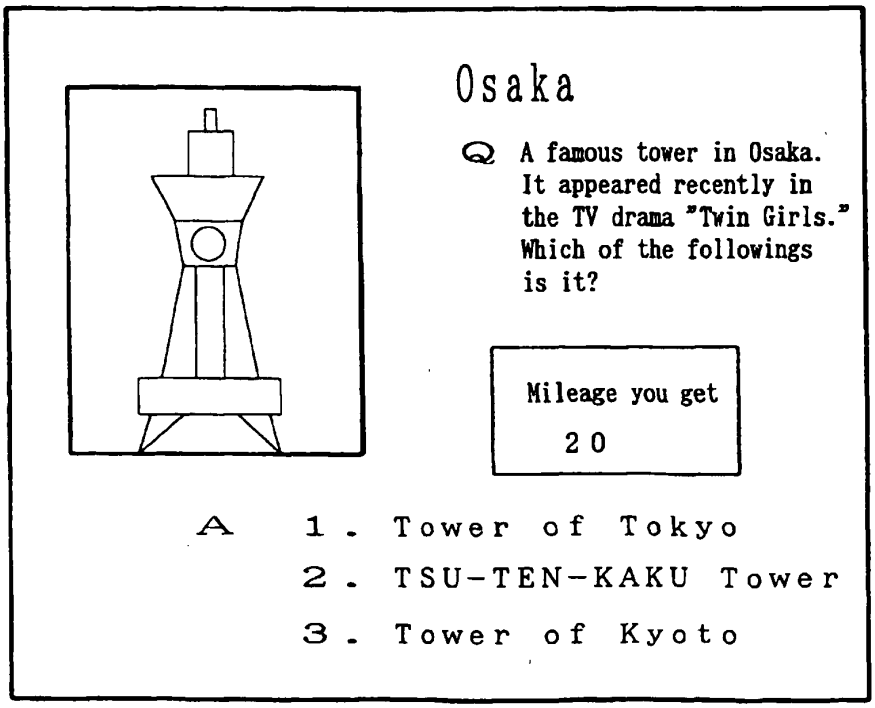

Figure 8

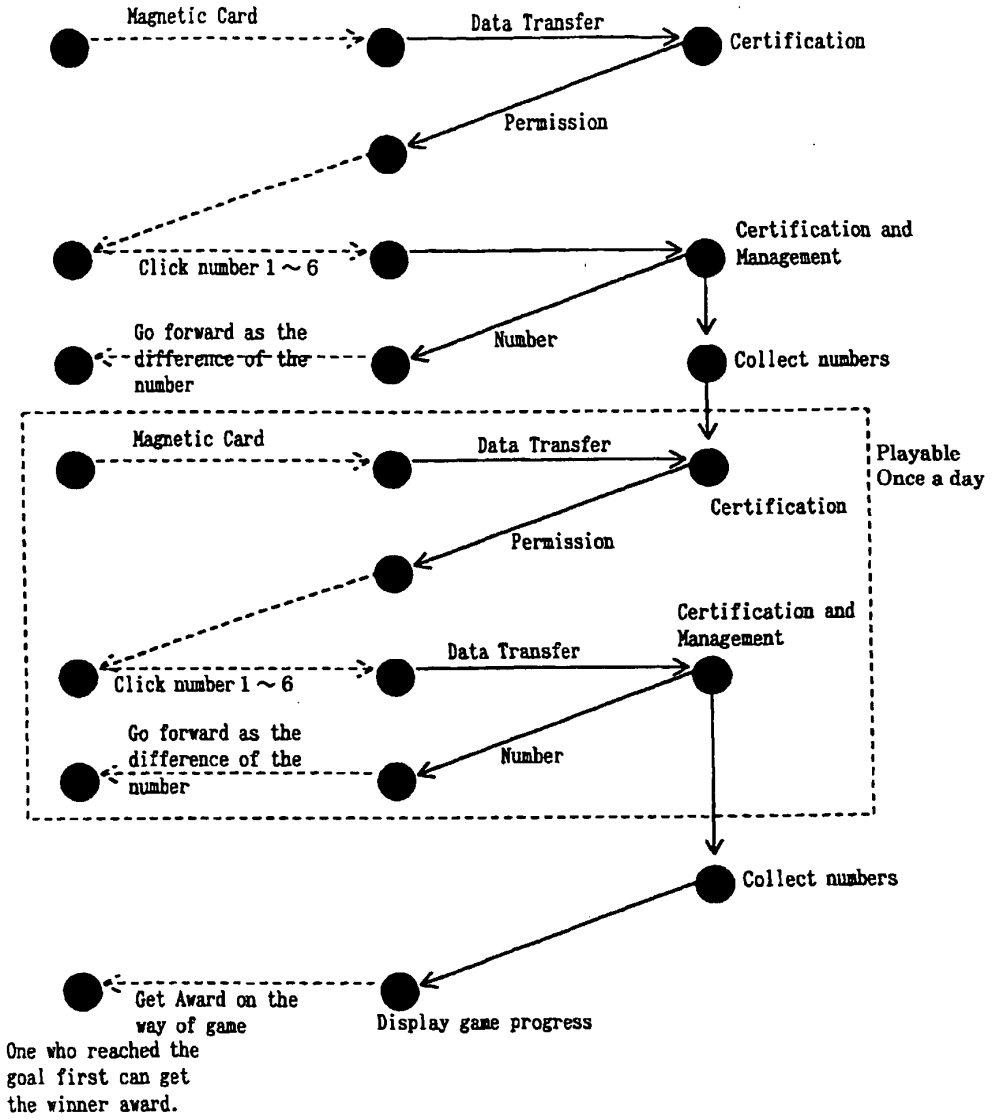

Figure 9

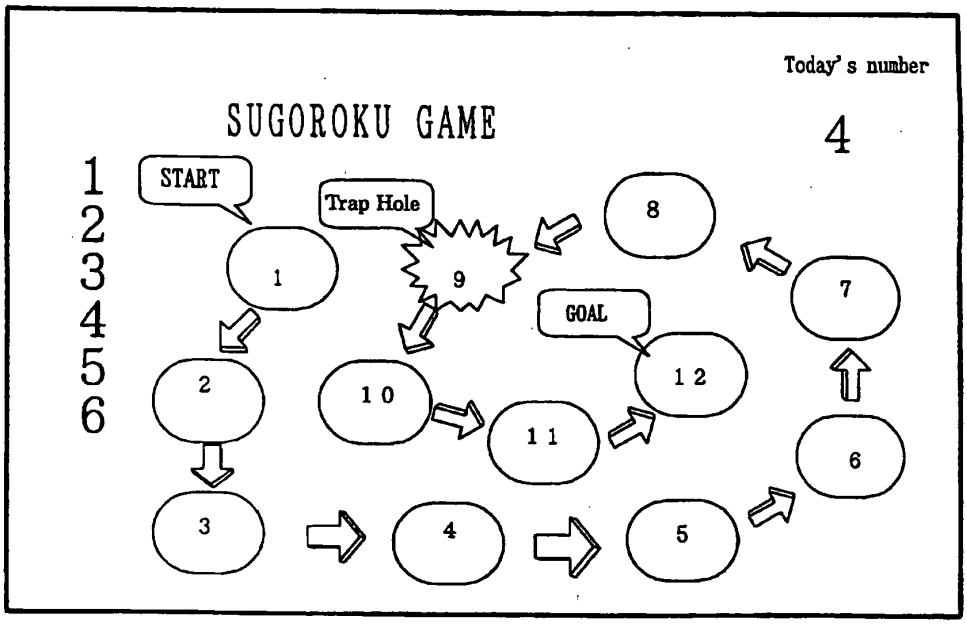

Figure 10

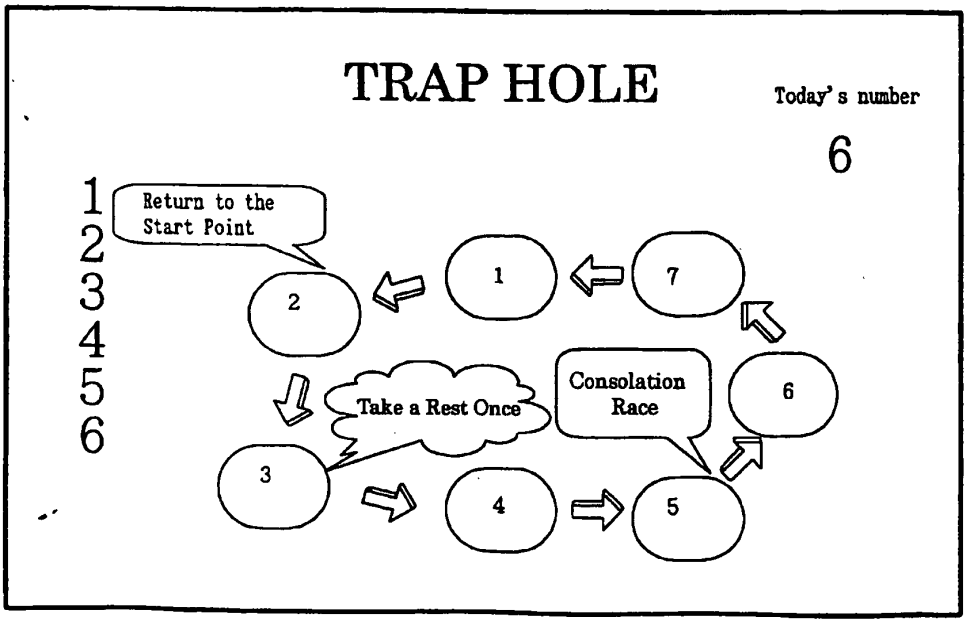

Figure 11

B I N G O

2	26	31	60	61
14	22	45	58	62
8	29	?	56	74
7	23	35	50	69
9	21	42	51	68

Figure 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP98/03659

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[6] A63F9/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl[6] A63F9/22

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-1998
Kokai Jitsuyo Shinan Koho 1971-1998 Jitsuyo Shinan Toroku Koho 1996-1998

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, Y	JP, 10-40311, A (Hiromitsu Yamaguchi), 13 February, 1998 (13. 02. 98), Full text ; Figs. 1, 2 (Family: none)	1-4
X	JP, 9-152999, A (Mitsubishi Electric Corp.), 10 June, 1997 (10. 06. 97), Full text ; Figs. 1 to 25	1, 3, 4
Y	Full text ; Figs. 1 to 25 (Family: none)	2

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
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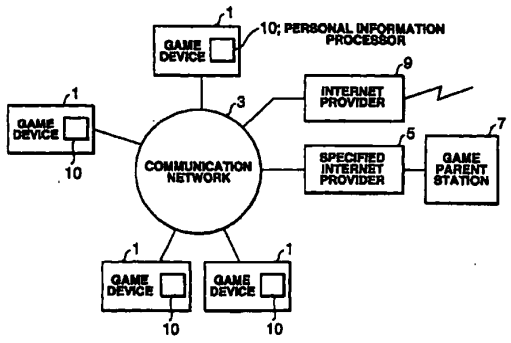
(54) NETWORK GAME SYSTEM, GAME DEVICE TERMINAL USED IN IT AND STORAGE MEDIUM

(57) In this game system, a plurality of game devices 1 are connected to a game parent station 7 over a communication network 3, and an online game application may be executed on the game devices 1 by means of the game parent station 7. In this game system, the game devices 1 are provided with a personal information processing means 10 that can exchange personal information with other players while the online game application is executed among the game devices 1. Therefore, personal information in the form of a business card may be exchanged with an opponent by means of the personal information processing means 10 either after a game has ended or when a game begins.

FIG.1



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Description

TECHNICAL FIELD

[0001] The present invention relates to a network game system wherein a plurality of game terminal devices are mutually linked via a communication means so that a prescribed game application program may be executed among the game terminal devices, as well as to a game terminal device used in this system and to a storage medium on which the game application program is stored.

BACKGROUND ART

[0002] Conventional network game systems of this type comprise a server machine and video game devices which are terminal devices, and the server machine and each video game device are either directly connected by means of a telephone line, or they are connected over the Internet by means of an Internet service provider. The terminal devices receive control from the server machine and a common game application program, so that a common game space for competitive games or the like is constructed between the terminal devices, and players may play games inside this space.

[0003] In recent years, many different network game systems of this type have been developed, and the number of players using them has been increasing remarkably. In these game systems, anyone may access the network game system so long as they fulfill the specified requirements to be a player.

[0004] In a network game system, even though players who are total strangers play against each other in a competitive game, the information exchanged between players is limited to their names and player IDs, and the problem exists that for the players who participate in the network game system, the information they receive regarding their opponent is insufficient.

[0005] Furthermore, in this type of game system, the game proceeds under restrictions applicable to all of the players. For example, while the game is underway, the players are prohibited from discontinuing the game until a match is completed. However, even where a player performs such a prohibited action, in the conventional game system, measures such as terminating the game being played over a network have not been adopted, in order to protect the other players.

[0006] Moreover, when a players does decide to play a network game, the player usually connects the game terminal device to the dedicated server over the Internet. Therefore, some time must be spent verifying the player's ID and password. Because it requires a certain amount of time to connect to the network (approximately five minutes), during this time, the problem arises that the player becomes tired of looking at still images on his or her (hereinafter 'his' for convenience) screen.

[0007] Furthermore, the verification of players' IDs and passwords is individually performed by the servers that manage the respective network game programs, and at present, information is not exchanged between the plurality of game servers. As a result, when a bad act occurs while one game server is being accessed, i.e., while a specific network game is being played, even if access to the specific game server is subsequently prohibited, it is easy for the player who committed the bad act to access other game servers, which hinders the smooth operation of the network games.

[0008] Accordingly, an object of the present invention is to provide a network game system wherein sufficient information regarding other players connected to the system is provided to the player. Another object of the present invention is to provide a network game system wherein necessary personal information regarding players may be easily exchanged among terminal devices connected to the network game system.

[0009] Another object of the present invention is to provide a network game system wherein it is easy for players to verify this personal information. Yet another object of the present invention is to provide a network game system wherein when a game is played over the Internet, appropriate measures are taken against players who violate pre-established rules, such that violations are prevented, and anyone can easily and enjoyably play the game.

[0010] Yet another object of the present invention is to provide a network game system wherein players having a game terminal device are not forced to become impatient during the time interval required for their game terminal device to connect to the network.

[0011] Still another object of the present invention is to obtain a network game system wherein, where a plurality of game terminal devices and a plurality of servers are connected over a network, it may be determined on a system-wide basis whether each game terminal device is authorized to access the network.

[0012] Still another object of the present invention is to provide a game terminal device used in this network game system. A further object of the present invention is to provide a storage medium on which is stored a program by which to execute the network game on the game terminal device in order to obtain the objects described above.

DISCLOSURE OF THE INVENTION

[0013] In order to achieve the objects described above, the present invention provides a network game system which is constructed such that a plurality of game terminal devices are connected to each other and each game terminal device is capable of executing a specified game application program, and is characterised in that it has (i) a plurality of game servers to manage information pertaining to the individual game

application programs, and (ii) an authentication server that is provided independently of said game servers, acts as a common server to the plurality of game servers, and has a function to determine whether or not each of the terminal devices should be permitted to access the game servers.

[0014] In other words, use of an authentication server that serves the plurality of game servers in common eliminates the need to individually determine whether or not access to a game server is authorized, and allows an accurate determination to be made based on information regarding the individual game application programs.

[0015] Furthermore, in the present invention, the common authentication server is characterised in that it performs initial registration to permit the terminal devices to access the game servers, and after registration, determines whether or not each terminal device is authorized to access the game servers.

[0016] Users participating in the network game system must first perform initial registration of their IDs and passwords using the game terminal device. If this initial registration is carried out using the common authentication server, there is no need to perform initial registration each time one of the plurality of game servers is accessed.

[0017] Moreover, the present invention is characterised in that information regarding a game terminal device is input to the common authentication server from the plurality of game servers, whereupon registration is performed.

[0018] In other words, because game terminal device information is supplied by all of the game servers and registration is performed in the authentication server, integrated management of information regarding the game terminal devices is made possible.

[0019] This information is information that identifies any game terminal device that has performed a bad act that may result in denial of access authentication to the game servers.

[0020] Denial of access authentication to the game servers is determined based on the seriousness of the bad act, and this determination may be subject to conditions involving the period or the types of games for which access authentication is denied.

[0021] For example, the determination may impose denial of access authentication for a specified time such as one month or one year, denial of access to a particular game server, or other conditions.

[0022] The present invention also provides a network game system in which a plurality of game terminal devices are connected to each other so that each game terminal device is capable of executing a specified game application program, and the network game system is characterised in that each game terminal device has a control means that can exchange player personal introduction information with other game terminal devices.

[0023] For example, this control means is constructed such that it can transmit a request to exchange personal information to another terminal, determine whether or not to accept such a request to exchange personal information, and transmit the results of this determination to the other terminal, as well as, when an input accepting the request to exchange personal information is made, carry out the exchange of personal information and save the exchanged data, while not carrying out the exchange if an input denying the exchange request is made.

[0024] In this case, the personal information comprises data displayed in the form of a virtual business card, for example. This display data in the form of a card may comprise data pertaining to the games played by the particular player. Furthermore, the data displayed in the form of a card may, for example, be stored in the memory area of the game application on each terminal, with the individual parts that form a character each being assigned a code. When this occurs, the data displayed in the form of a card may be transmitted over the communication network as codes for characters selected for the displayed data.

[0025] In each of the constructions described above, the terminal may also be constructed as a game machine that can execute its own online game application.

[0026] At the same time, in the construction in which the personal information comprises display data in the form of a card, this system may have a means that changes the data regarding the format of the card in response to the number of times personal information is changed. In this case, the data regarding the format of the card consists of at least one of the following: the color of the card, the motion of the character on the card, the background behind the character, or the card's name.

[0027] Furthermore, in the construction in which the personal information comprises display data in the form of a virtual card, the personal information may include the player's e-mail address attached to the display data in the form of a card.

[0028] In addition, in the basic construction described above, the game parent station may also have a tournament server means that executes the online game application in a tournament format, a determining means that determines which players have violated prescribed rules governing the execution of the online game application, and a sanctioning means that, the next time a player that has violated the rules attempts to join the tournament, issues a warning regarding the violation or imposes the sanction of preventing the player from connecting to the tournament server means.

[0029] Where a construction that includes sanctions for violations is adopted, the determining means and the sanctioning means are constructed as part of the tournament server means, for example. The deter-

mining means and the sanctioning means may also be constructed as part of the online game application.

[0030] On the other hand, the storage medium pertaining to the present invention is a storage medium that allows the online game application to be realized on the terminal.

[0031] Another game system pertaining to the present invention is a game system in which a plurality of terminals are connected to a game supply station over a communication network, and in which the online game application may be realized on the terminals by means of this game supply station, wherein each terminal has a personal information processing means that can exchange personal information between players when the online game application is executed between the plurality of terminals, and this personal information processing means is characterised in that it has a first processing means that can transmit to another terminal an exchange request indicating a desire to exchange personal information, and a second processing means that can (i) send to the other terminal the result of its determination whether or not to accept the exchange request indicating a desire to exchange personal information, (ii) where input that the personal information exchange request was accepted is made, carry out the exchange of personal information and save the exchanged data, and (iii) where input denying the exchange request is made, refrain from carrying out the exchange.

[0032] The present invention provides an online game system in which terminal devices are connected to servers over a network, and which is characterised in that the terminal devices have a control means that executes the game program in parallel with the process of connecting to the servers.

[0033] These terminal devices read out both the game program and a program indicating the process of connecting to the servers, while the control means begins the execution of the game program when the user instructs that the server connection process be initiated.

[0034] The terminal devices can also perform display on a display device in accordance with the execution of the game program, as well as perform display of the state of connection to the servers.

[0035] The terminal devices can execute the game program until the connection to the servers is terminated, or until it is detected that connection to the servers may not be performed.

[0036] The control means can also execute the game program until the connection to the servers is terminated, or until it is detected that connection to the servers may not be performed.

[0037] The plurality of game terminal devices in the present invention are characterised in that they are provided with an extra game program that has no connection to the game application program, and executes during the interval required for the game terminal device to connect to the game parent station over the network.

[0038] In other words, because it takes a certain amount of time (about five minutes) to connect to the network, players can become tired of watching still images on their screens during this period. Therefore, if an extra game is run which allows the player to perform some movement or carry out some action on the screen through operation of the game equipment during this network connection interval, the player can become absorbed in this game and the time spent waiting can be more enjoyable.

[0039] It is preferred that this game comprise a very simple mini-game that does not extend the time required to connect to the network. In other words, because the extra game is played during the network connection process, if it were a complex game, the time required to connect to the network would increase, and consequently it is preferred from a time allocation standpoint that game system spend a larger percentage of its time connecting to the network.

[0040] In addition, by displaying the fact that the network connection process is underway while the extra game is running, the user can enjoy the extra game without concern.

[0041] Furthermore, the extra game can proceed continuously even where the player does not operate the game equipment. Considering the fact that some players will not play the extra game, in which case ending the game would be pointless, if the game is made to continue even if the player does not use the game equipment, the screen will remain dynamic during the network connection process, making it at least more enjoyable to watch than still images.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042]

Fig. 1 is a block diagram showing the overall construction of the game system pertaining to a first embodiment of the present invention.

Fig. 2 is a block diagram showing a game device used in this system.

Fig. 3 is a block diagram showing the construction of a game parent station used in this system.

Fig. 4 is a flow chart to explain the operation to connect the game device and the game parent station in this game system, as well as the operation when the game is played after the connection is made.

Fig. 5 is a flow chart of the process of the sub-servers in this system.

Fig. 6 is a flow chart of the process of the first through tenth servers in this system.

Fig. 7 is a drawing showing the network map screen that is displayed when the process of this system shown in the flow charts is underway.

Fig. 8 is a drawing showing the display screen with the configuration of a card in this system.

Fig. 9 is a flow chart to explain the operation performed on the side sending the card in this system.

Fig. 10 is a flow chart to explain the operation performed on the side receiving the card in this system.

Fig. 11 is a drawing showing the screen displayed while the process shown in Figs. 9 and 10 is underway.

Fig. 12 is a front view of the card list in this system.

Fig. 13 is a drawing showing a table that describes the relationship between each part and its code in this system.

Fig. 14 is an example of the game system pertaining to a second embodiment of the present invention.

Fig. 15 is a table showing one example of the 'Number of Encounters and Evaluations Table' which shows a first variation.

Fig. 16 is a screen shot of the various types of cards with different backgrounds in accordance with the number of previous encounters.

Fig. 17 is a flow chart explaining the process of the game device on the side of the person sending the card pertaining to a second variation.

Fig. 18 is a flow chart explaining the process of the game device on the side of the person receiving the card pertaining to the second variation.

Fig. 19 is a drawing explaining the game tournament concept pertaining to a third embodiment of the present invention.

Fig. 20 is a drawing explaining the tournament server used in the game tournament.

Fig. 21 is a list explaining the play data items saved in the tournament authentication database.

Fig. 22 is a drawing explaining the time sequence of the game tournament.

Fig. 23 is a flow chart showing the control routine followed during the connection to the server shown in Fig. 4.

Fig. 24 is a front view showing one part of the extra game display screen.

Fig. 25 is a drawing explaining the communication protocol used between the servers and the terminals, using terminals A, B and C as examples.

Fig. 26 is a block diagram explaining in detail the state in which a game device is connected to a game parent station by means of an Internet service provider, as well as details regarding the station's specified servers (worlds).

Fig. 27 is a block diagram to explain the state in which a play server client has entered a room, as well as the form of communication (packet communication).

Fig. 28 is a drawing showing the communication protocol used during a card exchange.

Fig. 29 is a system construction diagram showing the basic construction of the network system, particularly where a single authentication server is used for a plurality of game servers.

Fig. 30 is a flow chart of the control performed to determine whether access authentication is granted or denied in the system having the construction shown in Fig. 29.

BEST MODE FOR CARRYING OUT THE INVENTION

[0043] Embodiments of the present invention will be explained below with reference to the attached drawings.

(System construction)

[0044] The construction of the system by which to access the game server 77 (equivalent to the game parent station 7 described below (see Fig. 1)) from a specific game device 1 will now be explained with reference to Fig. 29.

[0045] First, the specific game device 1 must perform initial registration. After initial registration, it must be determined whether or not access authentication may be granted, based on whether or not the game device 1 has a history of bad acts in the game server 77 connected to the network system.

[0046] As shown in Fig. 29, the game device 1 is connected to the network 3, and this game device is permitted to access a specified game server 77 connected to the network 3 and execute the network game. While there is only one game server 77 in this example, other game servers 77 may be connected to the network 3. Naturally, the number of game devices 1 is not limited to the number shown in the drawing, and many game devices 1 may be connected to the network.

[0047] An authentication server 900 is connected to the network 3. This authentication server 900 is a common authentication server 900 that serves a plurality of game servers 77. In other words, each game server 77 does not have its own authentication server. Information regarding the game device 1 based on the execution of the game application programs on each of the plurality of game servers 77 is registered in the database 902 of the authentication server 900 by the game servers 77. The most important of this information is the information regarding the commission of bad acts by the game device 1, based on which determinations are made regarding whether future access is authorized.

[0048] The determination of the 'badness' of a particular act varies depending on each game server 77. The determination may be made and transmitted automatically, or it may be made by the administrator of the game server 77 and transmitted by means of an input operation.

[0049] As described above, the operations executed on the authentication server 900 consist of the initial registration of the user (i.e., the game device 1), and the determination of whether or not the user (game device 1) accessing the game server should be author-

ized for access (i.e., whether or not access permission should be granted).

[0050] The process by which a game device 1 is granted or denied access by the authentication server 900 will now be explained with reference to Fig. 30.

[0051] First, in step 950, it is determined whether or not registration has already been performed. If registration is determined not to have already been performed, the authentication server 900 advances to step 952, in which the process of registering with the authentication server 900 is executed using the registration program incorporated in the game device 1, and the authentication server 900 then advances to step 954. In the event of an affirmative determination in step 950, that is, where registration has already been performed, step 952 is skipped, and the authentication server 900 advances to step 954.

[0052] In step 954, the authentication server is accessed. During this access, the user ID and password must be input.

[0053] In the subsequent step, step 956, an authentication determination is made. This authentication determination is based on information provided by the plurality of game servers 77 to the database 902 that the user is a bad user, and in addition to determining whether or not connection to the network 3 will be permitted, such a determination also decides the conditions to be applied in the event permission is denied. These conditions include the denial of permission for a limited time, the granting of access to some game servers 77 while denying access to others based on the nature of the bad acts committed, the display of information on the game terminal device that the user may be deemed a bad user, or the blanket denial of access to the game servers.

[0054] In the next step, step 958, where the authentication determination is that access permission is granted (including cases in which access is granted to only some of the game servers 77), the authentication server 900 advances to step 960, in which a message is transmitted stating that connection to the game servers 77 is permitted, and then to step 962, in which connection to the desired game server 77 is carried out, and the game finally begins to be played in step 964.

[0055] Where it is determined in step 958 that access is denied (including denial for a limited time), the authentication server 900 advances to step 966, in which a message is transmitted stating that connection to the game servers 77 is denied, and then to step 968, in which the logoff process is executed.

[0056] As described above, because when a game device 1 accesses the game servers 77, it is first required that the game device 1 access the common authentication server 900 rather than the plurality of game servers 77, and new registration is thereafter performed, or if the game device 1 has already been registered, it is determined on this authentication server 900 whether or not the user is permitted to join the network 3 based on information supplied by each game server 77, bad acts committed on the game servers 77 may be managed in an integrated fashion, and users that commit bad acts on any of the game servers 77 can be prohibited from accessing other game servers 77.

[0057] Because this construction does not require the installation of any additional authentication servers 900 even if the number of game servers 77 is increased, the system construction may be simplified.

[0058] Moreover, because the various items of information in the game servers 77 may be managed in an integrated fashion, it becomes easy to identify bad users (or game devices 1). As a result, the system may have the effect of inhibiting the commission of bad acts.

(First embodiment)

[0059] A first embodiment will now be explained with reference to Figs. 1 through 10. As shown in Fig. 1, in this system construction, a common game application program is executed on a plurality of game devices.

[0060] The first embodiment will now be explained with reference to Figs. 1 through 10. Fig. 1 is a block diagram showing the functions of the network game system pertaining to the present invention. In this system, a common game application program is executed on a plurality of game devices.

[0061] In Fig. 1, the system comprises a plurality of terminal devices 1 that comprise video game machines, a game parent station 7 that includes a plurality of server machines, and a communication network 3 that connects the game devices and the game parent station. In this system, the terminal devices are connected to the game parent station 7 via a specified Internet provider 5 that is designated in order to execute a particular game, and the common game application program is executed on a plurality of game devices (terminal devices) 1 through the game parent station 7. The game devices 1 may also be connected to the server machines through the network 3 and an Internet provider 9 that is not a specified Internet provider.

[0062] In this system, each game device 1 incorporates a personal information processing means 10 that can exchange detailed personal information regarding each individual user when the game application program is executed.

[0063] Fig. 2 is a function block diagram that explains the construction of the game device. In Fig. 2, the game device 1 comprises a CPU 1a that serves as a processing device to execute the game application program and other control programs, a ROM 1b that stores as the control programs, for example, program codes to interpret macros or scenario macros, program codes to perform processing in accordance with abstract operation commands, and other data or operating systems necessary to process the game program, a CD-ROM device 1c that includes a CD-ROM that stores data such as graphics including dynamic images, text,

or other information, as well as a game application program that runs a specified game based thereon, a bus controller 1d that controls the flow of data between the CPU 1a and the various other components, a RAM 1e used for data processing, a graphics processor 1f that forms image signals from graphics data, and a sound processor 1g that forms sound signals from sound data.

[0064] A VRAM is is connected to the graphics processor 1f, and is used when graphics signals are formed. A VRAM it is connected to the sound processor 1g, and is used when sound signals are formed. The output unit of the sound processor 1g is connected to an audio/video connector 1r.

[0065] The bus controller 1d roughly comprises a peripheral interface 1h, a graphics processor controller 1u, an internal bus controller 1v, and an external bus controller 1w.

[0066] The bus controller 1d is connected to the CPU 1a via the bus 11a, and the CPU 1a controls the bus controller 1d. The RAM 1e is also connected to the bus 11a. An extension serial connector 1q is connected to the CPU 1a via the bus 11b, and the CPU 1a can use or control serial connection-based accessory devices connected to the extension serial connector 1q by exchanging signals with them based on a prescribed data transfer method. In other words, serial connection-based accessory devices may be connected to the game device 1, and program, image, sound, command or other signals may be exchanged between the accessory device and the game device 1.

[0067] The graphics processor controller 1u can control the graphics processor 1f under the control of the CPU 1a. The CD-ROM device 1c, the ROM 1b and the sound processor 1g are connected to the internal bus controller 1v via the bus 11c, and the internal bus controller 1v can control the CD-ROM device 1c, the ROM 1b and the sound processor 1g under the control of the CPU 1a.

[0068] The output unit of the external bus controller 1w is connected to the extension connector 1m via the bus 11d, and this expansion bus controller 1w can use or control serial connection-based accessory devices connected to the extension serial connector 1m under the control of the CPU 1a by exchanging signals with the serial connection-based accessory devices. In other words, the serial connection-based accessory devices can be connected to the game device 1, and program, image, sound, command or other signals may be exchanged between the accessory device and the game device 1.

[0069] Peripheral devices 2 are connected to the peripheral interface 1i. A video monitor 4 is connected to the audio/video connector 1r.

[0070] A cable modem 6 is connected to the extension connector 1m as a parallel-connection based accessory device, and the game device is connected to the network 3 via the cable modem 6.

[0071] In addition to the cable modem 6, a terminal adapter, satellite data receiver, portable terminal device (PDA), cellular telephone, data recording device, or other parallel- connection based accessory device may be connected to the expansion bus 1m.

[0072] A PHS, data recording device, communication cable or other serial connection-based accessory device may be connected to the extension connector 1r.

[0073] Fig. 3 is a block diagram showing the construction of the game parent station. In Fig. 3, the game parent station 7 comprises a communication device 71 that carries out communication with the game devices via the network 3 and a specified Internet provider 5, an authentication server that is connected to the communication device 71 and functions as a general server to control sign-ups and connection requests from the game devices 1, and specified servers (sub-servers) 73 that are subordinate to the authentication server 72 and perform processing to realize a virtual experience on the game device 1 in which the player feels as if he were playing an athletic game such as ping-pong or a game such as mah-jongg in a resort hotel, etc., for example. Here, the sub-servers 73 comprise a first server 73a, a second server 73b, and so on, up to a tenth server 73j. The sub-servers 73 have a control means to run in each game device a specific online game.

[0074] This system enables the realization of a tournament-format game environment among the game devices. Each player can, for example, participate in a tournament-type game and receive a game ranking. A tournament format means that there is a game space subject to prescribed rules, and particularly, that any player may participate, that the game is a competitive game, and that players may freely decide whether or not to participate.

[0075] Fig. 26 is a block diagram showing the situation in which a game device 1 is connected to sub-servers via an Internet provider 9, a network 3 and a specified Internet provider 5, respectively.

[0076] The sub-servers 73 are called 'worlds' in Fig. 26, and comprise five worlds, from a first world 73A to a fifth world 73E. Because each world has the same construction, the construction of the worlds will be explained in detail below using only the first world 73A as an example.

[0077] Players authorized by the authentication server 72 are notified by the gate server 71 of such information as the type of game that is played in the first world 73A, tournament information, sponsors and maintenance times.

[0078] The gate server 71 comprises the first server (first play server) 73a, the second server (second play server) 73b, and so on, up to the tenth server (tenth play server) 73j. Because each play server has the same construction, the internal construction of the play servers will be explained below using only the first server (first play server) 73a as an example.

[0079] When a player's terminal device is connected to the first server 73a, the server's environment

is provided to the player's terminal device. In other words, the player first enters a space resembling the lobby 75 of a resort hotel. A memory area corresponding to this lobby exists in this server.

[0080] Next, by making a selection after receiving reports from the gate server 71, the player can enter the selected room in the memory area of the first server 73a. The lobby 75 is a so-called waiting room, and players may select their playing room (from the first room 75R through the 224th room 75R) from the lobby 75.

[0081] Each play server is assigned play rooms such as fortune-telling rooms, chess rooms, card game rooms, or mah-jongg rooms. Each room in a special play server is a play room dedicated to a designated game, such as mah-jongg, and each room has a maximum occupancy. The player can enter a desired room if the maximum occupancy has not been reached, but cannot enter if the maximum occupancy has been reached. A player entering a play room can play an online game such as mah-jongg with other players that have already entered the room. The player selects which world to enter.

[0082] Fig. 27 shows the state of entry into the world 73A (or worlds 73B to 73E) by clients (game terminal devices or players) of each play server (the first server through the tenth server). It shows a situation in which three clients in the lobby 75 have completed their network connection, and are at the stage of deciding which game to select. Meanwhile, the clients that have entered a room (in Fig. 27, rooms 01 or 02) can play the game offered in that room.

[0083] As shown in Fig. 27, communication is possible between each of the game devices 1a, 1b and 1c owned by a plurality of clients that have entered the room (in Fig. 27, the room shown under room 03), with the play server 73a (or the servers 73b through 73j) at the center, and messages regarding rules (special rules established by the users), exchanges of cards, and notification of completion of game preparations are sent and received via packet transmission. This information is managed by all of the play servers 73A through 73J. For example, if the room is a room in which card games are played, the play server 73A manages the cards that were initially dealt to all players, or the cards that have been dealt during the game, in an integrated fashion.

[0084] The operation of the game system will now be explained. In the explanation of the operation of this game system, the operation that takes place when the game terminal is connected to the game parent station and the game is begun will first be explained, and the operation that takes place when the personal information regarding the players that operate the game devices is exchanged among the players will then be explained.

[Connection and game play between game device 1 and game parent station 7]

[0085] Fig. 4 is a flow chart to explain the operation to connect the game terminal and the game parent station, as well as the operation of the game that is run by the game terminals after the connection is made. Fig. 5 is a flow chart of the processing performed by the sub-servers. Fig. 6 is a flow chart of the processing performed by the first through tenth servers.

[0086] When the player makes settings for the connection of the game device 1 to the sub-server 73, and inputs a request to connect to the sub-server 73 in the game device 1, the sequence shown in the flow chart of Fig. 4 begins. The game device 1 determines whether or not prescribed setting operations have been carried out in the game device (S101 in Fig. 4) If the game device 1 determines that the settings are insufficient (NO in S101), the message 'Settings are not complete.' appears on the video monitor 4 (S102), and the game device 1 waits until the settings are input once more.

[0087] If the game device 1 determines that the settings are correct (YES in S101), the game device 1 carries out the process of connecting to the specified Internet provider 5 in accordance with the connection procedure stored in the RAM 1e in the game device 1 (S103). The game device 1 then determines whether or not the connection has been made (S104), and if the connection has not been made (NO in S104), the message 'The network is congested.' is displayed on the video monitor 4 (S105), and the game device 1 returns to the beginning of the process shown in the flow chart.

[0088] Incidentally, the connection process of step S103 shown in Fig. 4 normally takes several minutes. Accordingly, in order to use this connection wait time productively, an extra game (mini-game) that the player can play is displayed on the screen.

[0089] The extra game execution control routine will now be explained with reference to Fig. 23. This routine begins based on a YES determination in step S101 in Fig. 4, and proceeds in tandem with the connection process of step S103 in Fig. 4. However, in order to ensure that the extra game may be played during the connection wait time, the extra game is a mini-game having simple rules.

[0090] As shown in Fig. 23, the game program is read out of the work RAM in step S1031 in tandem with the connection process. The read-out game program is then booted up (S1032) and the game is begun (S1033). The game screen then appears based on the commencement of the game (S1034).

[0091] As shown in Fig. 24, the extra game is a simple game in which the player tries to bounce back the obstacles 520 that bother the main object 500, and the player moves the main object to the left and right using the operating unit of the game device in order to bounce back the obstacles.

[0092] The current status of the connection to the

provider is continuously displayed on the screen (for example, through the message 'Connecting...'), and the time elapsed since the commencement of the game is continuously displayed (S1035). The player can therefore know that the connection to the provider is being made and be aware of the elapsed time even when playing the game. The number of points scored is also displayed onscreen.

[0093] When the connection to the provider is either completed or fails (S1036), the game is forcibly terminated (S1037) even if the extra game is being played, and the game device 1 returns to the step S104 in Fig. 4. When this occurs, the 'Connecting...' display changes to 'Connected'. On the other hand, where the connection attempt fails due to a busy signal or because the room is full, the message 'Connection failed' is displayed.

[0094] The extra game is not related to the main program explained below in connection with the first embodiment, and the points scored during this game are cleared when the game ends. The extra game may be designed to be appropriate to its status as a 'link' to the pending connection process. On the other hand, it is acceptable if the extra game is connected to the main game such that the points scored during the extra game are added to the points scored during the main game.

[0095] As shown in Fig. 4, when the connection is made to the Internet provider 5 (YES in S104), the game device 1 executes the process of connecting to the authentication server 72 (S106). It then determines whether or not the connection to the authentication server 72 is completed (S107). If the connection to the authentication server 72 is not completed (NO in S107), the message 'The amount of money is insufficient, or the settings are incorrect.' is displayed on the video monitor 4 of the game device (step S108 in Fig. 4), and the game device 1 returns to the beginning of the process shown in the flow chart.

[0096] If the connection to the authentication server 72 has been completed (YES in S107), the game device 1 executes the process of connecting to the sub-server 73 (step S109 in Fig. 4). The game device 1 then waits for the result of the determination made by the sub-server 73 regarding the game device ID (NO in S110 in Fig. 4).

[0097] As shown in Fig. 5, the sub-server 73 checks the ID sent by the game device 1, and if the ID is correct (step S201 in Fig. 5), the sub-server 73 approves the downloading of program data or necessary game data from the sub-server 73 to the game device (step S202 in Fig. 5), while if the ID is incorrect, the sub-server 73 issues a new ID and sends it to the game device 1 (step S203 in Fig. 5), and approves the downloading of data from the sub-server 73 to the game device (step S202 in Fig. 5).

[0098] Returning to Fig. 4, where the downloading of data from the sub-server 73 is approved (YES in S110 in Fig. 4), data regarding the status of the game running in the game system is downloaded (step S111 in Fig. 4). This data regarding the status of the game consists of information regarding the games being played in the servers 73a through 73j, as well as regarding the tournaments currently being played in the system. This data is displayed on each game device.

[0099] The game device 1 displays a network map on the video monitor 4 based on the downloaded data (S112), and waits for the player to select which of the games on the servers 73a through 73j will be played (NO in S113). When the player selects one of the servers among the servers 73a through 73j for connection (YES in S113), the game device 1 executes the process of connecting to that server 73x (x being any letter from a to j)(S114). The game device 1 then executes the process of transmitting the player's name and the ID assigned to the player to the server (S115).

[0100] In response, as shown in Fig. 6, the server 73x sends to all of the game devices 1 the names, etc., of all of the connected players using the game devices 1 connected to the server 73x (S301 in Fig. 6). Next, the server 73x sends to the game device 1 the data required to wait in the lobby (S302 in Fig. 6), and waits for a selection to be made from the game device 1 (NO in S303 in Fig. 6).

[0101] Returning to Fig. 4, the game device 1 displays the network map 400 shown in Fig. 7 on the video monitor 4, based on the data from the server 73x (step S116 in Fig. 4). As shown in Fig. 7, the network map 400 comprises game contents 401 located at the left edge of the screen, room types 402 located at the top of the screen, a new room create command button 403 located at the right edge of the screen, a room Connect button 404 located below the button 403, a 'Back' button 405 below the button 404, an exchange location designation button 406 at the lower left of the screen, and a keyboard display 407 located in the bottom third of the screen. The purposes of each of these components will be explained below.

[0102] The game device 1 then waits for a game to be selected based on this screen 400 (NO in S117 in Fig. 4). When the player inputs a game selection command to the game device 1, the game device 1 performs the process of transmitting the type and nature of the selected game to the server 73x (S118 in Fig. 4).

[0103] As shown in Fig. 6, when the server 73x thereby receives data regarding the selected game (YES in S304 in Fig. 6), the data required to execute the game application program is sent to the game device 1 (S304 in Fig. 6). The server 73x then receives the game data from the game device 1 and sends the data to the other game devices 1 connected to the same game application (S305 in Fig. 6), and manages the state of progress of the game application (S306 in Fig. 6).

[0104] As shown in Fig. 4, while connected to the server 73x, the game device 1 receives the data and programs required to process the game application, performs required processing, and finally proceeds with

the game (S118 and S119 in Fig. 4).

[0105] In this way, in the game system, a network game may be run while the game devices 1 are connected to the authentication server 72, a sub-server 73 and a selected subsidiary server 73x, which is subordinate to the sub-server 73.

[0106] The communication protocol between the game terminals and the server will now be explained in detail using as an example the case in which three terminals -- a terminal A, a terminal B and a terminal C -- are used, with reference to Fig. 25.

[0107] The terminal A is operated by a player who is going to connected to the server to play a online game, the terminal B is operated by a player who has been connected and is now in the 'lobby', and the terminal C is a player who is already connected to a room (room 01) to which the terminal A would like to be connected.

[0108] As shown in Fig. 25, first, the intention to connect is conveyed to the server by the terminal A (signal a).

[0109] In response to this signal a, after the connection is made, the types of games and the progress status are sent to the terminal A (signal b), and the terminal B is notified (signal b') of the fact that the terminal A is connected.

[0110] The terminal A immediately notifies the server of its desire to enter the room 01 (signal c). The server investigates the state of occupancy of the room 01 in response to this request, and if entry is possible, it issues an entry permission signal (signal d). When this occurs, the server provides to the terminal A, in addition to the entry permission, information regarding the room 01 and information regarding the other terminal (the terminal C) that has already entered the room 01.

[0111] The terminal A performs preparation (understanding of the rules, etc.) based on the information sent from the server, and sends a signal indicating that the preparation is completed (signal e). In response to this signal, the server informs the terminal A and the terminal C of the status of progress of the game (signals f and f', respectively). When this occurs, the signal f' transmitted to the terminal C includes a notification that the terminal A has entered the room.

[0112] When the game is thereafter commenced, a signal based on the operation of the terminal A is sent to the server (signal g), and based on this signal g, information on the operation of the terminal A is sent back to the terminal A (signal h), as well as to the terminal C (signal h').

[0113] Conversely, a signal based on the operation of the terminal C is sent to the server (signal i), and based on this signal i, information on the operation of the terminal C is sent back to the terminal C (signal j), as well as to the terminal A (signal j').

[0114] The game is played through repetition of these steps, and when the game ends, the server sends a game termination confirmation signal to the terminals A and C (signals k and k', respectively). In response, the terminal A sends the state of the game after termination (including the winner and loser) to the server (signal l), as does the terminal C (signal m).

[Creation of card format data for personal information exchange]

[0115] The game system described above is constructed such that each game device can exchange introductory information regarding the individual players. This personal introduction information includes data appropriate for introducing the individual player, including the player's name, date of birth, address, hobby, portrait, and past game results. The player need not necessarily indicate real private information such as his real name, address or date of birth. Alternatively, he may use false information that he creates, or may chose not to disclose such information. These information items are preferably arranged so that they are displayed on the game terminal device as a card object. In other words, in this network game system, the game control program executes a control process by which the personal introduction information is expressed in the form of a card on each terminal device, and the information arranged in this fashion may be exchanged between players as if exchanging business cards.

[0116] Fig. 28 shows the communication protocol for card exchanges between the servers and the game devices. In Fig. 28, A, B and C are game devices 1, and an example is shown in which A, B and C have already entered a prescribed room, and A has asked B to exchange cards.

[0117] First, A sends a request to the server, via the signal a, that seeks a card exchange with B. After receiving this request, the server notifies B (via the signal b) that a card exchange request has been issued by A, and informs A via the signal b' that it has sent said notification to B. When this occurs, because no card exchange request was issued for C, the server does not transmit any message to C.

[0118] Next, B, which has received A's request for a card exchange, notifies the server whether it is willing to exchange cards, in the form of OK or NO (signal C).

[0119] The server conveys B's response to A (signal d), and then informs B that the server has sent B's response to A (signal d'). When this occurs, because no card exchange request was issued for C, the server does not transmit any message to C.

[0120] Fig. 8 is a drawing showing the screen 500 showing the state in which the personal introduction information is arranged in the form of a card. The data used to create the card screen includes character codes corresponding to a character that comprises the equivalent of a self-portrait of the player, the player's ID, the player's name, game data regarding the player's past results, the frequency with which the game was played, the percentages of time that various types of games were selected, etc. The game device 1 forms the char-

acter codes, ID, name and other information into display data in the form of a card, and displays this data on the video monitor 4 of the game device as a card graphic 500 as shown in Fig. 8. This card graphic 500 includes a character 501 displayed in the square area, personal ID 502 and name 503.

[Operation to exchange personal information]

[0121] The operation to exchange personal information will now be explained. Fig. 9 is a flow chart to explain the operation of the game device on the side of the player sending the card. Fig. 10 is a flow chart to explain the operation of the game device on the side of the player receiving the card. Fig. 11 is a drawing showing in a sequential manner the screens displayed when the processes described in the flow charts of Fig. 9 and Fig. 10 are performed.

[0122] The exchange of information between individual players is carried out through the exchange of cards. Players cannot exchange cards while a game is being played, but may exchange them before the game has started or after it has ended. However, the permitted timing of a card exchange can be changed.

[0123] When the card exchange described in the flow charts of Figs. 9 and 10 is carried out, the screens 600 shown in Figs. 11(a) through 11(d) corresponding to the current stage of the process are displayed. The contents of the screen 600 will be explained simply. Data 601 describing the player himself is displayed at the lower left of the screen 600. In addition, name and other brief data 602, 603, 604 and 605 comprising self-introduction data regarding other players connected to the individual game space (room) in which the player is participating is displayed. 605 indicates brief data regarding players not currently present in the same 'individual game space (room)'. In the center of the screen 600 are displayed a card exchange button 606 that carries out a card exchange with a player selected from among the players connected to the 'individual game space', and a 'Back' button 607 by which to return to the process described on the previous screen.

[0124] When the game device 1 is connected to the server 73x, the initial screen from which to select the type of game is displayed. When a specific game screen is selected, the 'lobby' game screen described above, comprising the initial screen for that game, is displayed. Fig. 7 displays the game screen for this 'lobby'. Of the types of games available, 'mah-jongg' is chosen. 'Room' refers to the unit in which mah-jongg is played, and comprises four players. Players may enter game spaces in which the number of players has not yet reached four. To enter a desired room, a player selects the 'Connect to room' icon 404. To create a new room and recruit mah-jongg game participants, the player selects the 'Create new room' icon 403.

[0125] When the player selects 'Room' or 'Create new room', the game device executes a process by which the game is played with other players, and displays the corresponding screen. In Fig. 7, 406 is an icon indicating a location where cards may be exchanged. In the example of Fig. 7, cards are exchanged in a 'Room' with the three other players. 405 is a button used to return to the previous process. The 'lobby' is a large game space designed for each type of game, while a 'room' is equivalent to an individual game space comprising a group of players that are playing a game with each other, and is formed under the 'lobby'. A player can easily engage with other game players by choosing a type of game, entering the 'lobby', and then choosing a 'room', thereby simplifying the process by which a player can participate in a network game.

[0126] When a player clicks on the 'Exchange cards' button while in a 'room', the process shown in the flow chart of Fig. 9 begins.

[0127] When the 'Exchange cards' button is clicked on, the game device 1 immediately determines whether the player wishing to exchange cards already possesses 100 cards obtained in trades with other players (S401 in Fig 9). If 100 cards have already been obtained (YES in S401 in Fig. 9), the message 'You have already reached the limit of 100 cards. Please organize your cards.' is displayed on the video monitor 4 (S402 in Fig. 9), and the game device returns to the initial state.

[0128] If the limit of 100 cards has not yet been reached (NO in S401 in Fig. 9), the game device 1 displays the screen 600a shown in Fig. 11(a) on the video monitor 4 and waits for the person with whom a card will be exchanged to be determined (NO in S403). If any button is clicked on (YES in S403), the game device 1 detects the content of the button, and if the 'Cancel' button' is chosen, the game device returns to the initial state.

[0129] If any button is clicked on (YES in S403), and a particular player among the other players in the 'room' is selected after the game device 1 determines the content of the button, as shown in Fig. 11(b), it is determined through communication with the server 73x whether the selected player is still in the room (S404).

[0130] If it is determined that the selected player has already left the 'room' (NO in S404), the game device 1 waits once more for a button to be clicked on (NO in S403). On the other hand, if the other player has not yet left the room (YES in S404), it is determined whether or not the other player is exchanging a card via the server 73x (S405).

[0131] If the other player is exchanging a card (YES in S405), the game device displays the message 'That player is currently exchanging cards with another player.' on the video monitor 4 (S406), and then returns to the initial state. On the other hand, if the other player is not exchanging cards with another player (NO in S405), the game device 1 issues a card exchange request to the other game device 1, and displays the message 'Requesting card exchange...'on the video monitor 4 (S407).

[0132] Meanwhile, the other game device 1 that receives the card exchange request executes the process shown in the flow chart of Fig. 10. First, provided that no card exchange is being carried out with another player (NO in S501 shown in Fig. 10), the message '_____ has asked to exchange cards. OK?' is displayed on the video monitor 4 connected to the other game device 1, as shown in Fig 11(c) (S502 in Fig. 10). In addition to this message, an 'Accept (card exchange)' button 608 and a 'Do not accept' (card exchange) button 609 are displayed on the screen 600c.

[0133] The other game device 1 waits for input from the player for a limited time, such as 10 seconds (S503 in Fig. 10). If the other game device 1 does not receive from the player an input choosing to either accept or refuse the card exchange within the time limit (YES in S503), data indicating a refusal to exchange cards is sent to the game device 1, the message 'Because no response was received within the allotted time, the card exchange cannot take place.' is displayed (S504 in Fig. 10), and the other game device 1 returns to the initial state in the flow chart of Fig. 10.

[0134] If the other game device 1 receives an input from the player within the time limit either accepting or refusing the card exchange (NO in S503 in Fig. 10), the input is confirmed (S505 in Fig. 10), and if the input refuses the card exchange (NO in S505), data indicating a refusal of the card exchange is sent to the game device 1 that requested the card exchange, the message 'The card exchange request was refused.' is displayed on the video monitor 4 (S506 in Fig. 10), and the other game device 1 returns to the initial state in the flow chart of Fig. 10.

[0135] Where the other game device receives an input accepting the card exchange from the player (YES in S505 in Fig. 10), the other game device then determines whether the accumulated number of cards that have been exchanged has reached a prescribed amount, such as 100 (S507 in Fig. 10), and if the limit of 100 cards has not been reached (NO in S507), the card exchange process is carried out. Icons 611 and 612 indicating that a card exchange is underway are displayed as shown in Fig. 11(d), and the message 'Card exchange with _____ completed.' is displayed on the screen (S508 in Fig. 10).

[0136] The message 'Please don't forget to save.' is then displayed on the video monitor 4 connected to the other game device 1 (S509 in Fig. 10), and the process ends.

[0137] Returning to Fig. 9, if a response either accepting or refusing the card exchange is not received within the time limit (YES in S408 in Fig. 9), the message 'A response was not received within the allotted time.' is displayed (S409 in Fig. 9), and the process ends, and the game device 1 returns to the initial state in the flow chart of Fig. 9.

[0138] If a response is received within the time limit (NO in S408 in Fig. 9), the game device 1 confirms the response (S410 in Fig. 9), and if the response is a refusal (NO in S410), the game device 1 displays the message 'The card exchange was refused.' on the video monitor 4 (S411 in Fig. 9), and then returns to the initial state in the flow chart in Fig. 9.

[0139] On the other hand, if a response is received accepting the card exchange (YES in S410 in Fig. 9), the game device 1 determines whether or not 100 cards have been exchanged (S412 in Fig. 9), and if 100 cards have not been exchanged (NO in S412), the card exchange process is carried out, and the message 'Card exchange with _____ completed.' is displayed (S413 in Fig. 9).

[0140] The message 'Please don't forget to save.' is then displayed on the video monitor 4 connected to the other game device 1 (S414 in Fig. 9), and the process ends.

[0141] When the current exchange represents the 100th card exchanged (YES in S412 in Fig. 9, YES in S507 in Fig. 10), the card exchange is carried out (S415, S511), but the message 'The card exchange was successful, but no more cards may be held. Please organize your cards.' is displayed on the video monitor 4 of the applicable game device 1 (S416, S511), and the game device 1 returns to the initial state.

[0142] When the cards received in exchange are saved, as shown in Fig. 12, they are organized as a card list 800 and stored in a prescribed memory area. This card list 800 can save four cards 500a through 500d on one page, and includes the date 504 on which the cards were exchanged, and the content of the game and the points scored can also be saved with the information on the cards 500a through 500d.

[0143] The necessary data for these cards is stored in a prescribed memory area for each game terminal device or player.

[0144] A character (501 in Fig. 8) is displayed in the card described above. The character is an aggregation of specified parts. By selecting these parts appropriately, the player can design his own character.

[0145] Fig. 13 shows the situation in which a code is assigned to each part, and the part and the code are cross-linked in a table. This table is stored in a prescribed memory area in each game terminal device. In other words, in each game device 1, in order to create a character 501 on the card 500, a plurality of characters 501 are divided into parts 551, each part 551 is assigned a corresponding code 552, and the resulting table 550 is stored in the ROM 1b or the work RAM of each game device 1.

[0146] The parts 551 that form the characters comprise several frameworks for the upper torso of a man, several types of hair styles to be inserted in these human frameworks, several types of eyes, noses and mouths, several animal frameworks, several types of eyes, noses and mouths to be inserted in these animal frameworks, a robot framework, and several types of eyes, noses and mouths to be inserted in the robot

framework.

[0147] To create the character 501 on the card 500, the player selects parts 551 in the game device 1, displays them on the video monitor 4, and creates the desired character 501. The player then pastes the character onto the card 500.

[0148] When the character 501 is sent from the game device 1 that initiated the card exchange to the game device 1 comprising the target of the card exchange, only the codes 552 for the parts 551 forming the character 501 are sent to the other game device 1. The receiving game device 1 extracts the parts 551 from its own internal table 500 based on the received codes 552 and creates a character 501, and then displays the character 501 on the video monitor 4 as a part of the card 500. Therefore, because only text data (letter data) is sent between the game device 1 that initiated the card exchange and the game device 1 comprising the target of the card exchange, and image data (graphic data) need not be sent, the transmission speed for the card exchange may be increased.

[0149] As described above, because this embodiment enables a player to have the perception of traveling to a resort area, moving from a 'lobby' to a 'game room', and playing an entertaining game, and permits the exchange of personal introduction information in the game space of that 'room', using as a medium data on a business card, etc., it is easy and enjoyable for anyone to play the game, as well as easy to obtain personal introduction information regarding other players.

(Second embodiment)

[0150] Fig. 14 is a block diagram showing an example of the communication network pertaining to a second embodiment of the present invention. Each game device can access various networks by means of an Internet provider. The game device can connect to a general network described above by connecting to a high-level specified server on a specified network. Each game machine can also access a low-level specified server that is subsidiary to the high-level specified server, to connect to a low-level specified network by means of this low-level server. The high-level specified network by means of the high-level server is a network created for a household game machine of the same type as this system, while the low-level specified network is a network constructed specifically for the game system of the present invention. Making the low-level game network subordinate to the high-level game network makes the management and design of the specified game system easier.

[0151] In the embodiment described above, the personal information comprises game-related information in particular, and includes individual game results and game preferences.

(Variations of the first and second embodiments)

[0152] Variations of the first and second embodiments described above will now be explained.

[0153] First, a first variation is characterised in that the card data includes the number times a card has been exchanged, and the screen display of the card changes depending on how many times a card has been exchanged. In other words, the card 500 data DT contains the number of times the card has been exchanged (a number equivalent to the 'number of times the player has met another player') in the network game system. This number of previous exchanges is accumulated each time a card is exchanged with the same player, and is saved as part of the card data.

[0154] For example, as shown in Fig. 15, a 'Number of Meetings/Evaluation Table' is recorded in the sub-server 73 of the game parent station 7 as table data. As can be seen from the drawing, the 'Card color CL', 'Character motion MO', 'Character background BK' and 'Title SR' all change in accordance with the 'Number of meetings'.

[0155] The 'Number of meetings' is broken down into 'one or more, 'two or more', 'four or more', 'six or more', 'eight or more', and 'ten or more'. Where a card exchange falls into the 'two or more' through 'eight or more' categories, the content of the 'Card color CL', 'Character motion MO', 'Character background BK' and 'Title SR' changes depending on whether the gender of the exchange initiator (oneself) and the gender of the card exchange target player (the other player) are the same or different, i.e., whether the players are of the same sex or the opposite sex, even if the 'Number of meetings' (i.e, the number of card exchanges) with that player is the same.

[0156] When a card is exchanged, the game device 1 calculates how many exchanges including the current exchange have occurred with the same opponent, and matches the result with the 'Number of Meetings/Evaluation Table' in the sub-server 73 of the game parent station 7. It then updates the 'Card color CL', 'Character motion MO', Character background BK' and 'Title SR' components of the card data in accordance with the result of the matching operation, and subsequently carries out the card exchange process using this card data. Because the initiating player's card data is sent to the other player, and the target player's card data is received from the target player, both data items are saved.

[0157] The card list in which the exchanged card data is displayed is shown in Figs. 16(a) through 16(d). As can be seen from the drawing, the parameters pertaining to the configuration of the objects displayed in the form of cards (the 'Card color CL', 'Character motion MO', Character background BK' and 'Title SR') change in accordance with the 'Number of meetings'.

[0158] By changing the objects displayed in the form of cards in accordance with the number of card

exchanges (number of meetings), a sense of friendship between users may be added to the game.

[0159] The second variation will now be explained based on Figs. 17 and 18. In the second variation, when a card exchange takes place, the sender's e-mail address may be attached to the card, so that e-mail may be sent to a user that attaches his e-mail address from within the game application. This e-mail address may be made usable in other applications as well.

[0160] In this second variation, the game device 1 on the side sending the card carries out the process shown in Fig. 17, and the game device 1 on the side receiving the card carries out the process shown in Fig. 18. The process shown in Fig. 17 corresponds to that shown in Fig. 9. In Fig. 17, however, the processes of S404a through S404d are added. The process shown in Fig. 18 corresponds to that shown in Fig. 10. In Fig. 18, however, the processes of S500a, S500b, S502a, S502b, S505a and S505b are added.

[0161] In the process shown in Fig. 17 for the side sending the card, if it is determined that the other player has not left the game room (YES in step S404), the game device 1 determines whether or not to attach its own e-mail address to the card data (step S404a) based on interactive input from the user. If this determination is YES, the process of attaching the user's e-mail address to the card data is executed (step S404b). If the determination is NO (i.e., do not attach e-mail address), step S404(b) is skipped.

[0162] It is next determined whether or not the other user is already in possession of a prescribed number of cards (here, 100) through prior exchanges (step S404c). If this determination is NO, i.e., if it can be confirmed that the other user does not yet have 100 cards, and there is sufficient room in the card data memory, the processes of steps S405 and beyond are carried out in the same way as shown in Fig. 9. Conversely, if the determination is YES, i.e., if it is determined that the other user already has 100 cards, the message 'Because the other player has already reached the limit of 100 cards, the card exchange cannot take place.' is displayed (step S404d), and the game device 1 returns to the initial state in Fig. 17.

[0163] On the other hand, where the process of Fig. 18 for the side receiving the card is carried out, the game device 1 begins the process by determining whether or not it already has a prescribed number of cards (here, 100 cards) (step S500a). If the determination is YES, i.e., if the game device 1 determines that it already has 100 cards, the message '_____ has asked to exchange cards, but because you have already reached the limit of 100 cards, the card exchange cannot take place.' is displayed on the video monitor 4 (step S500b), and the game device 1 returns to the process of step 500a. Conversely, if the determination in step 500a is NO (i.e, the player does not yet have 100 cards), after it is determined whether or not a card exchange is underway with any other player and the existence of a card exchange request is displayed (steps S501, S502), the processes of steps S502a and S502b are performed.

[0164] In step S502a, the game device 1 determines whether or not the requesting player's e-mail address is attached to the card data, and if the determination is NO (i.e., the e-mail address is not attached), it carries out the processes of steps S503 and S505. Conversely, if the determination is YES (i.e., the e-mail address is attached), the message 'An e-mail address is attached.' is displayed on the video monitor 4 (step S502b), and the game device 1 proceeds to the process of step S503.

[0165] If there is ultimately an input from the user accepting a card exchange in step S505 (YES in step S505), the game device 1 determines, based on the user's input, whether or not to attach its e-mail address to the card data (step S505a). If the determination is YES, i.e., if the e-mail address is to be attached to the card data, the game device 1 executes the process to attach its own e-mail address to its own card data to be sent to the player requesting the card exchange (step S505b). Conversely, if the answer is NO (i.e., if the card is to be exchanged in accordance with the request, but the e-mail address is not to be attached to the card data), the game device 1 does not execute the e-mail address attachment process of step S505b, and proceeds to the card exchange processes of step S507 and beyond.

[0166] Excluding the processes described above, the other processes are identical to those shown in Figs. 9 and 10.

[0167] Therefore, e-mail addresses can be attached to card data and exchanged by means of this e-mail address attachment process. Another characteristic of this variation is that it offers players the freedom to choose the items to be exchanged in accordance with their degree of closeness with another player, such as by exchanging a card but not yet their e-mail address. In this way, a relatively broad spectrum of communication may be made available for an online game, thereby increasing the variety of chances of game.

[0168] A third and fourth variation will now be explained. These variations pertain to using the exchanged card data with applications other than the game application of the present invention.

[0169] In the third variation, the card data is read by other applications, so that it may be handled as a common format not only by one application but by a plurality of applications over the network. To obtain this construction, a common area from which the card data may be read by other applications is reserved in the memory area for data saved in this game application. Normally, the saved game data is encrypted, and the ordinary user cannot rewrite it or read it, but the card data should be saved in a common format in a certain area containing saved data, such that the card data may be read by means of a prescribed program. In that case, confiden-

tiality is preserved by having the common format and the prescribed program undergo prescribed encryption, and by using the encryption codes during decoding.

[0170] In the fourth variation, the card data contains information on individual preferences. The card data contains individual preference information such as 'I like cars'. Where a flag that indicates this type of personal information is included in the card data, when this flag is read in a car-based network game, it is displayed as a priority item in the card. In addition, 'For what game was the card exchanged?' can be specified in other applications. In this way, communication while playing the network game can take place more smoothly, and the application can be given greater flexibility. Furthermore, by means of this system, information may be transmitted among a plurality of applications.

(Third embodiment)

[0171] A third embodiment of the present invention will now be explained with reference to Figs. 19 through 22.

[0172] The game system pertaining to this embodiment is characterised in that a 'game tournament' is constructed on the network, and particularly in that, in order to ensure smooth and fair administration of the tournament, penalties are imposed for violations of the rules that players are required to follow in order to play the game (such violations include copying data or resetting the game while the game is underway, and are termed 'bad acts' here).

[0173] The network-based game tournament is carried out based on play data provided for a fixed period of time, and involves the announcement of rankings. The concept is shown in Fig. 19. Because the server of the game parent station 7 used in the game system lacks a database function, a database specifically dedicated to the tournament is used in order to prevent users from committing violations (game resetting, data copying, etc.),.

[0174] The tournament server is built into the game parent station 7. This tournament server includes a tournament planning server, a tournament administration server (this role is performed by one of the first through tenth servers), a ranking data storage area, and a tournament authentication database, all of which are software-based. Each game device 1 participates in the game tournament carried out on the tournament server in roughly the order specified below. For purposes of explanation, the numbers below in parentheses, which indicate the order in which the steps are performed, correspond to the numbers located inside the arrows in the drawing.

(1) The game device 1 connects to the tournament server.

(2) The 'tournament administration planning server' checks the current status of the tournament and downloads the tournament status data to the client (game device 1).

(3) Where the client indicates an intention to participate in the game tournament, the client's data is registered in the 'tournament authentication server'. This enables the client to participate in the tournament.

(4) The client enters the game server that is administering the game tournament, and plays the game.

(5) The play data generated during the game tournament is saved in the tournament authentication server.

(6) The results of the game tournament are calculated for each day, and the data is organized to create rankings.

(7) To view the rankings, the client downloads the rankings data.

[0175] Tournament planning is performed by converting into data various information regarding the timing, location and nature of the game to be played, and the rules that will govern them, and maintaining this data in the tournament server. The game tournament is basically run over successive days for a fixed period. Because the servers can go down at any time, requiring suspension of the game, this data may be changed. The data managed during administration of the tournament includes, for example, (1) the number of players participating in the tournament, (2) the game to be played (e.g., mah-jongg, chess, etc.), (3) the rules to be applied (rule setting), (4) the date the tournament began, (5) the tournament period (i.e., the number of days), (6) the minimum number of matches (i.e., the prescribed number of matches), (7) the name of the tournament (text data, displayed via downloading), and (8) data regarding the tournament sponsor (displayed via downloading).

[0176] A client wishing to participate in the tournament must express his desire to participate in the game tournament while playing the game. If the maximum number of participants has not been exceeded, the client may participate. If the number of participants recorded in the tournament database is already at the maximum, the client is notified that he cannot participate.

[0177] A basic rule is established for the game tournament, which is that if a user participating in the game tournament has not finished the 'prescribed number of matches', the user is deemed to have not completed his participation, and the user's final game results will not be saved. A further condition is that the prescribed number of matches must be completed during the tournament period. However, a player may play more than the prescribed minimum number of matches.

[0178] The conceptual construction of the tournament administration server GS is shown in Fig. 20. The server GS may have its own format, or may have the same format as a standard game server. However, per-

sons other than clients (users) eligible to participate in the tournament may not enter rooms in which games are being played (however, they may observe).

[0179] All data regarding participation and play in a game tournament (involving mah-jongg, chess, etc.) is saved in a tournament authentication database residing in the game parent station. An example of the saved data is shown in Fig. 21. Specifically, the data comprises (1) player name data, (2) player face data, (3) player participant ID number data, (4) tournament play data totals, (5) data regarding the number of tournament matches, (6) player IP address data, (7) player personal ID data, and (8) information regarding bad acts (number of resets, etc.).

[0180] In particular, the last item described in item (8) above, information regarding bad acts, refers to bad faith violations such as resetting the game and leaving the game room before the prescribed number of matches have been played despite the fact that the player was participating in the game tournament. The next time such a 'bad user' attempts to participate in a game tournament, he is either given a warning or assessed a penalty, in order to discourage the commission of such acts in the future.

[0181] The methods by which bad acts are determined and a warning given or a penalty imposed comprise either methods involving action by the tournament administration server, or methods involving action by the application (game software).

〈1A: Methods of performing determination via server〉

[0182] There are two methods.

(a) In one method, the tournament administration server continuously manages all clients. The number of times that a client leaves a game room during a match or uses prohibited language is observed in detail, and records of these acts are registered in the tournament database.

(b) In another method, clients are managed only when they enter and leave a game (i.e., when they enter or leave a game room). This method manages users who have not left a game (i.e., left a room) by means of the official method (that is, users that have disconnected their telephone). Compared to the previous method in which clients were continuously managed, this management method has the advantage of reducing the burden on the tournament administration server.

〈1B: Method of issuing warning via server〉

[0183] The method by which the tournament administration server issues a warning has the features described below.

(a) In the case of a household game machine, because the game device 1 is certainly connected to a for-pay server (not shown in the drawings), the next time a client that has committed bad acts connects to the server, the for-pay server issues the warning or rejects the connection attempt by the user. When this occurs, a blacklist containing the names of bad users may be shared among a plurality of games. In other words, a client listed on a blacklist for game A may be issued a warning or denied access to game B as well.

(b) Each gate server (not shown in the drawings) manages user IDs, and when a client who has committed bad acts next attempts to connect, the server sends a blacklist flag to the client. When this flag is raised in the client's game application, a warning is issued by means of a mark or message indicating 'Blacklisted player' being superimposed on the player's face displayed on the video monitor.

(c): Each gate server (not shown in the drawings) manages user IDs, and when a client who has committed bad acts next attempts to connect, the server sends a blacklist flag to the client. When this flag is raised in the client's game application, a warning is issued by means of a 'warning message' being displayed on the screen each time the player connects to the network.

(d): A blacklist of players who have committed bad acts is created in the tournament database. The data in the tournament authentication database is checked based on this list, and a warning is issued via e-mail in response to the results of this check.

〈2A: Method of determination via application〉

[0184] There are two methods.

(a): In the first method, flags are raised when the game starts and when it ends. In a normal game, game results and other data is saved when the game ends. By contrast, when this method using flags is used, a minus flag is saved when the game starts, and when the game ends, a minus flag is added to the normal game results so that the minus is offset. For example, when the game begins, 'one loss' is written, and when the game ends, this 'one loss' is returned to the original number. In this way, a client who thinks 'I'm losing, so I'll just quit' and leaves the game will acquire a 'loss', which will discourage early game departures. This method has the advantage of imposing no burden on the server.

(b): In this method, certain conditions that determine the existence of bad acts are incorporated into the application, and where these conditions are met, this information is written into a fixed area in the RAM of the game system main unit. In this way, because flags are not raised in just one application, but may be shared across a plurality of applications, the 'number of reset operations' and the use of 'pro-

hibited language' may be determined.

(2B: Method of issuing warning via application)

[0185] The application-side warning method has the following features.

(a): In the case of a household game machine, a 'blacklisted player' flag is written in the server unit, and this warning will thereafter be generated regardless of which game software is run.
(b): A flag from the blacklist is written into the RAM in the game system main unit, and this 'blacklist flag' is thereafter raised in all applications.
(c): A flag is inserted in the game data to be saved, and penalties are imposed that bar the selection of some items (such as face parts, games, etc.), depending on the seriousness of the bad acts.

[0186] As described above, the existence and nature of bad acts may be reliably determined on either the server side or the application side, and an appropriate warning or sanction may be imposed in accordance with the seriousness thereof. In other words, when a client who has committed bad acts next connects to the same game tournament or a different game, the flag in the saved data may be changed, and a warning such as 'Reset is not allowed during a game' may be given. In addition, where the seriousness of the bad act exceeds a prescribed standard, the client may be denied access on the next connection attempt.

[0187] In this way, the occurrence of bad acts such as premature game departures (resets) may be eliminated or inhibited, and a game tournament environment may be created that is appealing to clients participating in the game.

[0188] Furthermore, data regarding game play is saved in the tournament authentication database. This data is processed on a daily basis, and the ranking of the top 100 clients, for example, is saved in a ranking data storage area. This ranking information can be downloaded by clicking on a download button from a menu, and may thereafter be viewed by a user. Downloadable information is limited to the items 1 through 5 listed in Fig. 21.

[0189] When the tournament period ends, the final rankings are calculated, and only the clients who have completed the minimum number of matches are ranked. When the tournament period ends, the final rankings will continue to be displayed until the next tournament. The relationship between the game tournament and the ranking display is shown in a summary fashion in Fig. 22.

[0190] In the embodiments of the present invention, the authentication server performs control operations to ensure that players are charged when they access the specified game server. In addition, when a bad player accesses the system, the specified game server or the authentication server performs control operations by which his game terminal device is informed that the player is a bad player.

INDUSTRIAL APPLICABILITY

[0191] According to the invention described above, a plurality of players connected to a specified server can easily enjoy a game in a relaxed fashion, and personal information regarding game opponents can be exchanged, so that new acquaintances and friends may be made while enjoying the game.

Claims

1. A network game system constructed such that a plurality of game terminal devices are mutually connected and the game terminal devices can each execute a prescribed game application program, comprising:

   a plurality of game servers for managing information pertaining to the individual game application programs; and
   an authentication server that is provided independently of the game servers, acts as a common server for the plurality of game servers, and has a function to determine whether or not the game terminal device should be permitted to access each game server.

2. The network game system according to claim 1, wherein the common authentication server carries out initial registration to allow the game terminal device to access each game server, as well as makes a determination of whether or not the game terminal device should be allowed to access each game server after registration is performed.

3. The network game system according to claim 1 or claim 2, wherein information regarding the game terminal devices is input to and registered in the common authentication server from the plurality of game servers.

4. The network game system according to claim 3, wherein the information comprises information specifying game terminal devices on which bad acts giving rise to denial of access to the game servers have been committed.

5. The network game system according to claim 4, wherein the denial of access to the game servers is determined based on the seriousness of the bad acts, and this determination includes the phased imposition of conditions involving the period for which their access is denied or the types of games from which they are barred.

6. A network game system constructed such that a plurality of game terminal devices are mutually connected and the game terminal devices can each execute a prescribed game application program, wherein each game terminal device has a control means with which player personal introduction information can be exchanged with other game terminal devices.

7. The system according to claim 6, wherein the control means is constructed such that players can exchange personal introduction information with each other between terminal devices that belong to a group of such devices that run a prescribed game application.

8. A game system wherein the plurality of terminal devices are connected to a common server machine via a communication means.

9. The game system according to claims 6 and 7, wherein the personal introduction information includes groups of data items that are displayed in the form of a virtual business card on each terminal device.

10. The game system according to any of claims 6 through 9, wherein the control means is constructed such that it carries out the exchange of the personal introduction information while the game of the game application program is being executed or after the game has ended.

11. The game system according to any of claims 6 through 10,

wherein the control means sends a request for the exchange of player personal introduction information to the terminal device of the party with whom the player wishes to exchange the personal introduction information;
wherein, when an exchange request is received from another terminal device, the control means transmits to the terminal device that sent the exchange request the result of input by the player regarding whether or not the exchange request is accepted;
and
wherein, if an input indicating that the exchange request is accepted is made by the player, the control means carries out the exchange of personal introduction information with the other terminal device and cumulatively stores the personal information sent from the terminal device of the party with whom the personal information is exchanged.

12. The game system according to claim 6, wherein the personal introduction information includes data pertaining to the results of games played by means of the game application program.

13. The game system according to claims 6 through 10, wherein:

the personal introduction information includes a character which is divided into parts;
each game terminal device has a memory area in which data regarding each part and its corresponding code is saved; and
the control means is constructed such that it reproduces the character sent by the game terminal device with which personal information is exchanged by determining the parts of the characters based on their codes received.

14. The game system according to claim 6 or claim 9, wherein the personal introduction information includes data regarding the history of exchanges of personal introduction information.

15. The game system according to claim 14, wherein the configurations of the objects comprising the personal introduction information organized in the form of a business card are changed in accordance with the history of exchanges of personal introduction information.

16. The game system according to claim 15, wherein the data pertaining to the objects displaying the business card comprises at least one of the color of the card, the motion of the characters on the card, the background behind the character on the card, and the title of the card.

17. The game system according to any of claims 6 through 16, wherein the personal introduction information includes the player's e-mail address, which is attached to the data displayed in the form of a business card.

18. A network game system constructed such that a plurality of game terminal devices are connected to a game parent station over a network and a game application program can be executed between the game terminal devices by means of the game parent station, wherein the game parent station comprises:

a server means that can execute the game application program in such a way that a plurality of players may participate;
a determining means that determines when a player has violated prescribed rules in connection with the game application program; and
a sanctioning means that, when the violating

player next attempts to participate, implements measures in regard to the violation.

19. The network game system according to claim 18, wherein the sanctioning means is a means that implements measures such as the issuance of a warning or the denial of access of an offending player to the server means.

20. A communication system in which terminal devices are connected to servers over a network, wherein the terminal devices have a control means that executes a game program in parallel with the process of connection to the server.

21. The communication system according to claim 20, wherein the terminal devices previously read out both the program indicating the process of connecting to the server and the game program, and wherein the control means begins the execution of the game program when the user issues an instruction to execute the process of connection to the server.

22. The communication system according to claims 20 or claim 21, wherein the terminal devices serve as display devices to perform display of the execution of the game program, and also display the status of connection to the server.

23. The communication system according to any of claims 20 through 22, wherein the terminal device executes the game program until the connection to the server is ended or until it is confirmed that connection to the server is not possible.

24. The communication system according to claims 20 through 23, wherein the control means executes the game program until the connection to the server is ended or until it is confirmed that connection to the server is not possible.

25. A storage medium on which a program to have the game terminal device execute the control means according to claims 6 through 24 are stored.

26. The game terminal device constituting the system according to any of claims 6 through 24.

FIG.1

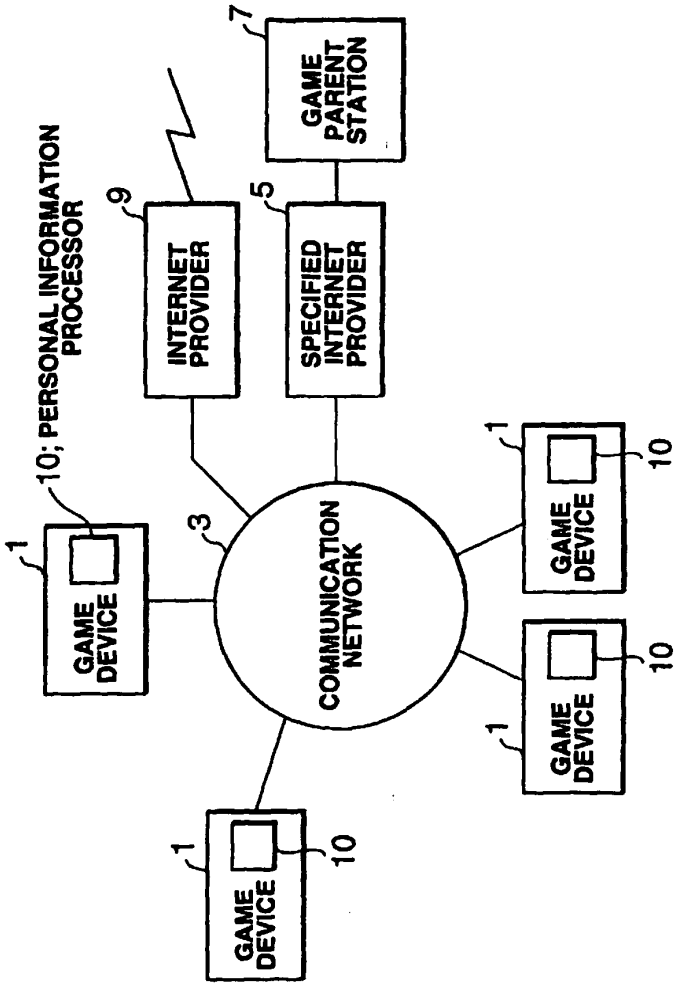


FIG.2

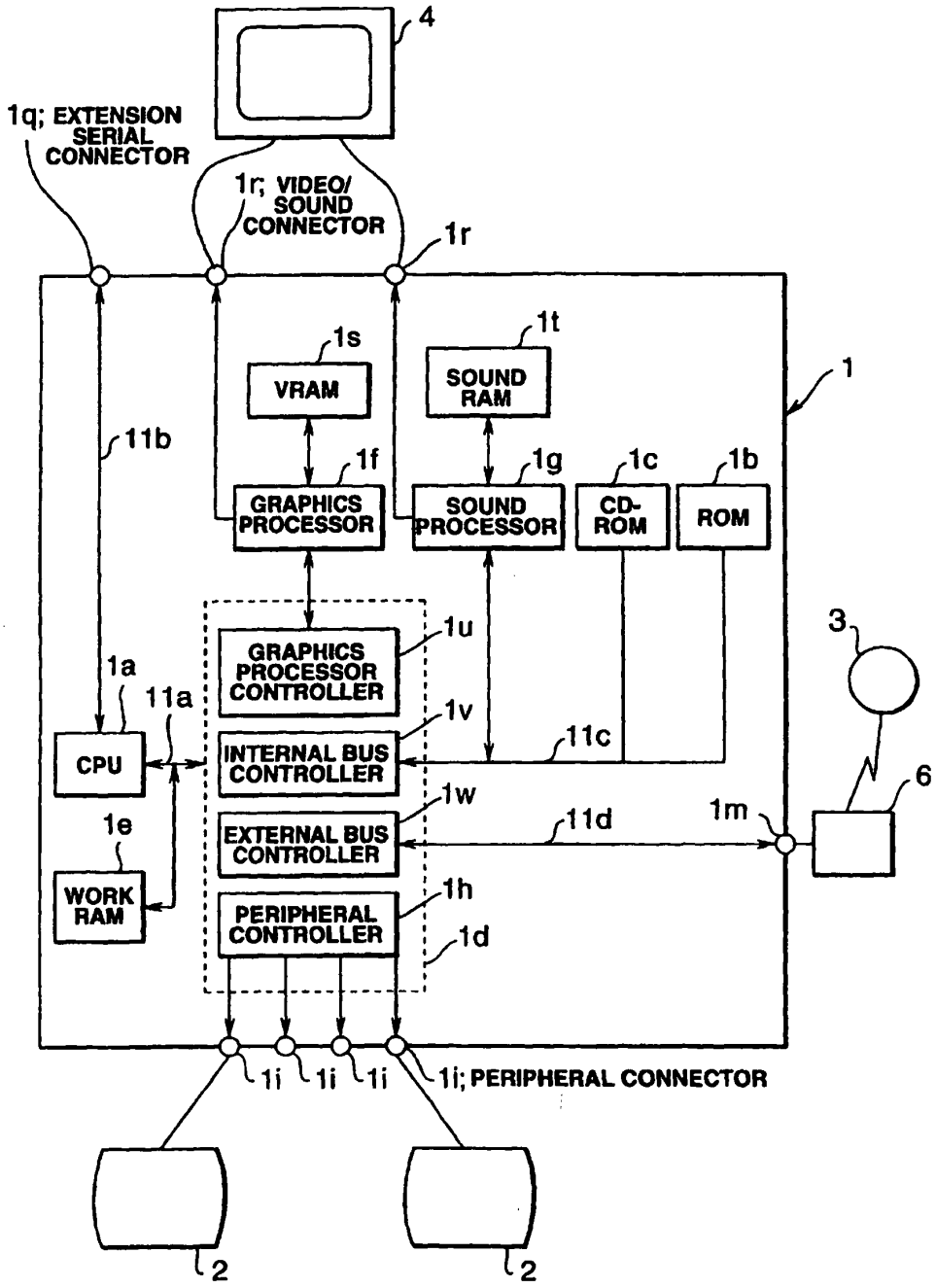


FIG.3

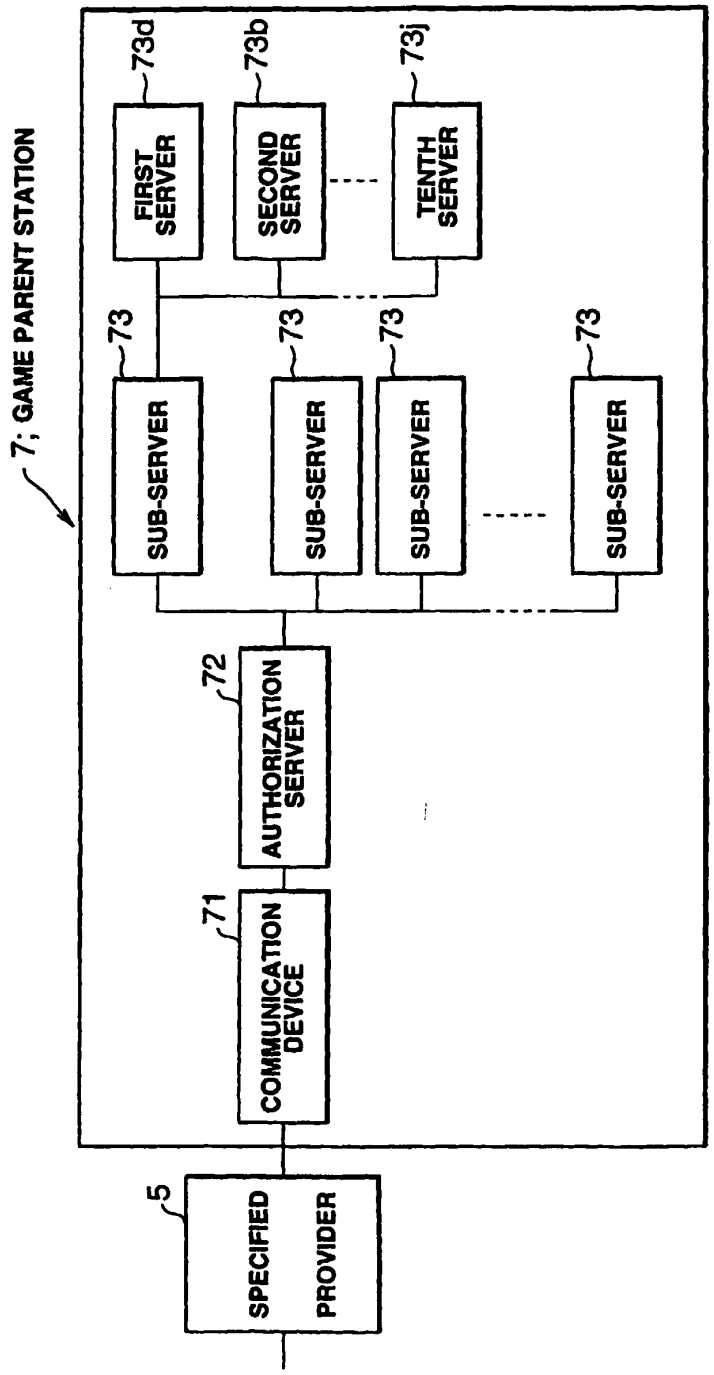


FIG.4

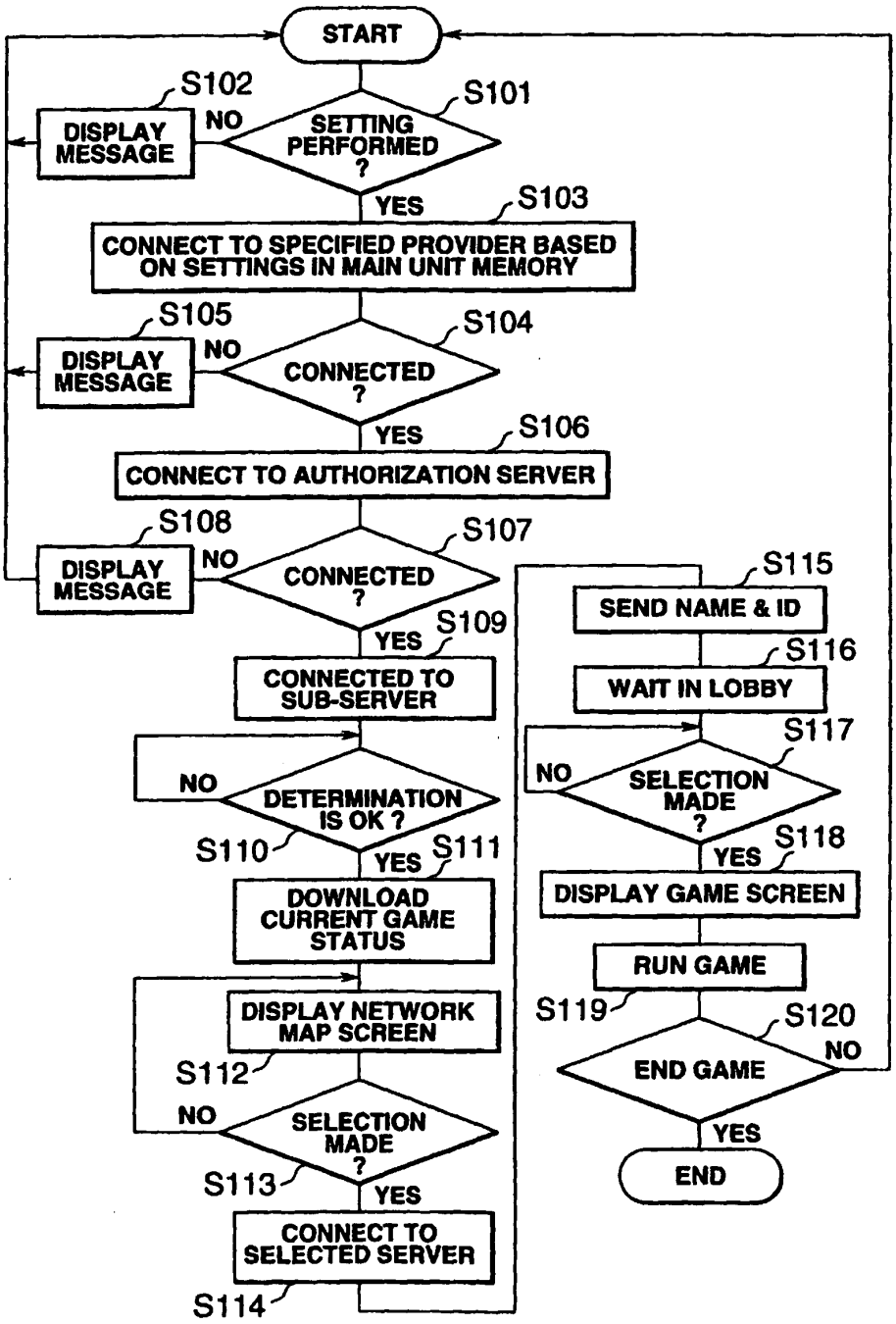


FIG.5

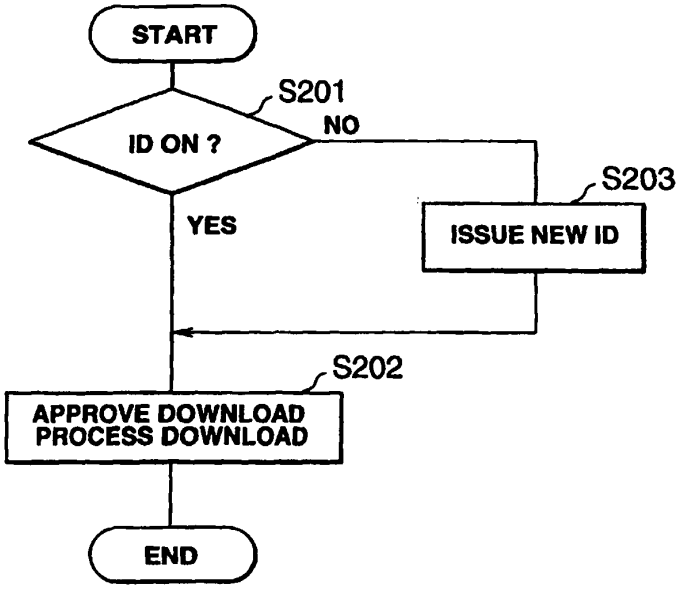


FIG.6

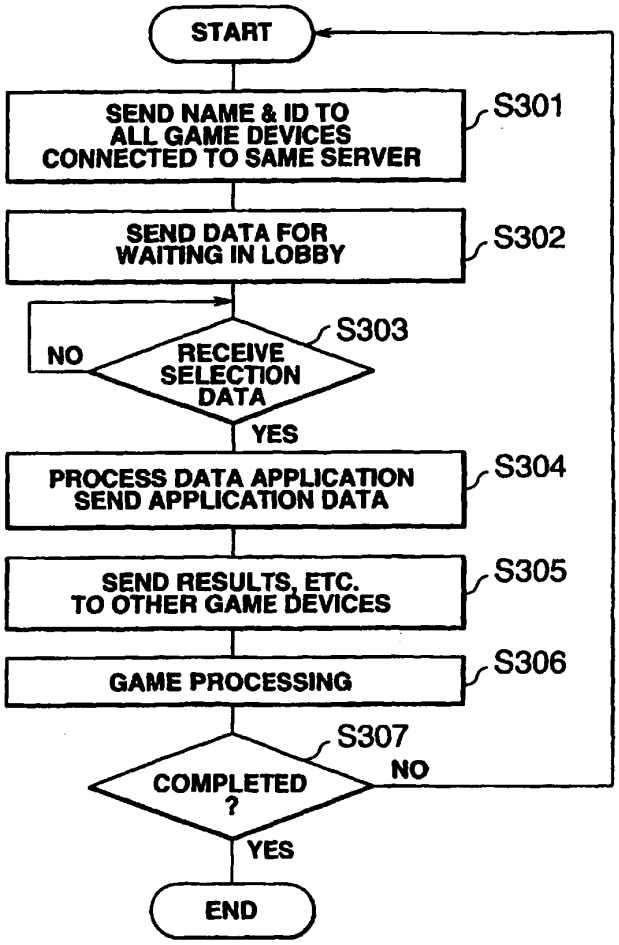


FIG.7

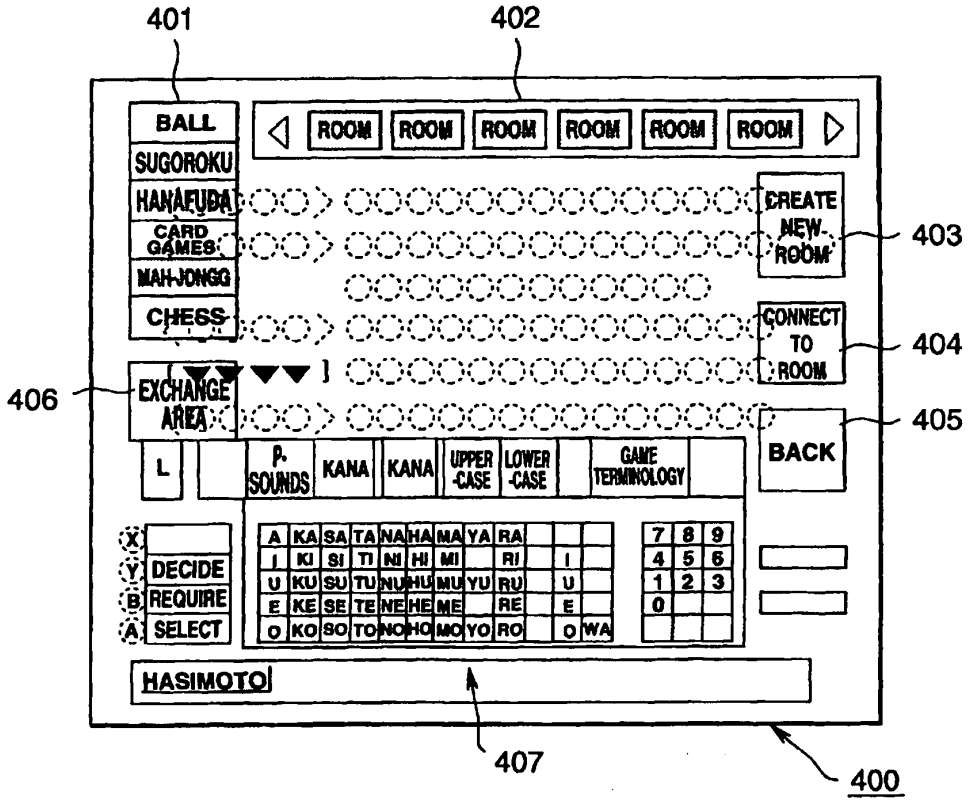


FIG.8

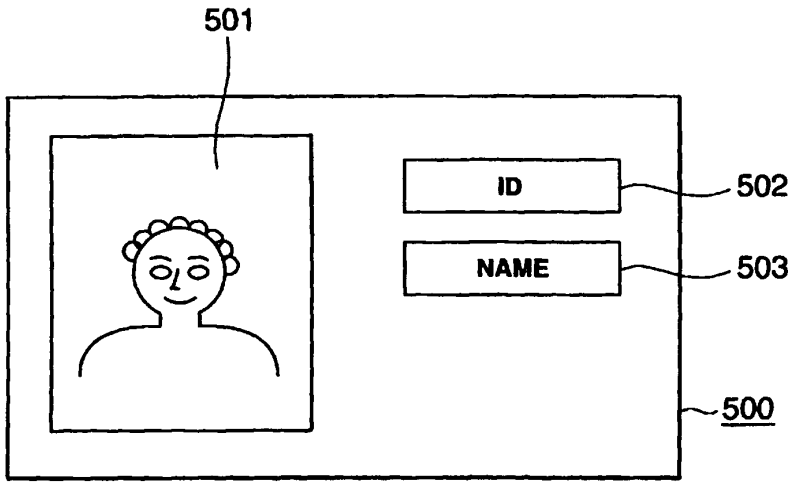


FIG.9

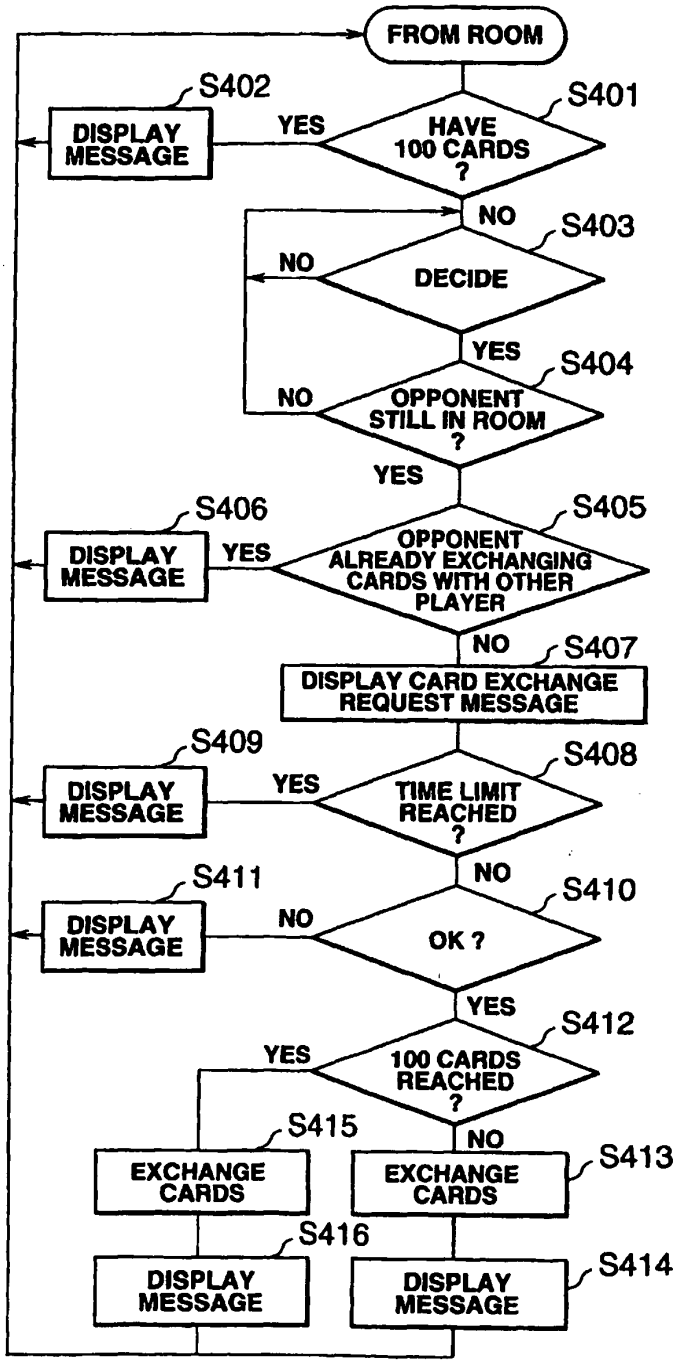


FIG.10

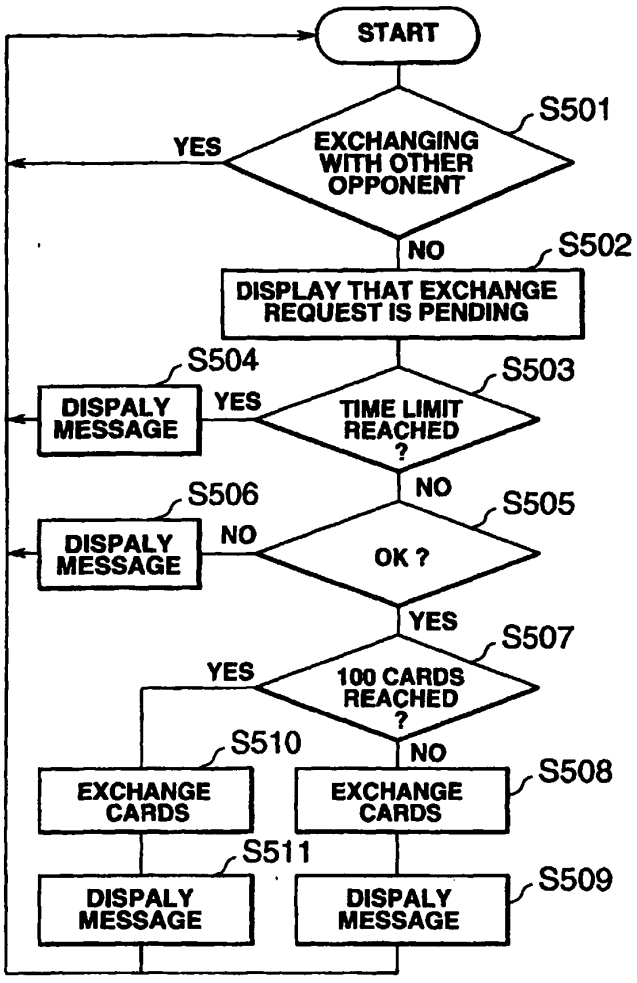


FIG.11

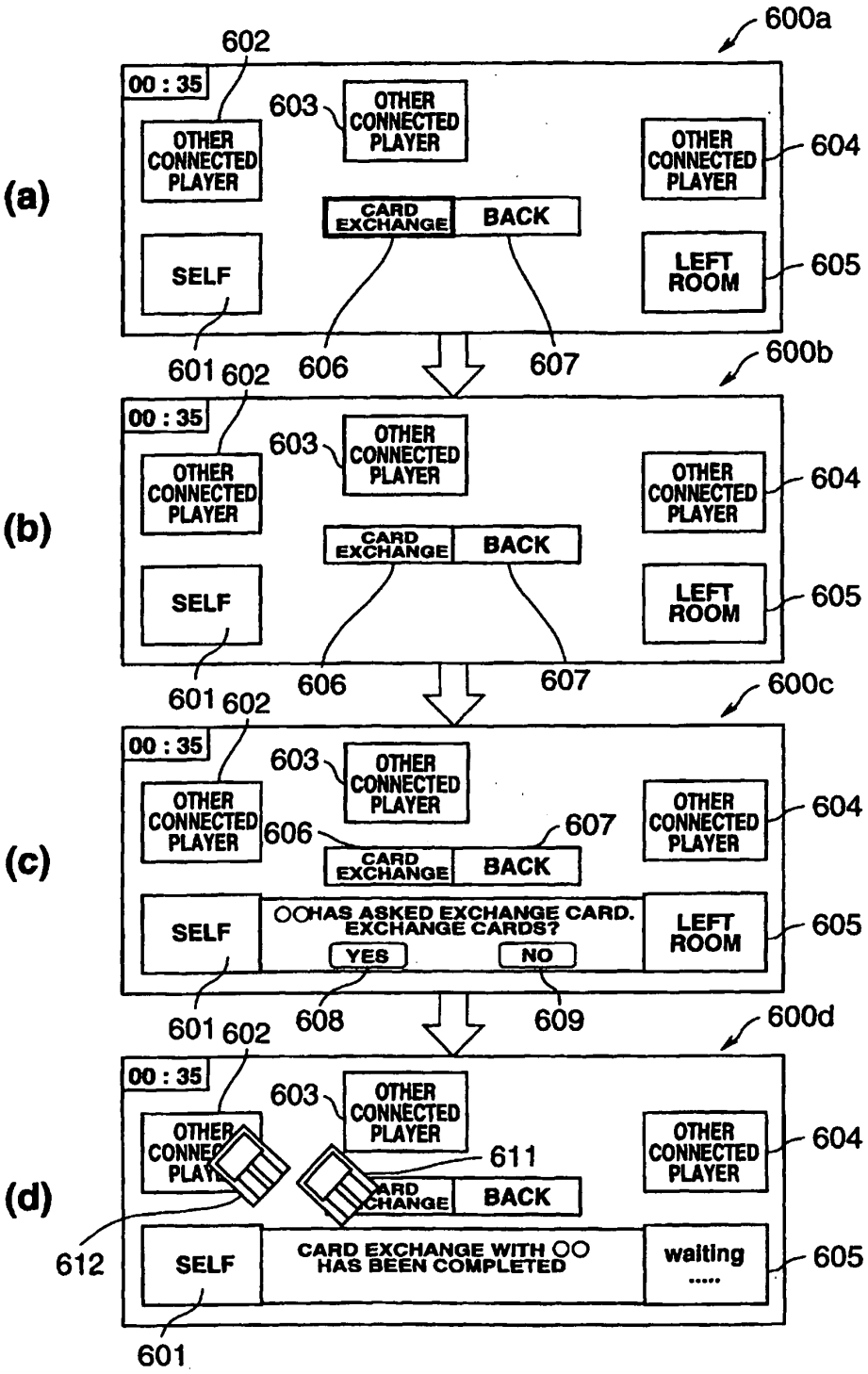


FIG.12

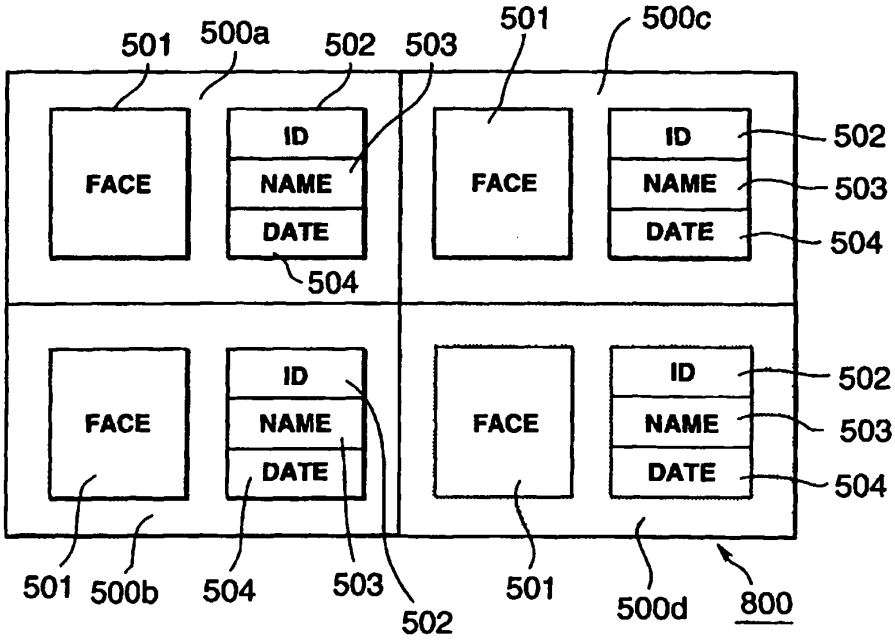


FIG.13

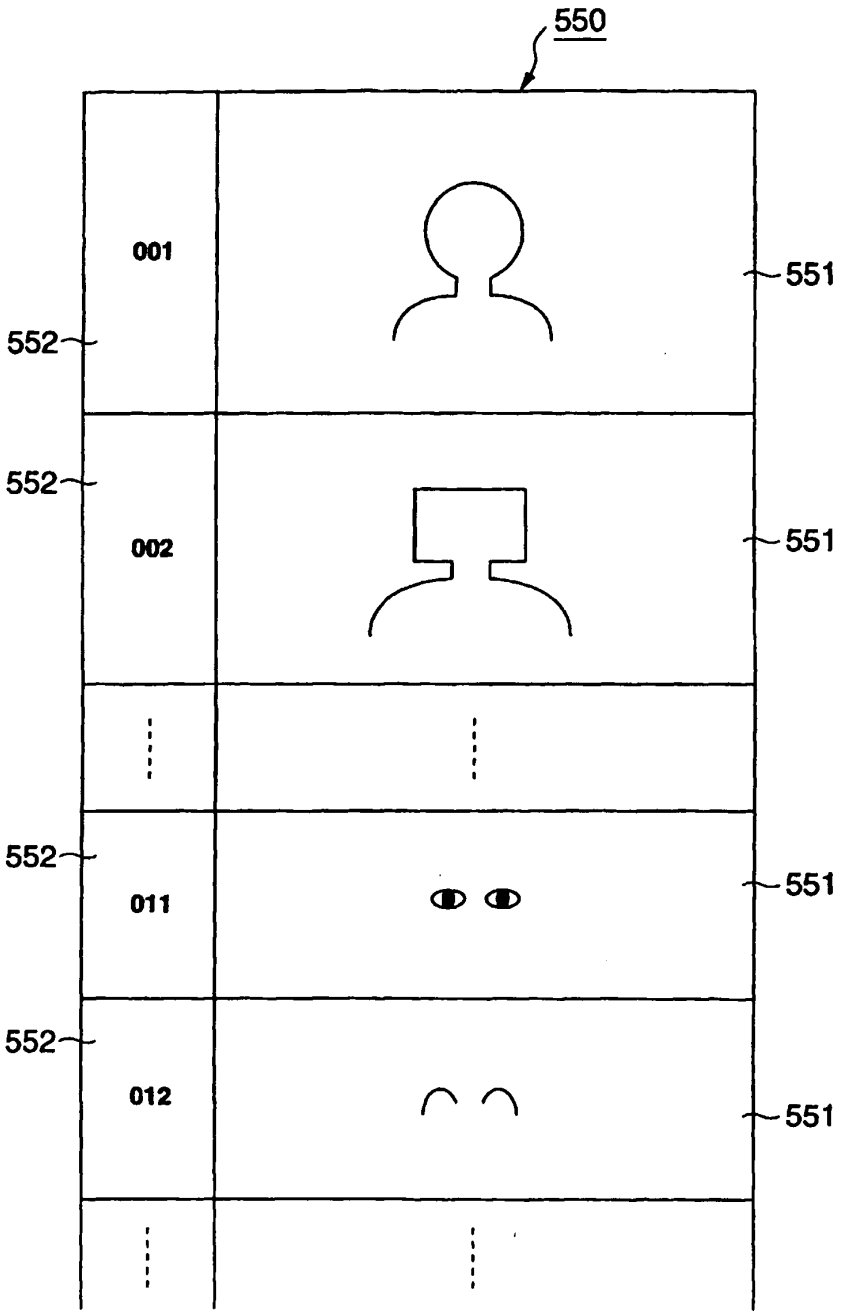


FIG.14

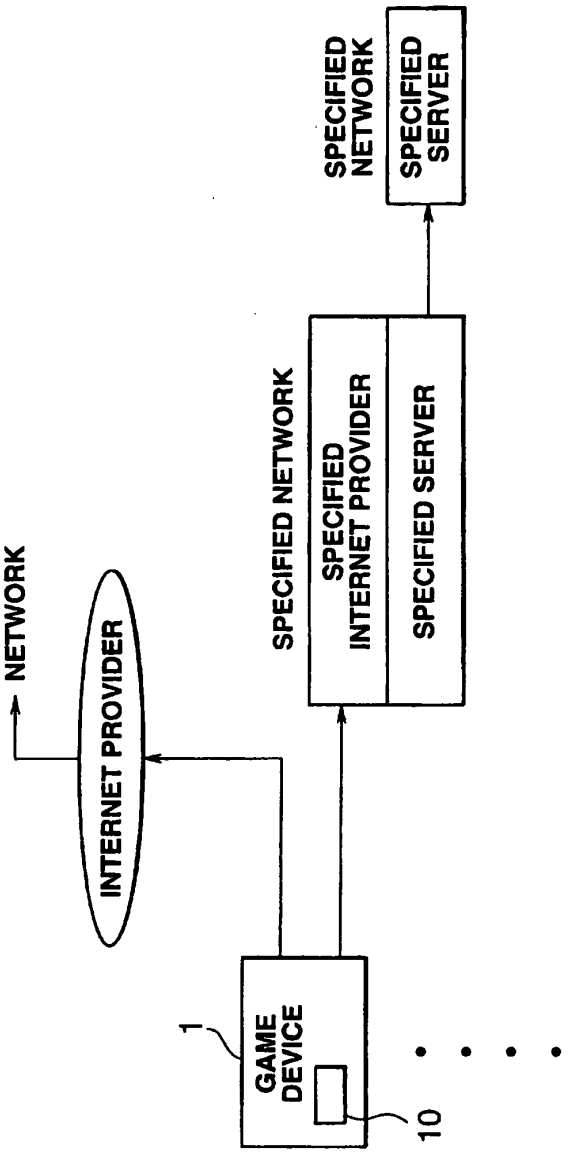


FIG.15

No.	NUMBER OF MEETINGS	CARD COLOR : CL	CHARACTER MOTION: MO	CHARACTER BACKGROUND (P1) : BK	TITLE : SR	ONE'S OWN GENDER →OPPONENT'S GENDER	REMARKS
001	1 OR MORE	1st STAGE	BASIC STANDBY	22	FRIENDS	M/F → M/F	
002	2 OR MORE	2nd STAGE	BASIC STANDBY + GREETING	4	STRONG FRIENDSHIP	M → M	
003	2 OR MORE	2nd STAGE	BASIC STANDBY + GREETING	4	FRIENDSHIP	M → F, F → M	
004	2 OR MORE	2nd STAGE	BASIC STANDBY + GREETING	4	CLOSE FRIENDS	F → F	
005	4 OR MORE	3rd STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 4	3	BUDDIES	M → M	
006	4 OR MORE	3rd STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 4	3	AMICABLE RELATIONSHIP	M → F, F → M	
007	4 OR MORE	3rd STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 4	3	PRAISABLE FRIENDSHIP	F → F	
008	6 OR MORE	4th STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 3	2	INTENSE FRIENDSHIP	M → M	
009	6 OR MORE	4th STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 3	2	INTIMATE FRIENDSHIP	M → F, F → M	
010	6 OR MORE	4th STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 3	2	SECRETIVE RELATIONSHIP	F → F	
011	8 OR MORE	5th STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 2	10	MASCULINE FRIENDSHIP	M → M	
012	8 OR MORE	5th STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 2	10	GOOD RELATIONSHIP (+HEART MARK)	M → F, F → M	
013	8 OR MORE	5th STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 2	10	BEAUTIFUL FRIENDSHIP	F → F	
014	10 OR MORE	6th STAGE	BASIC STANDBY + EXPRESSION OF HAPPINESS 1	1	BEST FRIENDS	M/F → M/F	

FIG.16

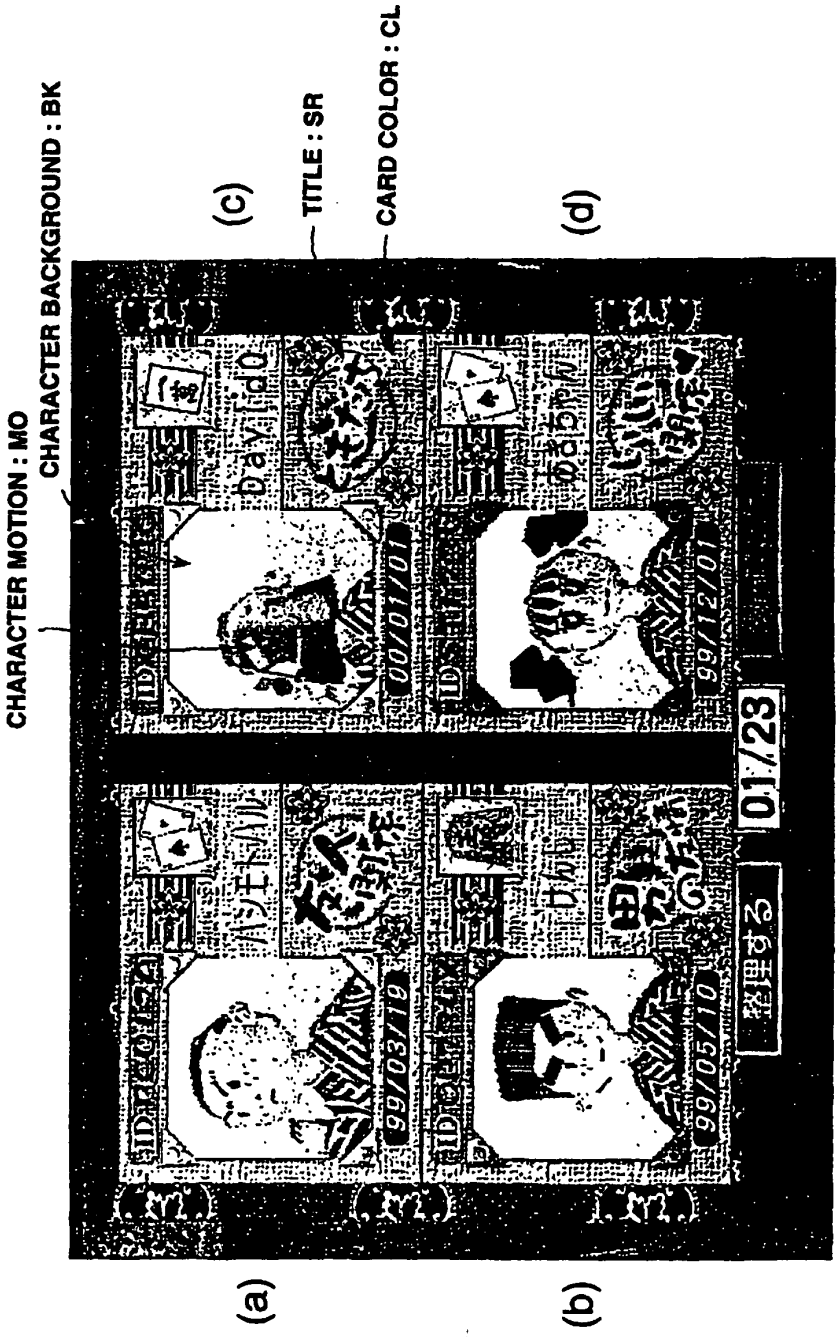


FIG.17

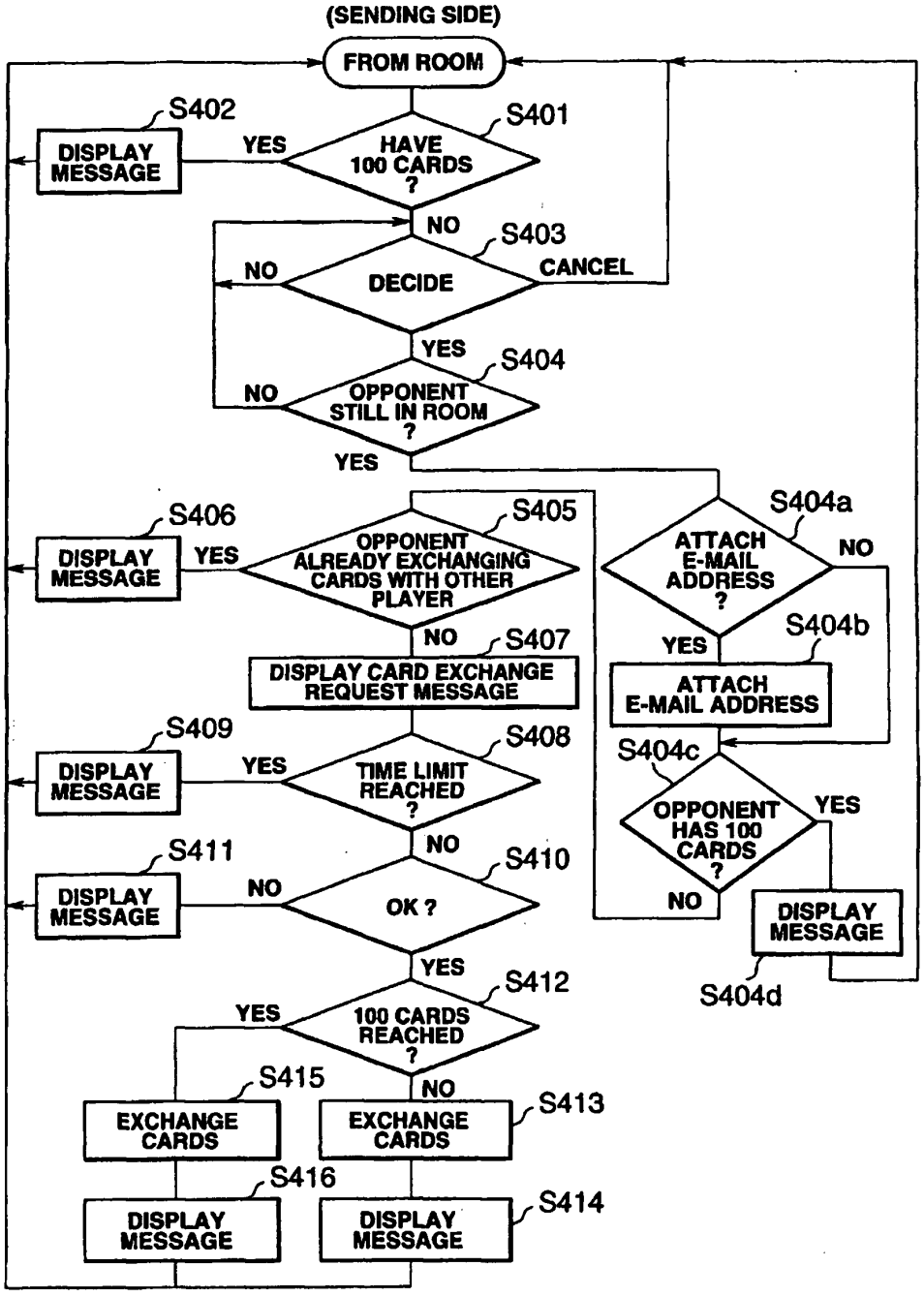


FIG.18

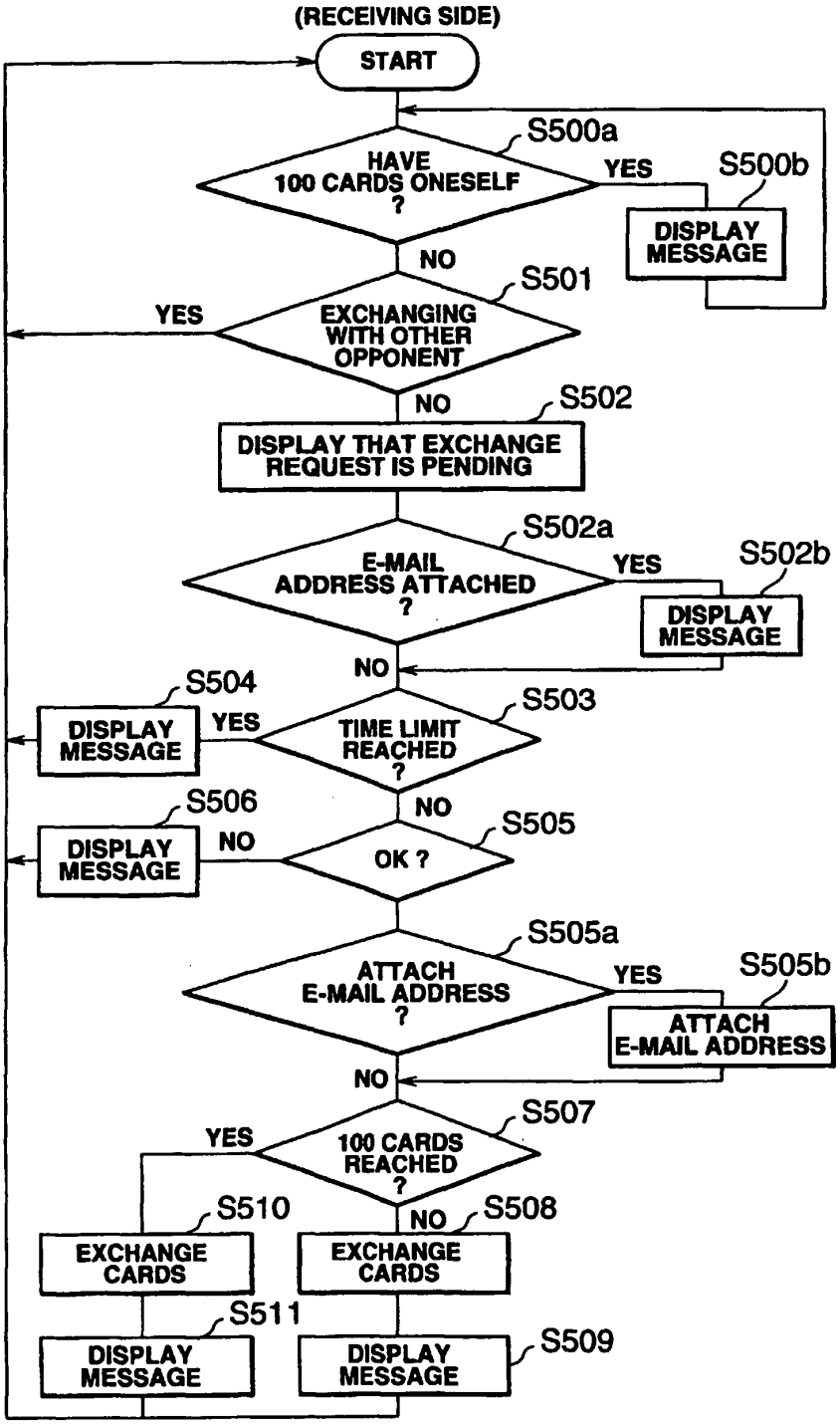


FIG.19

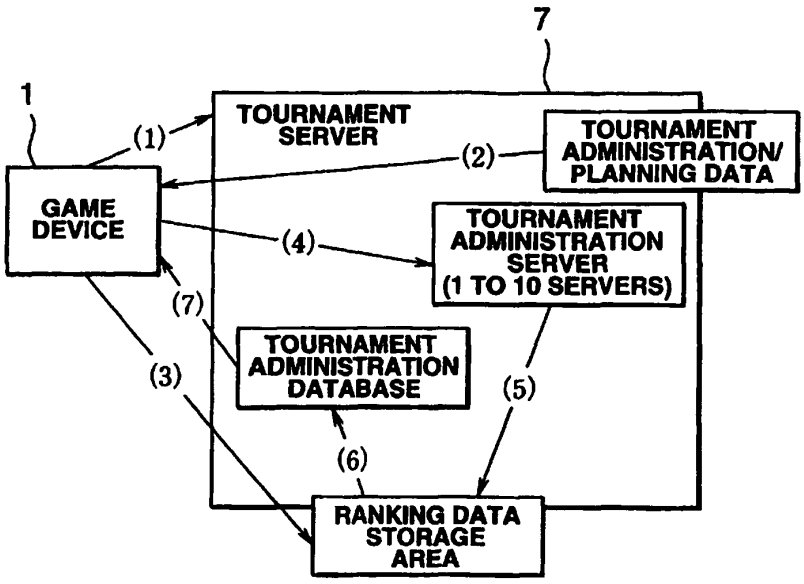


FIG.20

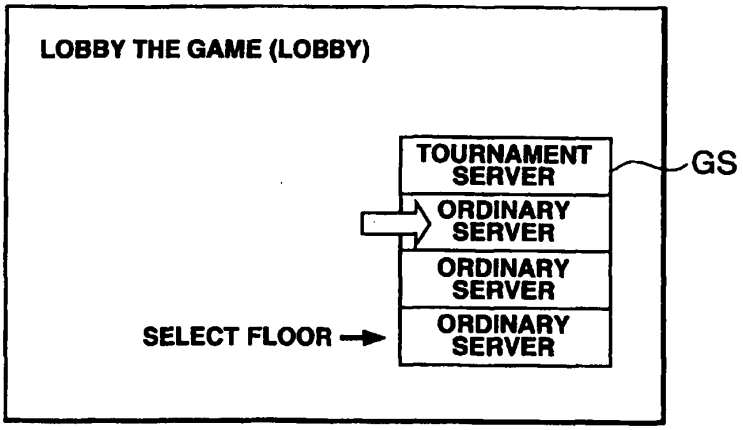


FIG.21

① PLAYER'S NAME DATA
② PLAYER'S FACE DATA
③ PLAYER'S HOT SPRING MEMBERSHIP NUMBER
④ TOTALS OF TOURNAMENT PLAY DATA
⑤ NUMBER OF TOURNAMENT MATCHES
⑥ PLAYER'S IP ADDRESS
⑦ PLAYER'S PERSONAL ID
⑧ BAD ACTS INFORMATION

FIG.22

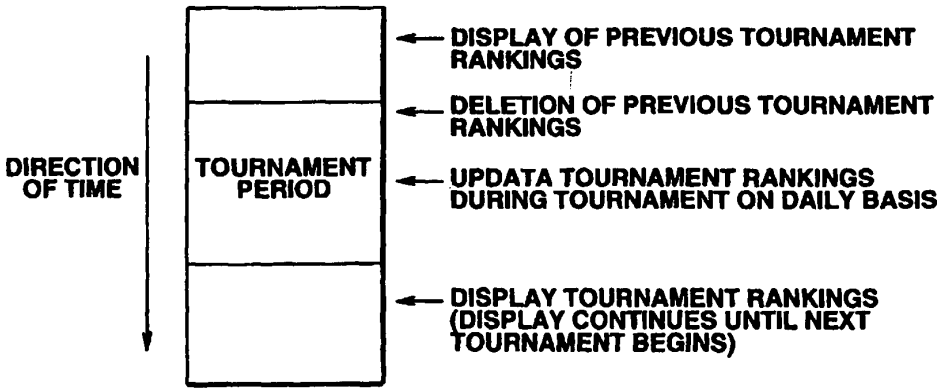


FIG.23

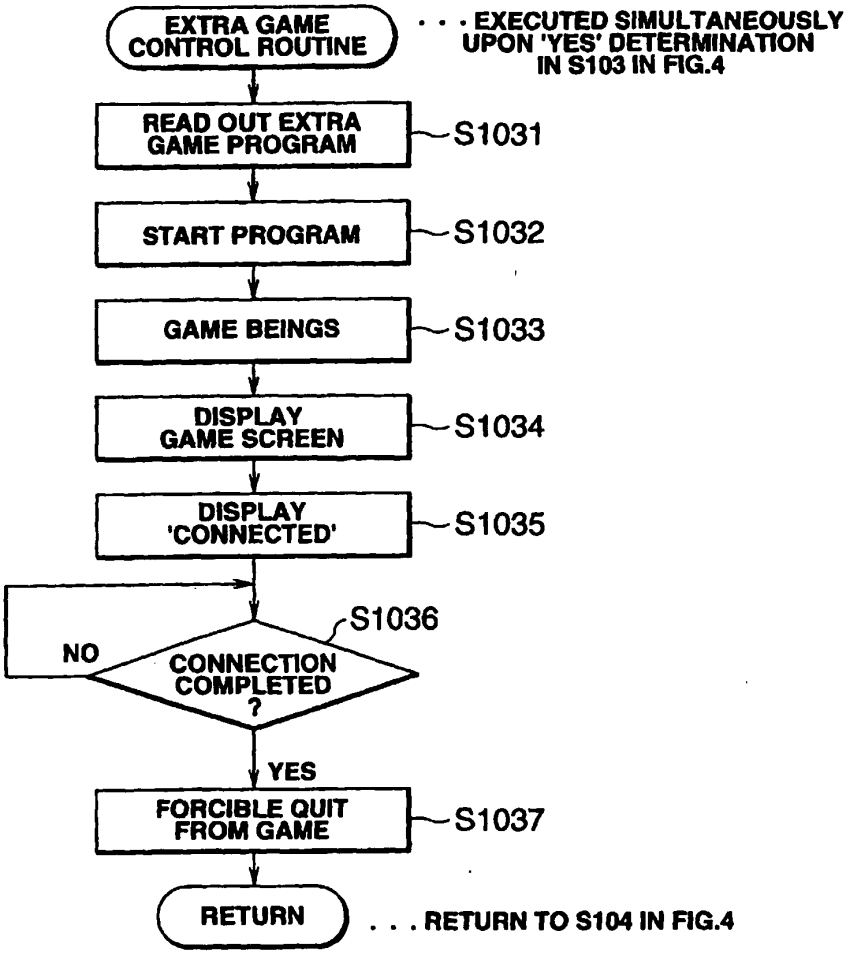


FIG.24

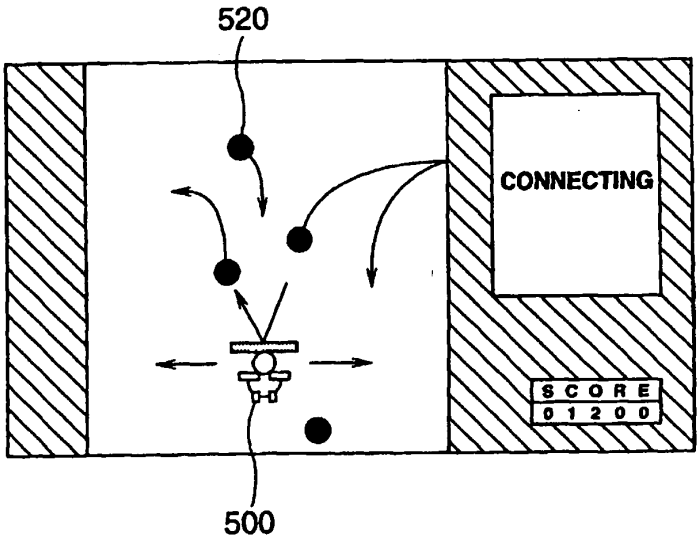


FIG.25

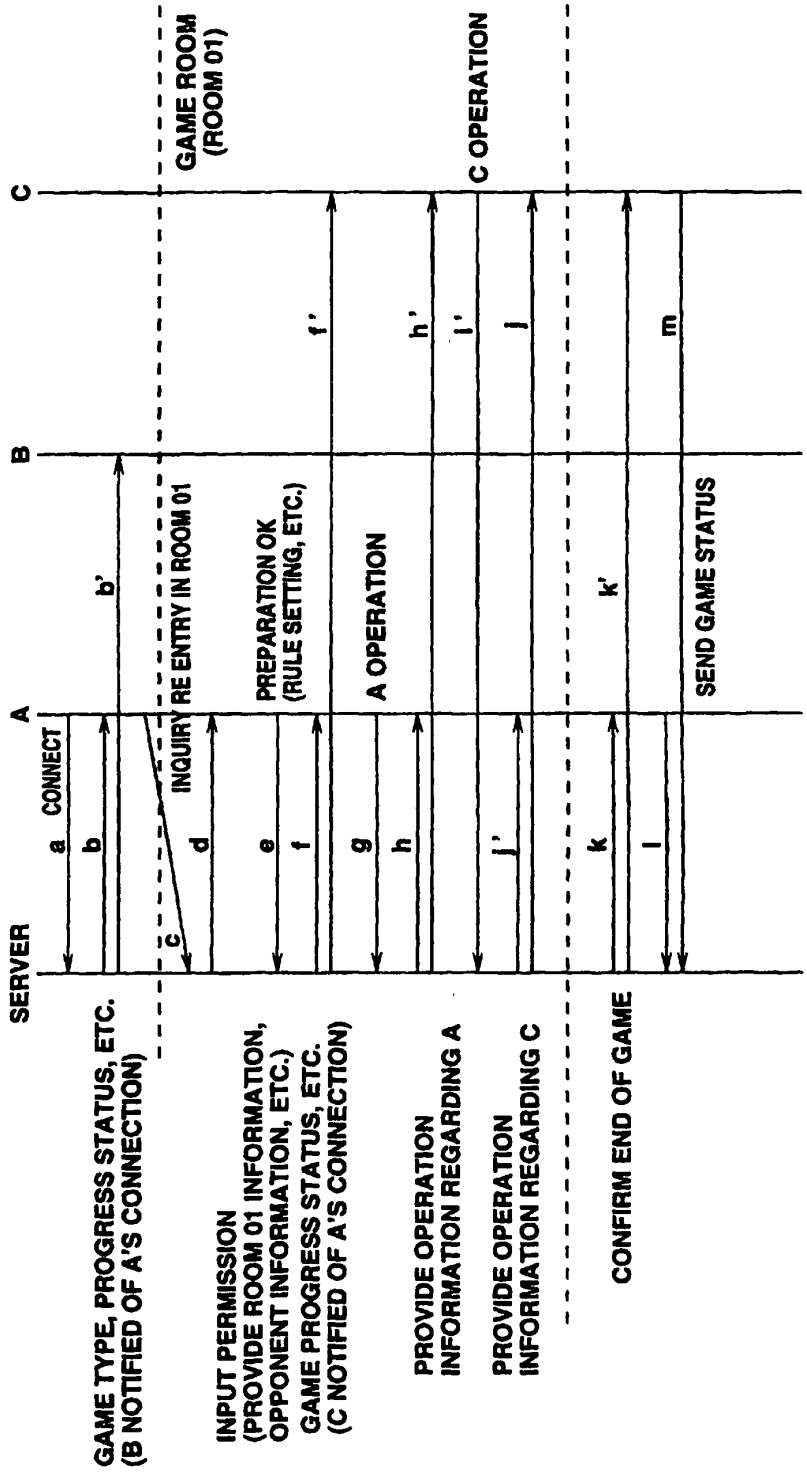


FIG.26

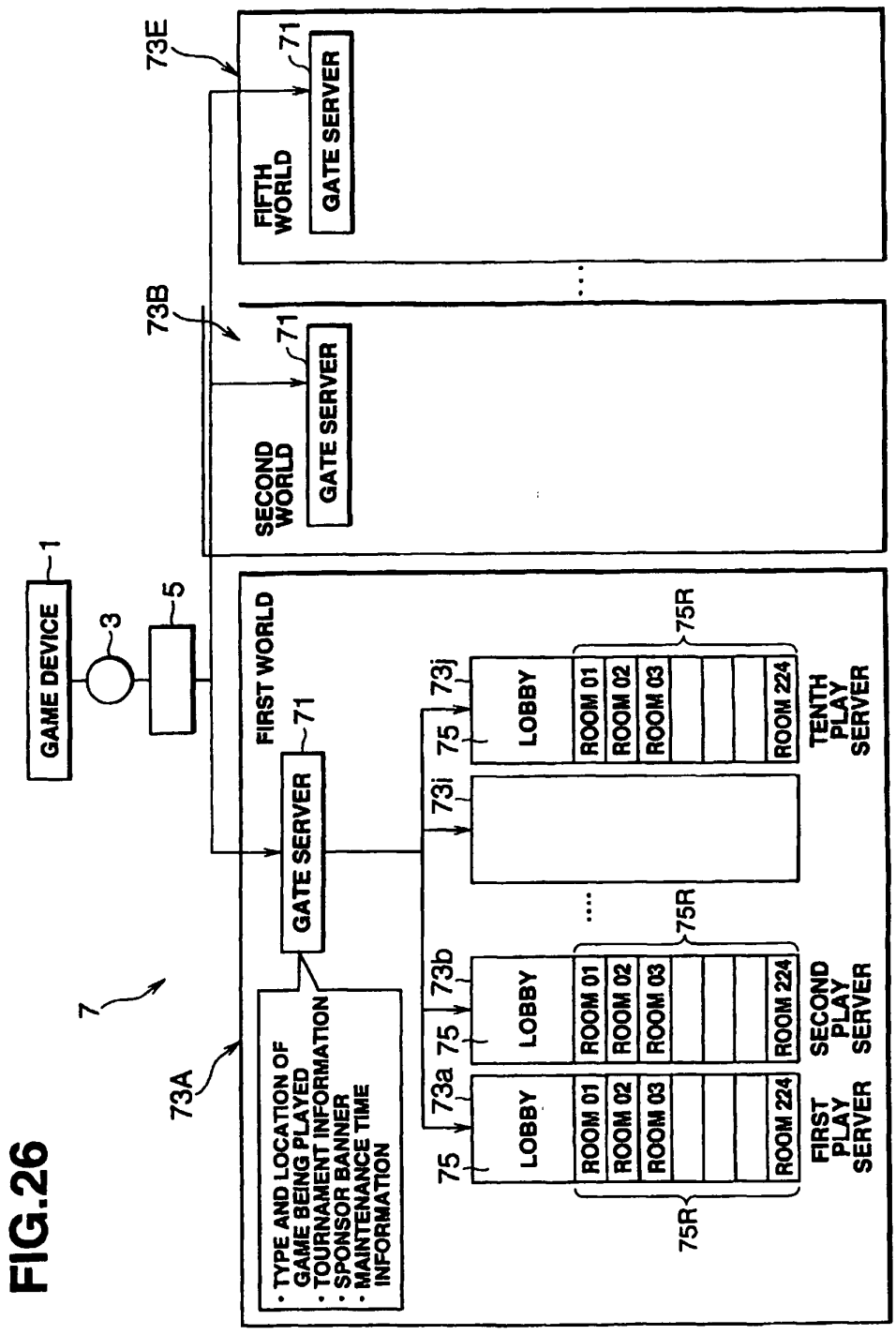


FIG.27

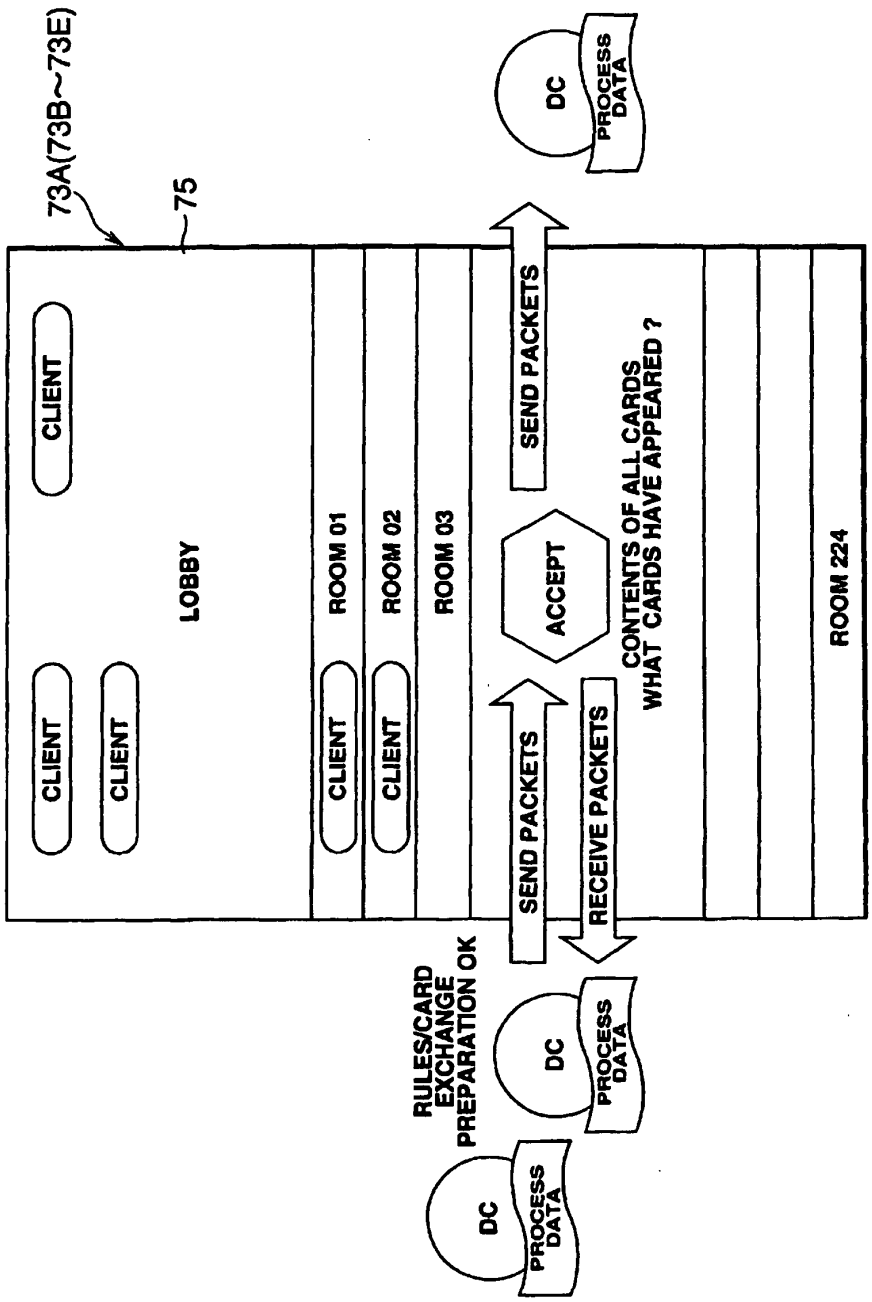


FIG.28

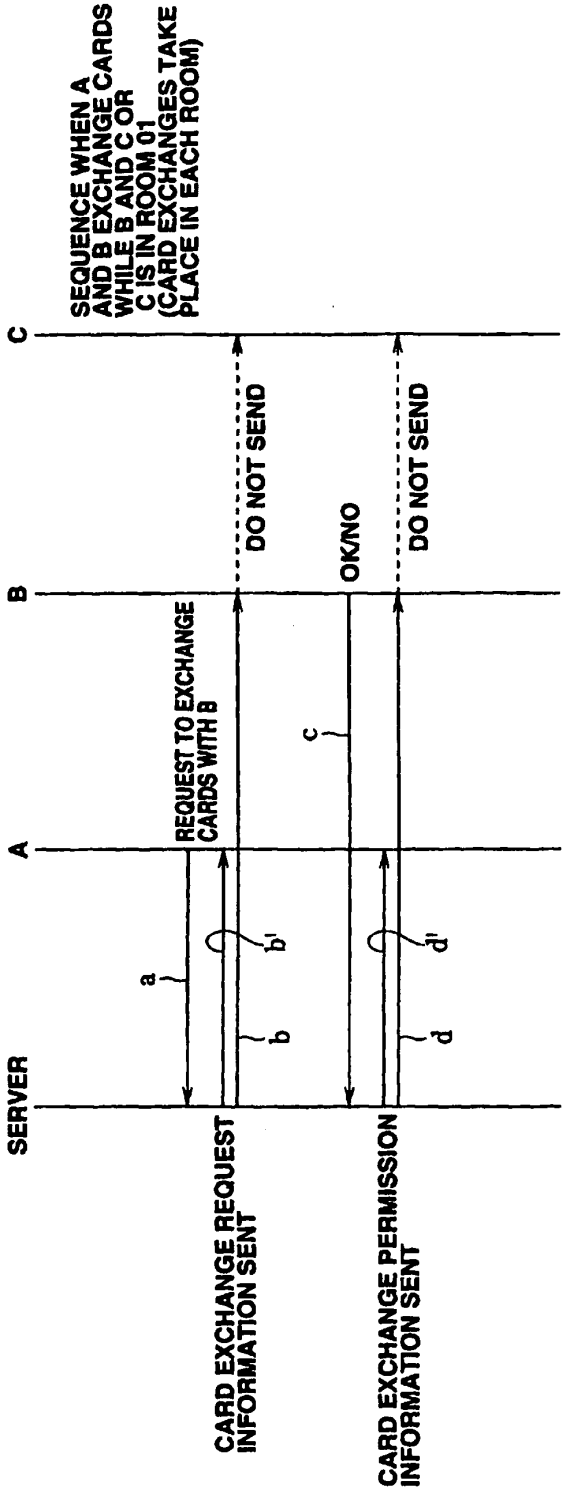


FIG.29

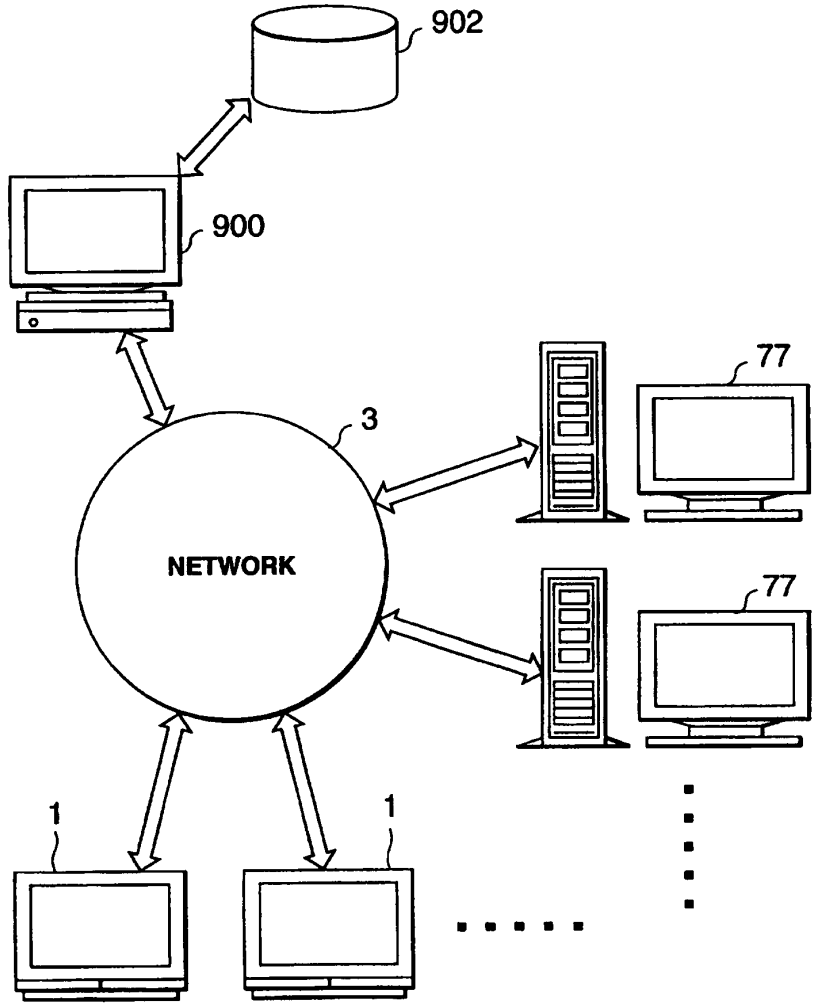
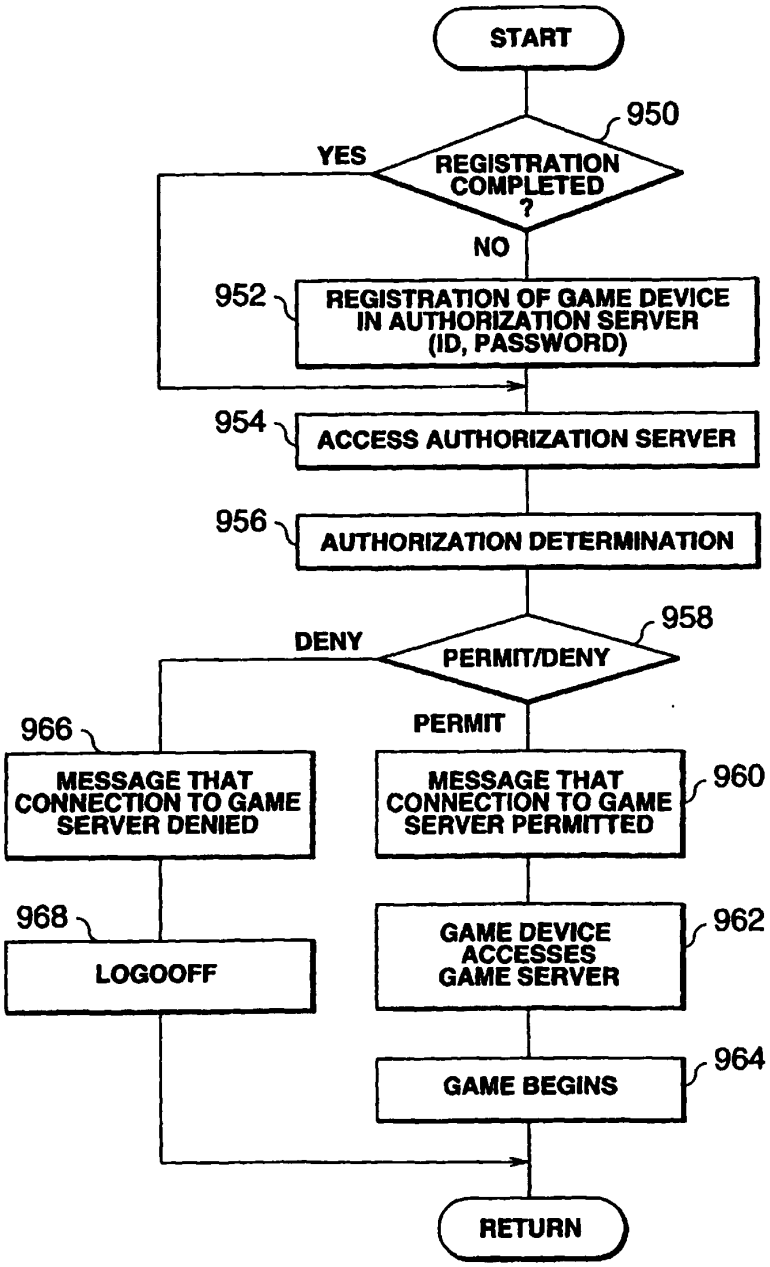


FIG.30



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP00/00483

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[7] A63F13/12, G06F15/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl[7] A63F13/00-13/12, G06F15/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2000
Kokai Jitsuyo Shinan Koho 1971-2000 Jitsuyo Shinan Toroku Koho 1996-2000

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	JP, 10-295939, A (Nippon Denki Ido Tsushin K.K.), 10 November, 1998 (10.11.98),	
X	Full text; Figs. 1 to 6	1-3, 8, 26
A	Full text; Figs. 1 to 6 (Family: none)	4-5
	DOS/V magazine, Vol.6, No.10, (Japan), Sofuto Banku K.K., (15.05.97)	
X	Pages 182-183	6, 7, 10, 26
Y	Pages 182-183	9-11, 13, 14, 17
A	Pages 182-183	12
	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No.10598/1987 (Laid-open No.118668/1988) (Hiroshi Ishibashi), 01 August, 1988 (01.08.88),	
Y	Full text; Fig. 1	9-11, 13, 14, 17, 26
A	Full text; Fig. 1	15-16

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 April, 2000 (25.04.00)	16 May, 2000 (16.05.00)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP00/00483

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 8-129535, A (Casio Computer Co, Ltd.), 21 May, 1996 (21.05.96), Full text; Figs. 1 to 10 (Family: none)	13, 17, 26
Y	JP, 8-47582, A (Casio Computer Co, Ltd.), 20 February, 1996 (20.02.96), Full text; Figs. 1 to 15 & EP, 686944, A2 & US, 5601487, A1	13, 17, 26
Y	JP, 8-98956, A (Sharp Corporation), 16 April, 1996 (16.04.96), Full text; Figs. 1 to 14 (Family: none)	13, 17, 26
A	JP, 5-274267, A (NEC Corporation), 22 October, 1993 (22.10.93), Full text; Figs. 1 to 9 (Family: none)	4-5, 18-19
A	JP, 57-172440, A (Hitachi, Ltd.), 23 October, 1982 (23.10.82), Full text; Figs. 1 to 3 (Family: none)	4-5, 18-19
Y	JP, 8-155145, A (Namco Ltd.), 18 June, 1998 (18.06.98), Full text; Figs. 1 to 9 (Family: none) & US, 5718632, A1	20-24, 26
Y	JP, 1-250228, A (Sony Corporation), 05 October, 1989 (05.10.89), Full text; Figs. 1 to 6 (Family: none)	20-24, 26

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP00/00483

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 25
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1 to 5, 18 to 19, 25 to 26 relate to connection limitations.
Claims 6 to 7, 9 to 17 relate to personal information exchange.
Claim 8 relates to a connection mode between terminal devices and a server machine.
Claims 20 to 24 relate to a game program execution made in parallel with processing for connection with a server.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest
☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (1)) (July 1992)

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(11) EP 1 177 822 A1

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(30) Priority: **01.08.2000 JP 2000233670**

(71) Applicant: **Konami Computer Entertainment Osaka, Inc.**
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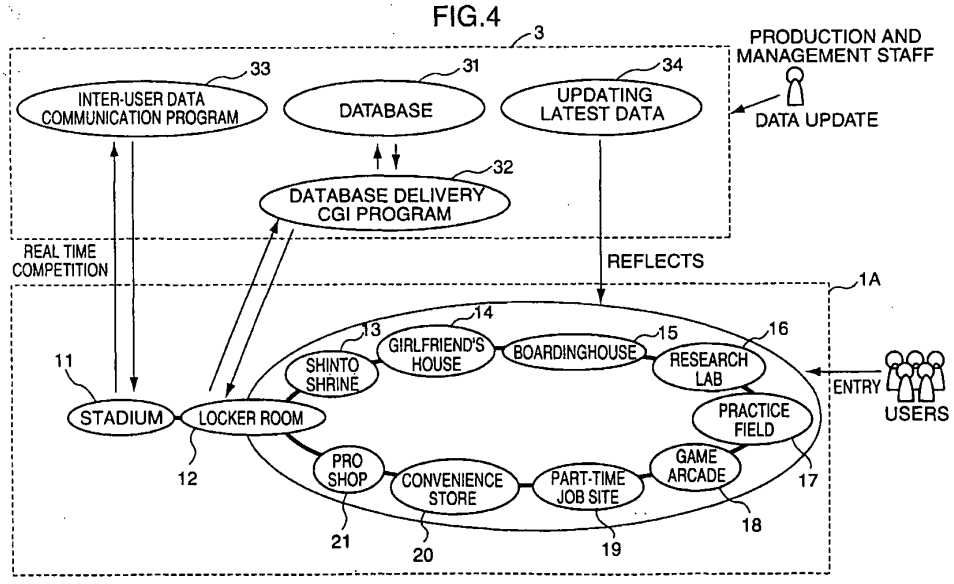
(54) Game procedure method, game system, and server

(57) Using terminal apparatuses 1A to 1E connected to a server 3 by a network 2, original characters are trained by the game players executing a character training game, and data relating to those original characters are stored in a database 31 in the server 3. When two or more game players directly contest the same game in real time via the network 2, data relating to the original characters of the game players stored in the database 31 are downloaded to the terminal apparatuses 1A to 1E and used as character data.

FIG.4



EP 1 177 822 A1

Printed by Jouve, 75001 PARIS (FR)

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] This invention relates to a game procedure control method and game system wherewith direct game competition is possible between a plurality of game players using a plurality of terminal apparatuses connected to a server via a network.

2. Description of the Related Art

[0002] With a game like a baseball game, for example, where an opponent is competed with, it is possible to conduct direct competition by a plurality of game players, connecting a plurality of controllers to a single game apparatus. Also, game players in remote locations are competing directly with each other, respectively, in baseball games and the like using terminal apparatuses such as personal computers connected via a network.

[0003] In a baseball game that has been provided for some time by the applicant, however, a player character training mode is included wherewith original characters selected discretionally by a game player can be conditioned by training and made to participate in the game as professional baseball players.

[0004] With direct competition in a conventional game through a network, however, nothing further is accomplished than taking the direct competition of a game played by connecting a plurality of controllers to a single game apparatus such as is commonly played in homes and extending it to competition between game players at remote locations via a network. The game software is merely loaded into the game apparatuses or terminal apparatuses possessed by the game players, and nothing more is done than to have only the operation signals input by the game players transmitted and received via the network.

[0005] Data relating to the original character trained by each game player, or to teams made up of such original characters, are stored only in the game apparatuses or terminal apparatuses of those particular game players. It has not been possible to have original characters compete against each other, or teams made up of original characters compete against each other, via a network.

SUMMARY OF THE INVENTION

[0006] An object of the present invention, which was devised in order to resolve the problems with the conventional examples noted above, is to provide a game procedure control method and game system wherewith it is possible to effect direct competition between original characters or between teams made up of such original characters, in a stadium on a server connected through a network, which original characters have been trained by the game players by the execution of a player character training mode in the game apparatuses possessed by them.

[0007] The game procedure control method according to an aspect of the present invention is a game procedure control method wherewith at least two game players can engage in competition, using at least two terminal apparatuses connected to a server through a network, and comprises the steps of: storing data relating to an original character trained independently by each game player in a prescribed memory area in the server; reading out the data relating to the original character of each game player stored in the memory area as character data to be used when a game program is executed; transmitting control data input by each game player for causing his or her own original character to move on the monitor screen of each terminal apparatus to the terminal apparatus of a game player that is a competing opponent via the server; and causing the original character of the opponent to move, in correspondence with the control data, on the monitor screen of the terminal apparatus, using the control data transmitted back from the server.

[0008] According to this composition, it becomes possible to cause original characters trained by game players to compete directly against each other via a network.

[0009] The game system according to another aspect of the present invention comprises: a server wherein are stored data relating to original characters trained independently by game players, being character data used for a game program wherewith competition is possible between at least two game players; and a plurality of terminal apparatuses, each of which is capable of being connected to the server through a network, comprises a control unit manipulated by the game player, and is capable both of storing data relating to the original character in the server and of reading out data relating to the original character when the game program is executed.

[0010] According to this composition, two or more game players who do not know each other can directly compete in a game via a network. It is also possible to hold tournaments participated in by many game players.

[0011] The server according to still another aspect of the present invention is one wherein: access is possible from terminal apparatuses operated by game players through a network; and data relating to original characters trained independently by the game players, which are character data to be used for a game program wherewith competition is possible between at least two game players, are stored.

[0012] According to this composition, it becomes possible for game players to access the server from a terminal apparatus of a different type from their own personal computer or game apparatus, and engage in direct game competition.

[0013] These and other objects, features and advantages of the present invention will become more appar-

ent upon a reading of the following detailed description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

Fig. 1 is a diagram showing how, in one embodiment of the present invention, a plurality of game player terminal apparatuses is connected to a server through a network;
Fig. 2 is a block diagram representing the configuration of a terminal apparatus in the embodiment noted above;
Fig. 3 is a block diagram representing the configuration of a server in the embodiment noted above;
Fig. 4 is a diagram representing a virtual world when executing a baseball game in a server and one terminal apparatus connected to the server through a network, in the embodiment noted above;
Fig. 5 is a diagram representing a password input screen displayed on the screen of a monitor apparatus, in the embodiment noted above;
Fig. 6 is a diagram representing a boardinghouses screen for Pawapuro-kun displayed on the screen of a monitor apparatus, in the embodiment noted above;
Fig. 7 is a diagram representing a locker room screen displayed on the screen of a monitor apparatus, in the embodiment noted above;
Fig. 8 represents a screen displayed on the screen of a monitor apparatus when playing the baseball game, in the embodiment noted above;
Fig. 9 is a diagram representing the main flow of the baseball game in the embodiment noted above;
Fig. 10 is a diagram representing the continuation of the main flow diagrammed in Fig. 9;
Fig. 11 is a diagram representing one example of a subroutine in step #21 in the main flow noted above;
Fig. 12 is a diagram representing the continuation of the subroutine diagrammed in Fig. 11;
Fig. 13 is a diagram representing another example of a subroutine in step #21 in the main flow noted above;
Fig. 14 is a diagram representing the continuation of the subroutine diagrammed in Fig. 13.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0015] A baseball game is described as one embodiment of the present invention. Fig. 1 diagrams how multiple game player terminal apparatuses 1A to 1E are connected to a server 3 through a network 2. Fig. 2 is a block diagram representing a specific configuration for the terminal apparatuses 1A to 1 E which are personal computers or the like. Fig. 3 is a block diagram representing a specific configuration for the server 3.

[0016] As diagrammed in Fig. 2, each of the terminal apparatuses 1A to 1E comprises a master control unit 100 configured of a CPU or the like, a game program memory unit 101 wherein a game program is stored, configured of a recording medium such as a CD-ROM or dedicated ROM cassette or the like and a reader apparatus (not shown), etc., a control input device 102 configured of a dedicated controller or keyboard or the like, a monitor apparatus 103, such as a CRT or LCD or the like, a temporary memory unit 104 configured of a hard disk or RAM or the like, for temporary storing various kinds of data during a game, and a communication unit 105, configured of a modem or the like, for communicating via the network 2 with the server 3 or with any of the other terminal apparatuses 1A to 1E.

[0017] The server 3, on the other hand, as diagrammed in Fig. 3, comprises a master control unit 300, configured of a CPU or the like, for effecting the master control of the server 3, a game program memory unit 301, configured of an EEPROM, hard disk, or other non-volatile writable memory, for storing a game program or the like, a latest data entry unit 302, configured of a keyboard or the like, for updating the program or data stored in the game program memory unit 301 or the like to the latest program or data, a virtual time timer 303 for arithmetically calculating the virtual time in the game that elapses faster than real time, a communication unit 304, configured of a modem or the like, for communicating with the terminal apparatuses 1A to 1 E via the network 2, a message board unit 305, capable of being accessed at will by the game players, for writing any desired messages into or requesting a game competition, etc., a character data memory unit 306, configured of a hard disk unit or the like, for storing data relating to original characters trained independently by game players, a character data modification unit 307 for ranking the original characters according to the capabilities of the original characters trained independently by the game players, or causing the original characters to age according to the passage of virtual time, or the like, and a search unit 308 for searching the message board unit 305 or the character data memory unit 306, etc., when the server 3 has been accessed from the terminal apparatuses 1A to 1 E, and reading out data relating to the original characters of the game players, etc.

[0018] Fig. 4 represents a virtual world realized when the baseball game is implemented in the server 3 and in one terminal apparatus (1A, for example) connected to the server 3 via the network 2.

[0019] The server 3 stores a database 31 for storing data relating to the original characters trained independently by the game players that control the terminal apparatuses 1A to 1 E connected via the network 2, a database delivery CGI program 32 for performing deliveries of data between the terminal apparatuses 1A to 1 E, an inter-user data communication program 33 for conducting data communication between the terminal apparatuses 1A to 1 E of two or more game players directly

competing in a game via the network, and updating latest data 34 for providing the latest data to the game program being executed by the terminal apparatuses 1A to 1 E.

[0020] The terminal apparatuses 1A to 1E are dedicated game apparatuses or personal computers or the like, for example, which execute a game program by installing a game program stored in a memory medium 110 such as a CD-ROM or ROM cassette or the like into an internal hard disk or RAM or the like therein. The game players, using the control input devices 102 connected to the terminal apparatuses 1A to 1 E, select menu items displayed on the screen of the monitor apparatus 103, and input movements for the game characters displayed on the screen, etc. The configuration may also be made so that the game program is stored at the server 3 side, and downloaded to the terminal apparatuses 1A to 1 E via the network 2.

[0021] By executing the game program, a virtual world is configured in the terminal apparatuses 1A to 1 E that includes a stadium 11 for playing the baseball game with another game player, a locker room 12 that is a place where agreements are made to play a game or information is exchanged with another game player, a Shinto shrine 13 that is a place where the game players train original characters, a girlfriend's house 14, boardinghouses 15, research lab 16, practice field 17, game arcade 18, part-time job site 19, convenience store 20, and pro shop 21, etc. In the description which follows, "Pawapuro-kun" is a name given to an original character trained independently by some game player.

[0022] First, when the game program is started up in the terminal apparatus of the game player, a password input screen such as that diagrammed in Fig. 5 is displayed on the screen of the monitor apparatus 103. In this screen, the name and password of the game player are entered, and, when the "Enter" button is clicked on, this terminal apparatus (1A, for example) and the server 3 are connected via the network 2.

[0023] When this terminal apparatus 1A and the server 3 are connected, the boardinghouses screen for Pawapuro-kun, such as diagrammed in Fig. 6, is displayed. In this boardinghouses screen, various menu items such as "to map," "initial settings," "my data," "Help," "End," and "question mail" can be selected. In Fig. 6, however, a condition wherein the map screen has been selected is diagrammed. On the map screen are indicated the pro shop, research lab, part-time job site, convenience store, Shinto shrine, practice field, stadium, and girlfriend's house, centered on the boardinghouses of Pawapuro-kun. When, on this screen, the pointer is moved over any desired position and clicked on that location, a subroutine program corresponding to the clicked location is executed. Status data including the current abilities of Pawapuro-kun stored in the database in the server 3 are displayed at the lower right of the screen. The status data displayed here may be modified at any time to reflect the amount of training done by Pawapuro-kun, his fatigue level, and his age, etc.

[0024] Next, when the stadium is clicked on, for example, a locker room screen like that diagrammed in Fig. 7 is displayed. In the locker room screen are listed the names of game players who wish to engage in competition and messages from other game players, etc. Here, if one of the game player's names is clicked on and selected, and the "compete" button at the right of that name is clicked on, the baseball game can be played with that selected game player. Fig. 8 represents a screen produced when the baseball game is being played against the selected game player. In this case, Pawapuro-kun is standing in the batter's box, wherefore a screen is displayed that represents the viewpoint of the catcher or plate umpire.

[0025] Next, the baseball game in this embodiment is described with reference to the flowcharts given in Fig. 9 and 10. It is assumed that this game player (user) has already registered as a user with the server 3 and acquired a user ID.

[0026] First, the memory medium 110 is loaded into the terminal apparatus 1A, and the game program stored in the memory medium 110 is installed in the terminal apparatus 1A (step #1). When installation of the game program is complete, the terminal apparatus 1A begins executing the game program, and the password input screen diagrammed in Fig. 5 is displayed at the top of the screen on the monitor apparatus 103 (step #3). The terminal apparatus 1A waits for the user ID and password to be entered (step #5), and then transmits the entered user ID and password over the network 2 to the server 3 (step #7).

[0027] The server 3 compares the received user ID and password against previously registered user ID and password (step #9). If either the user ID or the password is wrong (NO in step #9), an error message is displayed at the top of the screen on the monitor apparatus 103 of the terminal apparatus 1A (step #11), and the password input screen display is returned to (step #3). If the transmitted user ID and password are correct (YES in step #9), on the other hand, the server 3 reads out data relating to Pawapuro-kun stored in the database 31 (step #13) and transmits those data to the terminal apparatus 1A (step #15).

[0028] Upon receipt of the Pawapuro-kun's data, the terminal apparatus 1A switches the screen of the monitor apparatus 103 to the boardinghouses screen indicated in Fig. 6 (step #17). A decision is also made as to whether or not Pawapuro-kun has any physical strength left (step #19), and when no such physical strength is left, step #17 is returned to and the terminal apparatus 1A waits until Pawapuro-kun's strength is restored. When Pawapuro-kun does have strength left (YES in step #19), on the other hand, one of the following subroutines is selected and executed, that is, (1) go over to the girlfriend's house for a visit, (2) pay a visit to worship at the Shinto shrine, (3) go shopping at the pro shop, (4) go shopping at the convenience store, (5) go make

some money at the part-time job site, (6) go play at the game arcade, (7) go practice at the practice field, (8) go rebuild one's strength at the research lab, or (9) go to the stadium and play a game against another game player (step #21).

[0029] When the selected subroutine is finished, the terminal apparatus 1A again judges whether or not Pawapuro-kun has any physical strength left (step #23) and, when he does have physical strength left, step #21 is returned to and another subroutine is selected. If he has no strength left (NO in step #23), on the other hand, the terminal apparatus 1A switches the screen on the monitor apparatus 103 to the boardinghouses screen (step #25), and waits until either Pawapuro-kun's physical strength is restored or the game player selects game termination (step #27).

[0030] When the game player selects game termination (YES in step #27), the terminal apparatus 1A terminates the game program (step #29) and transmits the current data for Pawapuro-kun to the server 3 via the network 2 (step #31). The server 3 performs ranking on the Pawapuro-kun's data transmitted from the terminal apparatus 1A (step #33), stores the Pawapuro-kun's data in the database 31 (step #35), and terminates that baseball game.

[0031] Next, as an example of a subroutine in step #21, the flow ensuing when (7) "go practice at the practice field" has been selected is described with reference to Fig. 11 and 12.

[0032] First, when "go practice at the practice field" is selected, the terminal apparatus 1A switches the screen of the monitor apparatus 103 to the practice field screen (step #41). This is not shown particularly in the drawings, but the initial screen of the practice field screen is a practice menu selection screen, wherefrom it is possible to select, as examples, batting practice, pitching practice, fielding practice, running, and weight training (step #43). The terminal apparatus 1A decides, in order, whether batting practice has been selected (step #45), whether pitching practice has been selected (step #49), whether fielding practice has been selected (step #53), whether running has been selected (step #57), and whether weight training has been selected (#61). When batting practice, pitching practice, fielding practice, running, or weight training, respectively, has been selected, the terminal apparatus 1A reads out the game program corresponding to the selected menu item, and executes that game (steps #47, #51, #55, #59, and #63).

[0033] When a game is finished, instead of Pawapuro-kun's physical strength being expended, his abilities will either have improved or deteriorated depending on the results of the game of the menu item selected, wherefore the terminal apparatus 1A modifies the status (i.e. the status data displayed for Pawapuro-kun at the lower right of the screen diagrammed in Fig. 6) according to those categories (step #65). Then the terminal apparatus 1A determines whether the game player has selected "do another practice" or not (step #67) and, when "do another practice" has been selected, judges whether or not Pawapuro-kun has any physical strength left (step #69). If Pawapuro-kun does have physical strength left, step #43 is returned to and a practice menu is selected. If the game player has not selected "do another practice" (NO in step #67) and Pawapuro-kun has no strength left (NO in step #69), the terminal apparatus 1 A changes the screen on the monitor apparatus 103 to the boardinghouses screen (step #71) and terminates the practice field flow.

[0034] Next, the flow in the case of (9) "go to the stadium and play a game against another game player" in step #21, is described with reference to Fig. 13 and 14. Here, moreover, the game player mainly described is referred to as player A, and the other game player as player B.

[0035] First, when "go to the stadium and play a game against another game player" is selected, the terminal apparatus 1A checks the status of the connection to the server 3 over the network 2 (step #71), and judges whether or not on the message board page of the server 3 another game player is registered as wishing to directly compete in the baseball game (step #73). When another game player is so registered, the terminal apparatus 1A switches the screen on the monitor apparatus 103 to the locker room screen diagrammed in Fig. 7 (step #75) and a list of the game players who can compete is displayed. When, on this screen, the game player A selects any other game player B (step #77), the server 3 notifies that other game player B, via the network 2, that he or she has been selected (step #79). When that selected other game player B either agrees to compete or refuses to compete, a signal corresponding to that agreement or refusal, respectively, is transmitted to the server 3 via the network 2, wherefore either the server 3 or the terminal apparatus 1A can determine whether the selected game player B has consented to compete against game player A or not (step #81).

[0036] When the selected game player B has consented to compete (YES in step #81), decisions are made between the game player A and the selected game player B as to the method of competition, who will bat first, and the number of innings to play and so forth (step #83). As to the method of competition, a homerun derby game or strikeout competition game may be played, for example, with the original character "Pawapuro-kun A" trained independently by the game player A and the original character "Pawapuro-kun B" trained independently by the game player B alternating between pitching and batting. Alternatively, a baseball game may be played between a team called "Pawapurozu A" made up of nine or more original characters trained independently by game player A and a team called "Pawapurozu B" made up of nine or more original characters trained independently by game player B.

[0037] When the method of competition is decided, the terminal apparatus 1A of the game player A and the terminal apparatus (1 B, for example) of the game player

B execute a baseball game (including the homerun derby game and the strikeout competition game) stored in the memory medium 110 according to control signals from the server 3 (step #85). The data relating to the original characters trained independently by the game players A and B, respectively, will be stored in the database 31 of the server 3, wherefore those data are transmitted to the terminal apparatuses 1A and 1 B of the game players A and B prior to the commencement of the game and used as character data in the game program. Furthermore, control signals input when the game players A and B manipulate the control input devices 102 are transmitted via the network 2 to the server 3, where they are processed by the inter-user data communication program 33 of the server 3 and transmitted to the terminal apparatus 1B or 1A of the corresponding opponent.

[0038] When, for example, the game player A manipulates the control input device 102 connected to the terminal apparatus 1A and designates a pitch selection, course, and pitch start for Pawapuro-kun A (the pitcher) on the screen, those signals are sent to the terminal apparatus 1 B of the game player B via the network 2 and the server 3. At the terminal apparatus 1 B of the game player B, Pawapuro-kun A displayed on the screen of the monitor apparatus 103 of the terminal apparatus 1 B is made to perform the prescribed pitching action, using the received signals. Simultaneously, the terminal apparatus 1A of the game player A also causes the Pawapuro-kun A displayed on the screen of the monitor apparatus 103 of the terminal apparatus 1A to perform the prescribed pitching action.

[0039] The game player B, while watching the screen of the monitor apparatus 103, manipulates the control input device 102 connected to the terminal apparatus 1 B and causes Pawapuro-kun B to perform a swinging action. Signals relating to the timing, swing speed, and bat position in the swing action manipulated by the game player B are sent to the terminal apparatus 1A of the game player A via the network 2 and the server 3. The terminal apparatus 1A of the game player A, using those received signals, causes the Pawapuro-kun B displayed on the screen of the monitor apparatus 103 of the terminal apparatus 1A to perform the prescribed swing action. Simultaneously, the terminal apparatus 1 B of the game player B also causes the Pawapuro-kun B displayed on the screen of the monitor apparatus 103 of the terminal apparatus 1 B to perform the prescribed swing action.

[0040] The terminal apparatuses 1A and 1 B arithmetically compute the bat and ball impact conditions (including a swing and a miss) using signals relating to the pitching done by the game player A and the swinging done by the game player B, respectively, and displays the action of the ball based on those arithmetic computation results on the screens of the monitor apparatuses 103. Thus the game players A and B can directly compete in a baseball game using the same game program, via the network 2 and the server 3. Also, because signals are transmitted and received between the terminal apparatuses 1A and 1 B via the network 2 and the server 3, a slight time delay will occur from the moment that the game player A manipulates the control input device 102 until the Pawapuro-kun A begins the pitching action on the screen of the monitor apparatus 103 of the terminal apparatus 1B of the game player B, for example. Nevertheless, because a certain amount of time is required for a ball thrown by a pitcher to reach home plate, it is possible to prevent the game players A and B playing the game directly to sense any awkwardness by making the speed of signal transmission and reception faster than the speed wherewith the ball moves.

[0041] When the game competition ends in step #85, the server 3 preserves the results of that competition in the database 31 (step #87), and makes a query to both game player A and B as to whether or not they wish to compete again against the same opponent (step #89). If both game players agree (YES in step #89), step #83 is returned to and the method of competition is determined. If either game player A or B refuses to compete again (NO in step #89), on the other hand, either the server 3 or the terminal apparatuses 1A and 1 B ask whether or not the game players wish to leave the locker room and return to the boardinghouses screen (step #91). Should the game player A wish to compete against some game player other than the game player B (NO in step #91), the terminal apparatus 1A returns to step #75 and displays the initial screen for the locker room. When the game player A is not to compete against another game player (YES in step #91), on the other hand, the terminal apparatus 1A switches the screen of the monitor apparatus 103 to the boardinghouses screen (step #93) and terminates the stadium flow.

[0042] Brief descriptions are given next for the subroutines in step #21, namely (1) "go over to the girlfriend's house for a visit," (2) "pay a visit to worship at the Shinto shrine," (3) "go shopping at the pro shop," (4) "go shopping at the convenience store, (5) "go make some money at the part-time job site," (6) "go play at the game arcade," and (8) "go rebuild one's strength at the research lab."

[0043] In this game system, furthermore, irrespective of whether or not a game player plays a game, virtual time elapses at a speed that is approximately ten times faster than that of actual time (1 year being 35 days), for example), and the transitions between day and night occur accordingly. Settings are also made so that Pawapuro-kun will age according to the passage of virtual time, so that Pawapuro-kun will automatically reach a certain age upon the passage of a certain time after the game player has started a game, and thereupon be forced to retire from active professional baseball play.

[0044] First, with (1) "go over to the girlfriend's house for a visit," Pawapuro-kun's enthusiasm and physical strength will change, either increasing or consuming depending on whether the girlfriend is in a good mood or

bad. By having the girlfriend cook for him, Pawapuro-kun can raise his own enthusiasm and physical strength. If he gives her a present to put her in a better mood, that means he has to spend money. And if he goes out on a date with her, he will expend both money and physical strength. By putting her in a better mood, the "romantic index" will rise, and, depending on the "romantic index," a mode leading to marriage and having children can be advanced to. Also, a child born to them can be raised as "Pawapuro-kun Junior" and grow up into a professional baseball player. Pawapuro-kun can acquire the girlfriend by getting to know her at his part-time job or through his activities as a professional baseball player, etc. This routine cannot be advanced to so long as Pawapuro-kun has no girlfriend. Furthermore, the "romantic index" will decline when he puts her in a bad mood, and if the romantic index becomes 0, she will break up with him.

[0045] With (2) "pay a visit to worship at the Shinto shrine," by praying to the gods at the shrine, Pawapuro-kun will be able to perform well in a game, or reduce the severity of an injury.

[0046] (3) With "go shopping at the pro shop," a top-secret item that is sold at the pro shop can be purchased with money earned by Pawapuro-kun at the part-time job described further below. Also, Pawapuro-kun can perform well in a game by using that top-secret item. By accessing the updating latest data 34 in the server 3, the top-secret item can be renewed. When it is night in the virtual time described earlier, the pro shop will sometimes be closed.

[0047] In (4) "go shopping at the convenience store," a drink that will restore Pawapuro-kun's physical strength is sold at the convenience store. By accessing the updating latest data 34 in the server 3, new products can be marketed or the prices of products can be changed (marking the prices up or down). The convenience store is open 24 hours a day in the virtual time.

[0048] With (5) "go make some money at the part-time job site," Pawapuro-kun can select any of a number of jobs, differing in type depending on whether daytime or nighttime jobs, such as a sushi bar, karaoke joint, or host club, etc., and can earn part-time money according to the results of the selected game. The degree to which Pawapuro-kun will expend his physical strength and earn part-time money will also depend on the type of job performed.

[0049] In (6) "go play at the game arcade," games are established that have nothing to do with baseball. By playing these games, Pawapuro-kun can both spend money and restore his enthusiasm.

[0050] In (8) "go rebuild one's strength at the research lab," a mysterious doctor performs a suspicious surgical operation to reconstruct Pawapuro-kun into a baseball cyborg, but the abilities of this cyborg will depend on the reconstruction fee charged. After submitting to this baseball cyborg reconstruction, moreover, Pawapuro-kun will age faster and the time he can play actively will be shortened.

[0051] In the embodiment described in the foregoing, furthermore, the configuration is made such that the game program is stored in a CD-ROM or other memory medium, and started up from the terminal apparatuses 1A to 1 E of the game players. That poses no limitation, however, and the configuration may be made such that the game program is downloaded from the server 3 over the network 2. In that case, the game players can enjoy the latest version of the game.

[0052] In the embodiment described in the foregoing, moreover, the configuration is made such that the passage of time is managed on the server, and so that the ages of the original characters increase even when the game players are not participating in the game. This need not be limited to age, however, and the configuration may be made so that there are changes in various data relating to the original characters, such as deterioration in eyesight or injuries healing, etc. Nor must this be limited to data relating to the original characters, but the configuration may be made so that all kinds of data relating to the game change, such as the baseball equipment deteriorating, plants growing, or food products losing their freshness, etc. The configuration may even be made so that the muscle tone of an original character declines when a game player does not access the server for a long time or does not use that original character.

[0053] Also, in the embodiment described in the foregoing, the description is for the example of a baseball game, but the present invention is not limited thereto or thereby, and can be applied to a soccer game or other games in general wherein two or more game players can play against each other.

[0054] In the embodiment described in the foregoing, furthermore, the description is given for the case where one game player trains original characters for one team, but one team may be made up of a plurality of original characters trained by a plurality of game players. The configuration might be, for example, one wherewith three or more game players can participate in one game, with the pitcher being Pawapuro-kun A trained by game player A, the catcher being Pawapuro-kun B trained by game player B, the first baseman being Pawapuro-kun C trained by game player C, and so on. The configuration may also be made so that the game players make trades between themselves with the original characters that they have trained.

[0055] In the embodiment described in the foregoing, moreover, the description is given for the case where the same images are displayed on the screens of the monitor apparatuses 103 of the terminal apparatuses 1A to 1 E of the game players, but that poses no limitation, and the configuration may be made so that different images are displayed on the screens of the monitor apparatuses 103 of the terminal apparatuses of the game players. The configuration may be made so that, for example, when the Pawapuro-kun A trained by game player A is the pitcher and the Pawapuro-kun B trained by

game player B is the batter, images are displayed on the screen of the monitor apparatus 103 of the terminal apparatus 1A as seen from the perspective of the pitcher or, alternatively, as seen from the back screen, and images are displayed on the monitor apparatus 103 of the terminal apparatus 1 B of the game player B as seen from the perspective of the batter or, alternatively, as seen from behind the back net. The configuration may also be made so that images are displayed on the monitor apparatus 103 of the terminal apparatus (1C, for example) of a game player C as seen from the perspective of the first baseman or, alternatively, as seen from the outfield.

[0056] Moreover, the present invention is also applicable the following modes.

[0057] The game procedure control method according to an aspect of the present invention is a game procedure control method wherewith at least two game players can engage in direct competition, using at least two terminal apparatuses connected to a server through a network, comprising the steps of: storing data relating to an original character trained independently by each game player in a prescribed memory area in the server; reading out the data relating to the original character of each game player stored in the memory area as character data to be used when a game program is executed; transmitting control data input by each game player for causing his or her own original character to move on the monitor screen of the terminal apparatus to the terminal apparatus of a game player that is a competing opponent via the server; and causing the original character of the opponent to move, in correspondence with the control data, on the monitor screen of each terminal apparatus, using the control data transmitted back from the server.

[0058] According to this composition, it becomes possible to cause original characters trained by game players to compete directly against each other via a network.

[0059] In the method described above, the game program may be stored in the server, and downloaded to the terminal apparatuses of the game players and executed.

[0060] Alternatively, the game program may be recorded in a memory medium, and installed in the terminal apparatuses of the game players and executed.

[0061] Moreover, ranking may be performed according to the levels of the original characters trained independently by the game players, and competition with another game player made possible only when a certain rank or above has been attained. In this case, competition between game players having extremely different abilities can be avoided.

[0062] Furthermore, competition may be made possible only with a game player having an original character ranked within a prescribed range, according to the ranks of the original characters trained independently by the game players. In this case, game players at roughly the same level can be made to compete with each other. It is also possible then to form leagues according to game player abilities.

[0063] Furthermore, each game player may train a plurality of original characters, and teams made up of these pluralities of original players may be caused to compete with each other. In this case, it becomes possible to conduct games requiring pluralities of game characters, as a baseball game, for example.

[0064] Alternatively, a team may be made up of pluralities of original characters trained by pluralities of game players, and teams made up in the same way caused to compete. In this case, it becomes possible to have three or more game players participate.

[0065] Furthermore, a message board page capable of being accessed at will by the game players may be provided in the server, so that game players are able to at least record, in the message board page, either their wish to compete in a game or consent to compete. In this case, it becomes possible to provide more opportunities to compete against other game players.

[0066] Furthermore, the same screen may be displayed on the monitor screens of the terminal apparatuses of the game players. In this case, it becomes possible to raise the arithmetic processing speed in cases of games involving comparatively few screen changes such as roll playing games where two game characters fight each other directly.

[0067] Alternatively, game images from a camera perspective established in correspondence with the original character of each game player may be displayed on the monitor screen of the terminal apparatus of each game player. In this case, in a baseball game or the like, for example, images seen from the perspective of the pitcher can be displayed on the monitor screen of the game player controlling the game character doing the pitching, and images seen from the perspective of the batter can be displayed on the monitor screen of the game player controlling the game character doing the batting, making it possible to experience greater game realism.

[0068] Furthermore, the passage of time on the server may be monitored, and the data relating to the ages of the original characters on the server may change irrespective of whether or not the game players participate in games. In this case, character control can be effected so that, for example, the physical strength and athletic abilities of an athlete character increase as his or her age increases when he or she is young, then peak at a certain age, and thereafter gradually decline, making it possible to experience greater game realism.

[0069] Furthermore, in the data on the server, data relating to the ages of the original characters may change.

[0070] The game system according to another aspect of the present invention comprises: a server wherein are stored data relating to original characters trained independently by game players, being character data used in order to execute a game program wherewith direct competition is possible between at least two game players; and a plurality of terminal apparatuses , each of

which is capable of being connected to the server through a network, comprises a control unit manipulated by the game player, and is capable both of storing data relating to the original character in the server and of reading out data relating to the original character when the game program is executed.

[0071] According to this composition, two or more game players who do not know each other can directly compete in a game via a network. It is also possible to hold tournaments participated in by many game players.

[0072] In the system described above, the game program may be stored in the server, and downloaded to the terminal apparatuses of the game players and executed.

[0073] Alternatively, the game program may be recorded in a memory medium, and installed in the terminal apparatuses of the game players and executed.

[0074] The server according to still another aspect of the present invention is one wherein: access is possible from terminal apparatuses operated by game players through a network; and data relating to original characters trained independently by the game players, which are character data to be used for executing a game program wherewith direct competition is possible between at least two game players, are stored.

[0075] According to this composition, it becomes possible for game players to access the server from a terminal apparatus of a different type from their own personal computer or game apparatus, and engage in direct game competition.

[0076] Moreover, the server may also store the game program that is downloaded and executed in the terminal apparatuses of the game players.

[0077] As this invention may be embodied in several forms without departing from the spirit of essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within metes and bounds of the claims, or equivalence of such metes and bounds are therefore intended to be embraced by the claims.

Claims

1. A game procedure control method which with at least two game players can engage in competition, using at least two terminal apparatuses connected to a server through a network, comprising the steps of:

   storing data relating to an original character trained independently by each game player in a prescribed memory area in said server;
   reading out said data relating to the original character of each game player stored in said memory area as character data to be used when a game program is executed;
   transmitting control data input by each game player for causing his or her own original character to move on monitor screen of each terminal apparatus, to terminal apparatus of a game player that is a competing opponent via said server; and
   causing the original character of said opponent to move, in correspondence with control data, on monitor screen of each terminal apparatus, using control data transmitted from said server.

2. The game procedure control method according to claim 1, wherein said game program is stored in said server, and downloaded to terminal apparatuses of said game players and executed.

3. The game procedure control method according to claim 1, wherein said game program is recorded in a memory medium, and installed in terminal apparatuses of said game players and executed.

4. The game procedure control method according to any one of claims 1 through 3, wherein said original characters trained independently by said game players are ranked according to levels thereof, and competition with another game player is made possible only when said original characters have attained a certain rank or above.

5. The game procedure control method according to claim 4, wherein competition is made possible only with a game player having an original character ranked within a prescribed range, according to ranks of original characters trained independently by said game players.

6. The game procedure control method according to any one of claims 1 through 5, wherein each game player trains a plurality of original characters, and teams made up of these pluralities of original characters are caused to compete with each other.

7. The game procedure control method according to any one of claims 1 through 5, wherein a team is made up of a plurality of original characters trained by pluralities of game players, and teams made up in same way are caused to compete.

8. The game procedure control method according to any one of claims 1 through 7, wherein said server is provided with a message board page capable of being accessed at will by said game players, so that said game players are able to at least record, in said message board page, either their wish to compete in a game or consent to compete.

9. The game procedure control method according to

any one of claims 1 through 8, wherein same screen is displayed on monitor screens of said terminal apparatuses of said game players.

10. The game procedure control method according to any one of claims 1 through 8, wherein game images from a camera perspective established in correspondence with the original character of each game player are displayed on monitor screen of the terminal apparatus of each game player.

11. The game procedure control method according to any one of claims 1 through 10, wherein passage of time on said server is monitored, and data on said server change irrespective of whether or not game players participate in games.

12. The game procedure control method according to claim 11, wherein, in said data on said server, data relating to ages of original characters change.

13. A game system comprising:

a server for storing data relating to original characters trained independently by game players, said data being character data used for a game program which enables competition between at least two game players; and
a plurality of terminal apparatuses, each of which is capable of being connected to said server through a network, comprises a control unit manipulated by said game player, and is capable both of storing data relating to said original character in said server and of reading out data relating to said original character when said game program is executed.

14. The game system according to claim 13, wherein said game program is stored in said server, and downloaded to terminal apparatuses of said game players and executed.

15. The game system according to claim 13, wherein said game program is recorded in a memory medium, and installed in terminal apparatuses of said game players to be executed thereby.

16. A server, which is accessible from terminal apparatuses operated by game players through a network; and which stores data relating to original characters trained independently by said game players, said data being character data used for a game program which enables competition between at least two game players.

17. The server according to claim 16, wherein said server also stores a game program that is downloaded to and executed by terminal apparatuses of said game players.

FIG.1

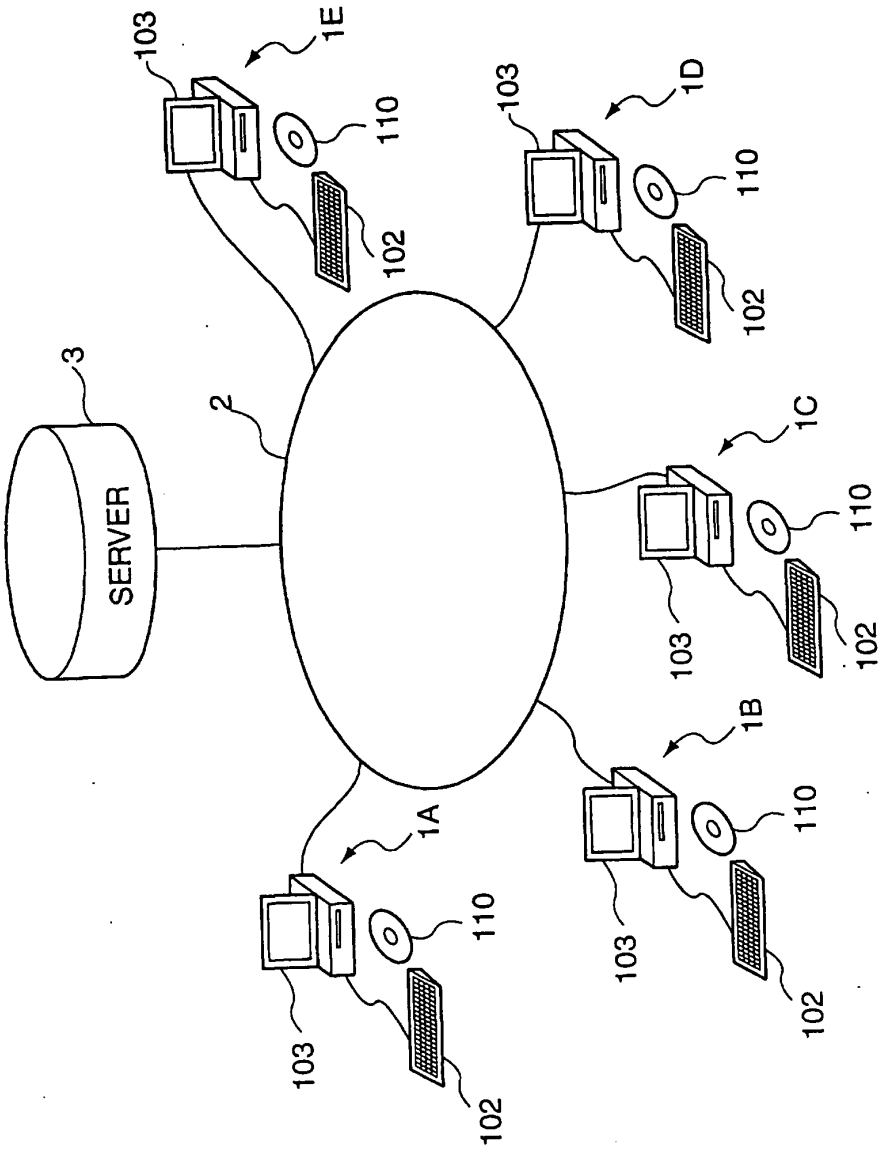


FIG.2

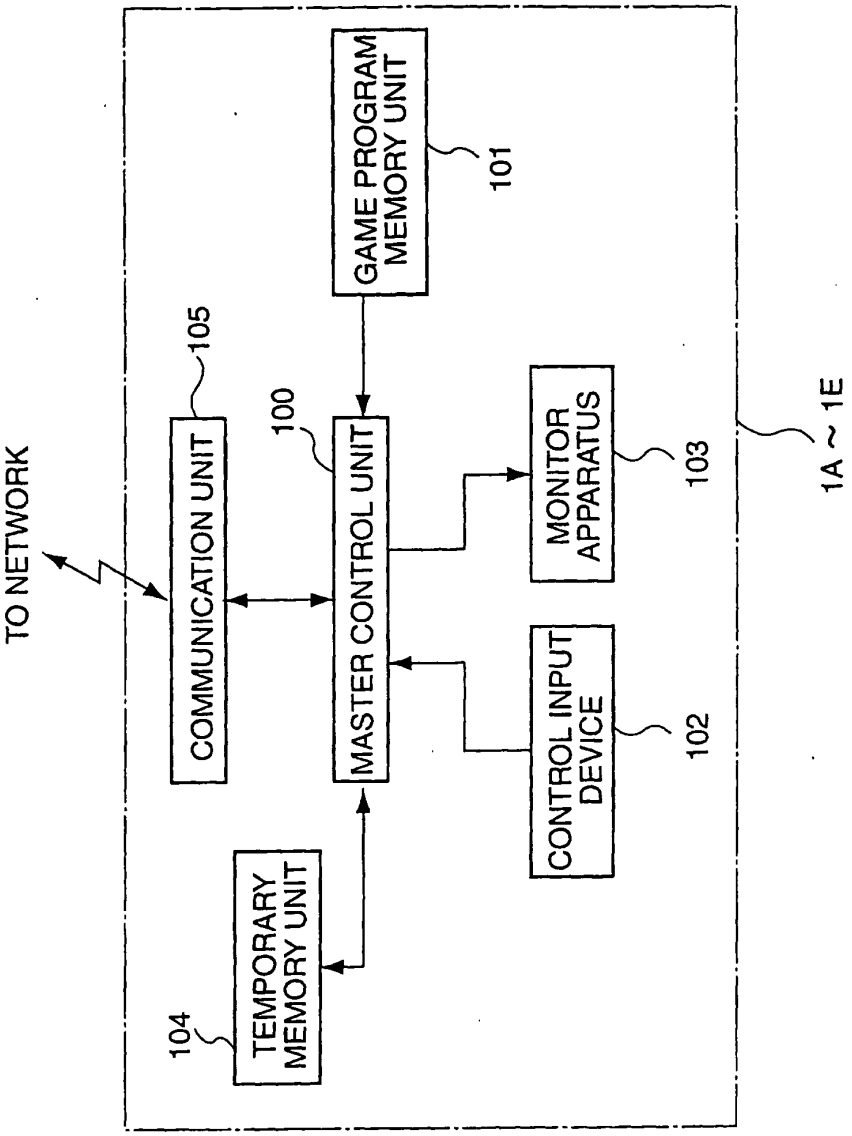


FIG.3

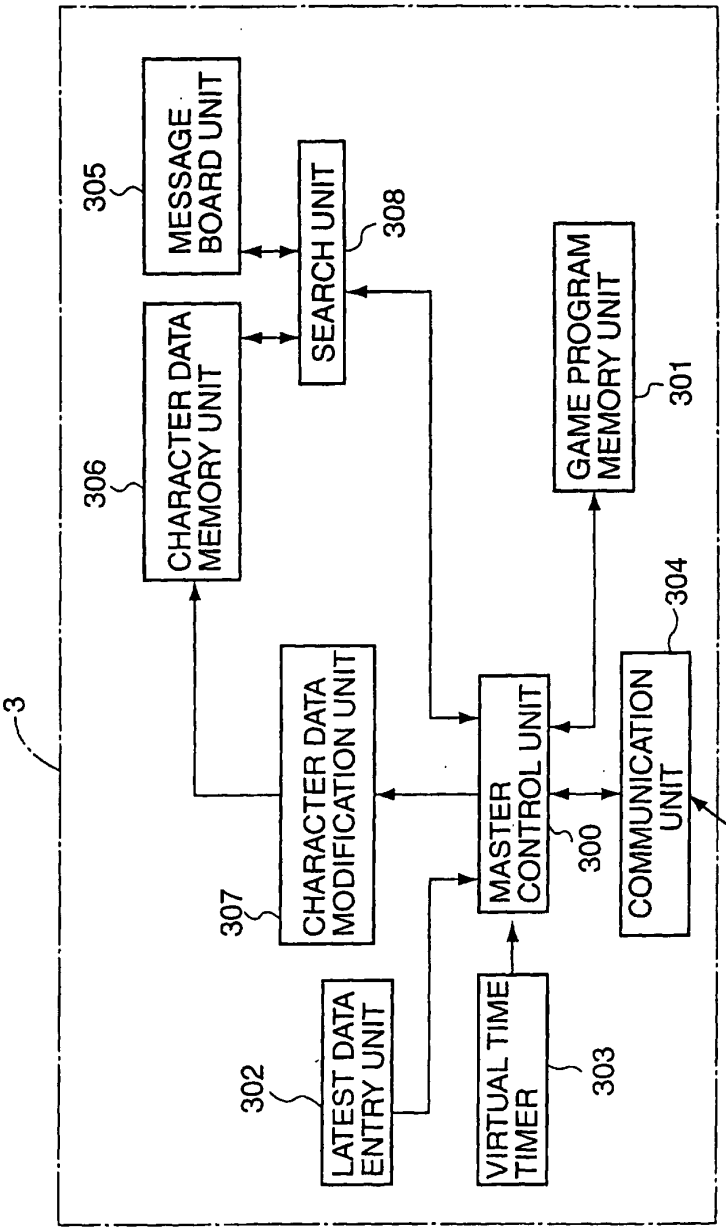


FIG.4

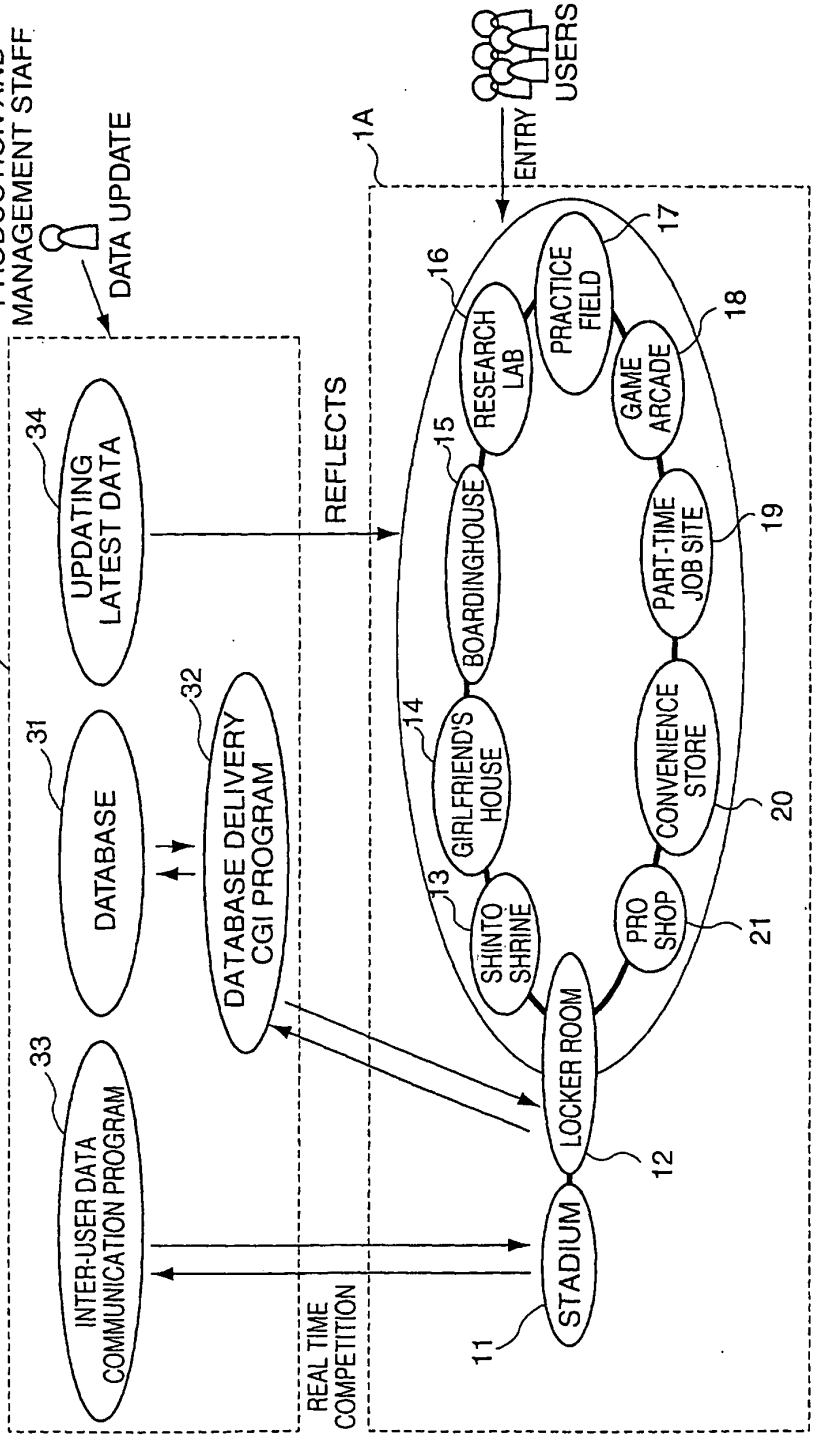


FIG.5

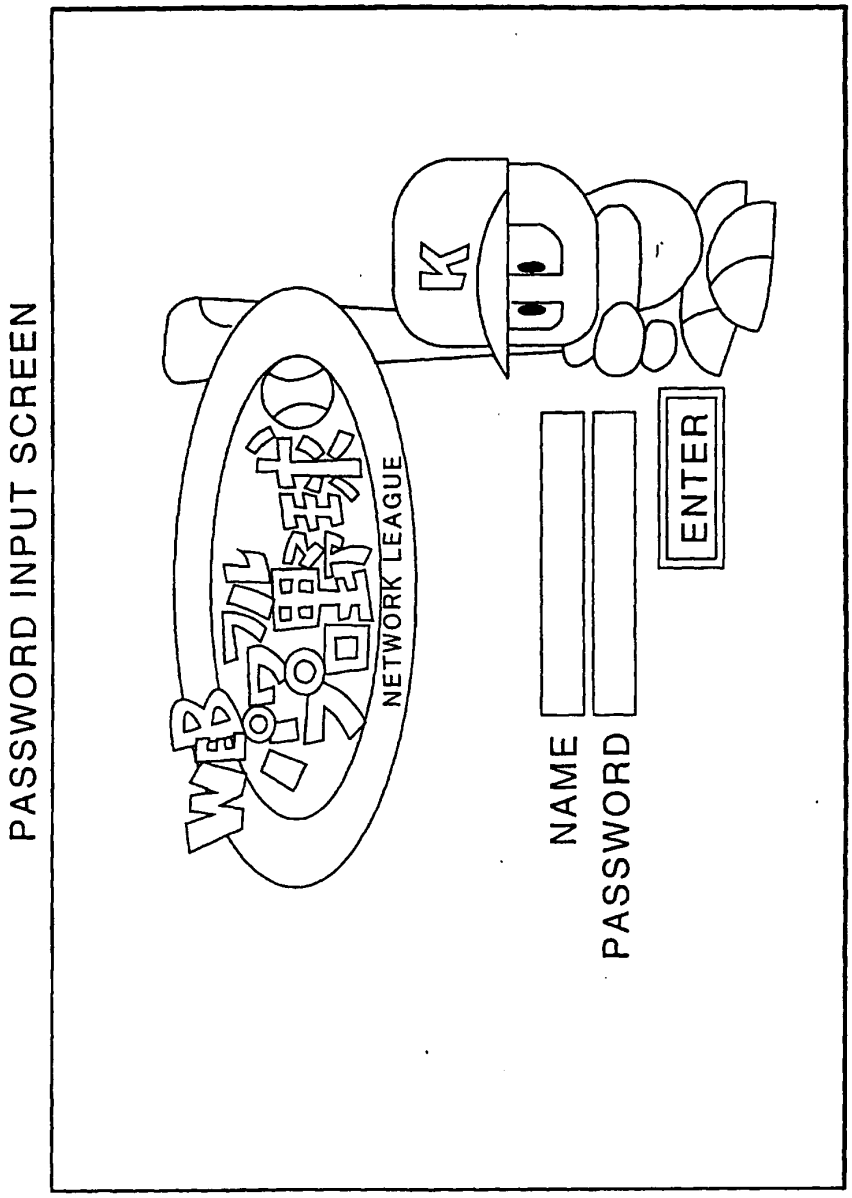


FIG.6

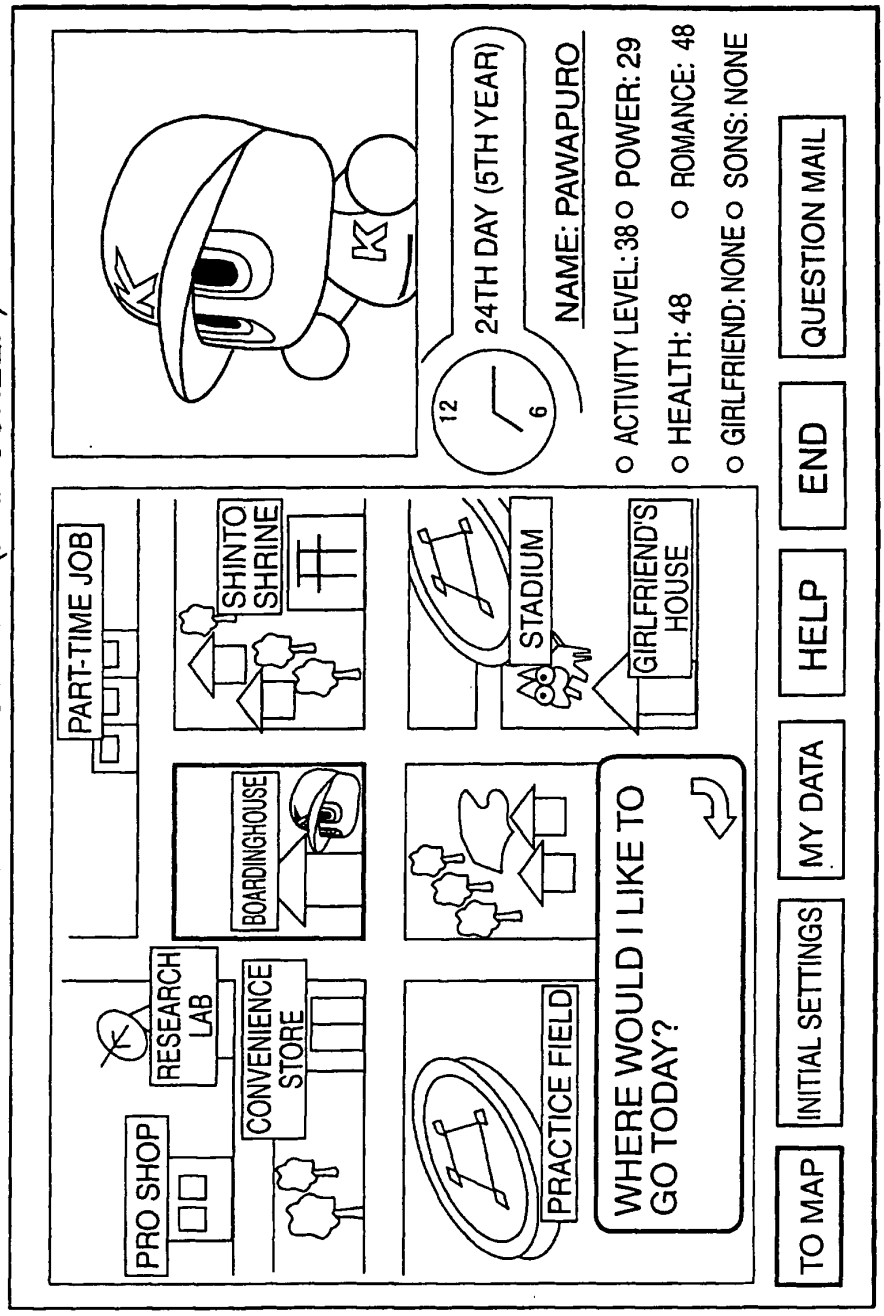


FIG.7

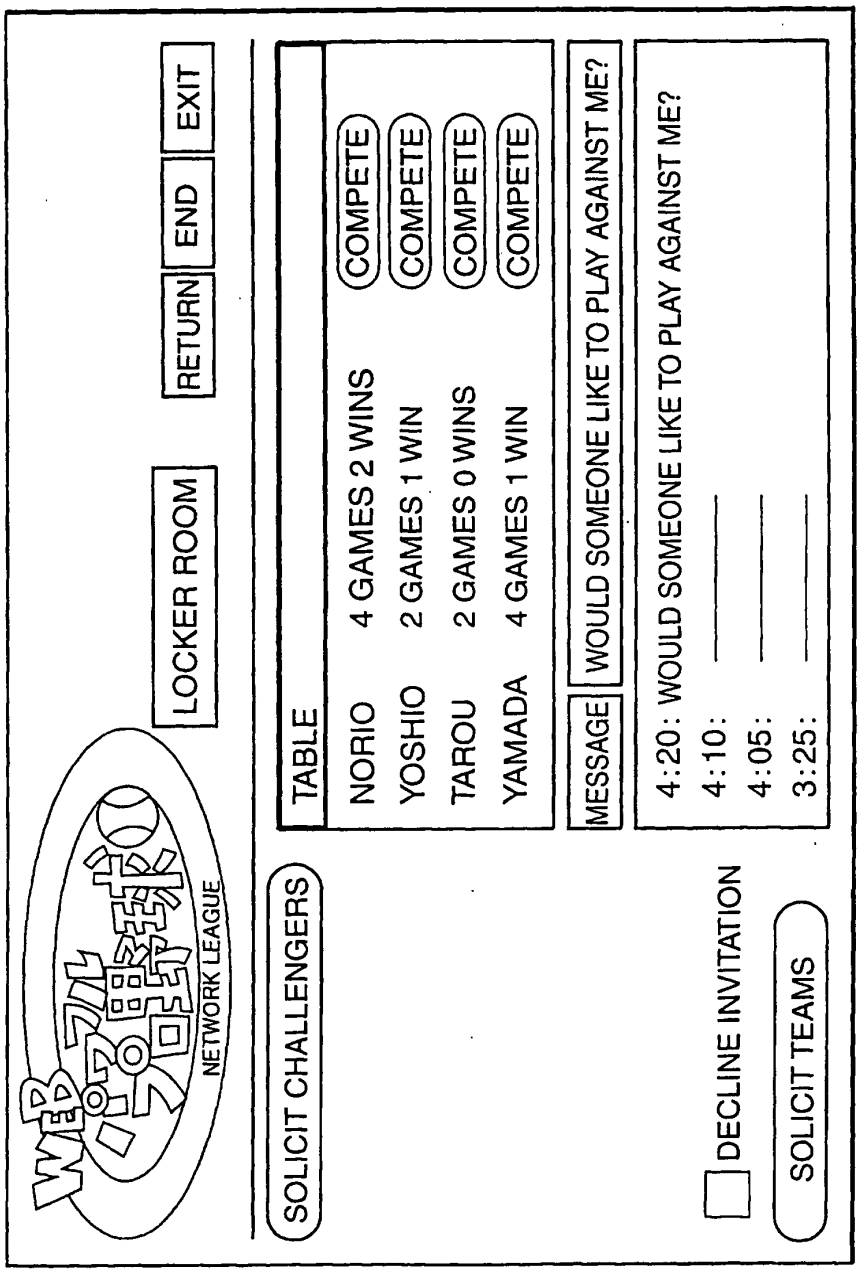


FIG.8

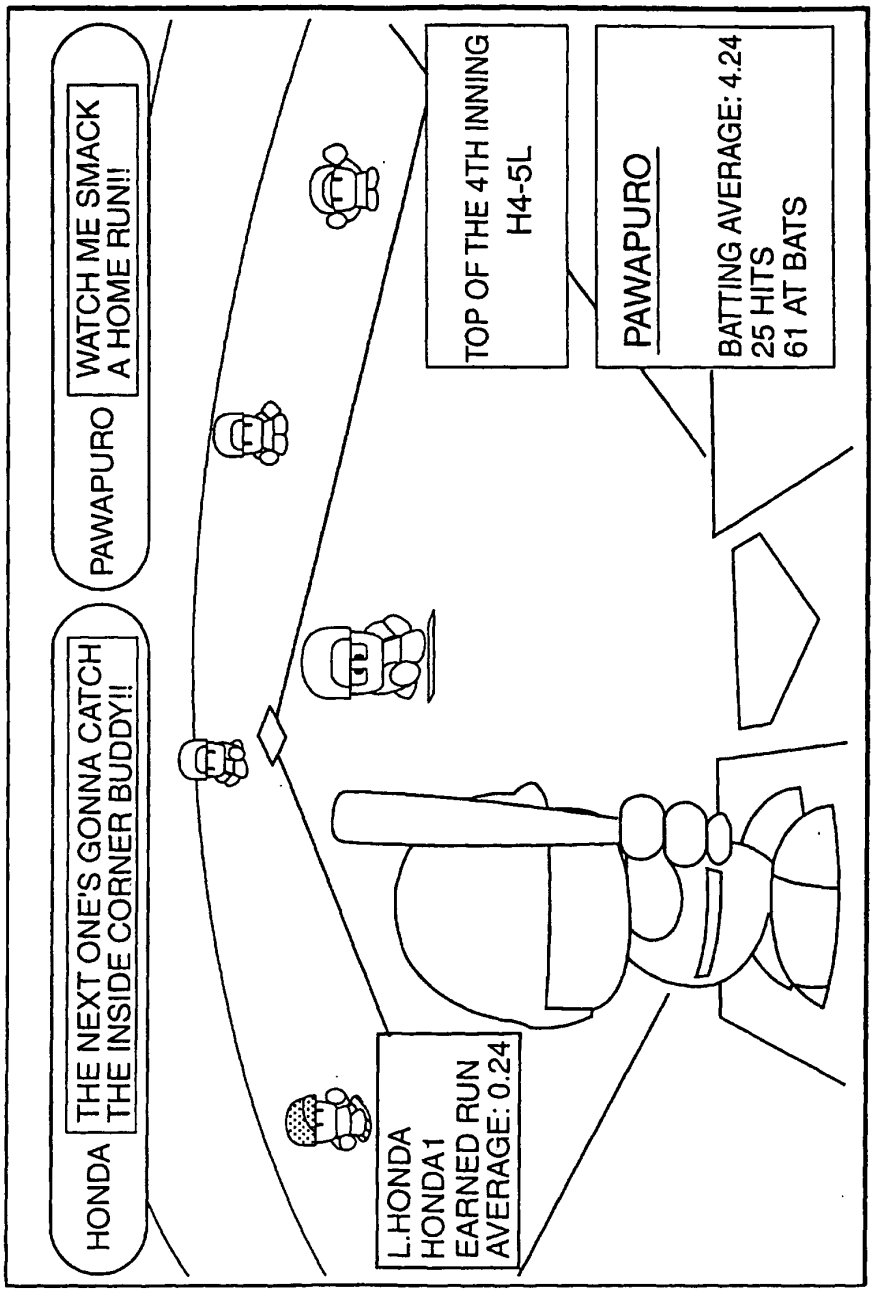


FIG.9

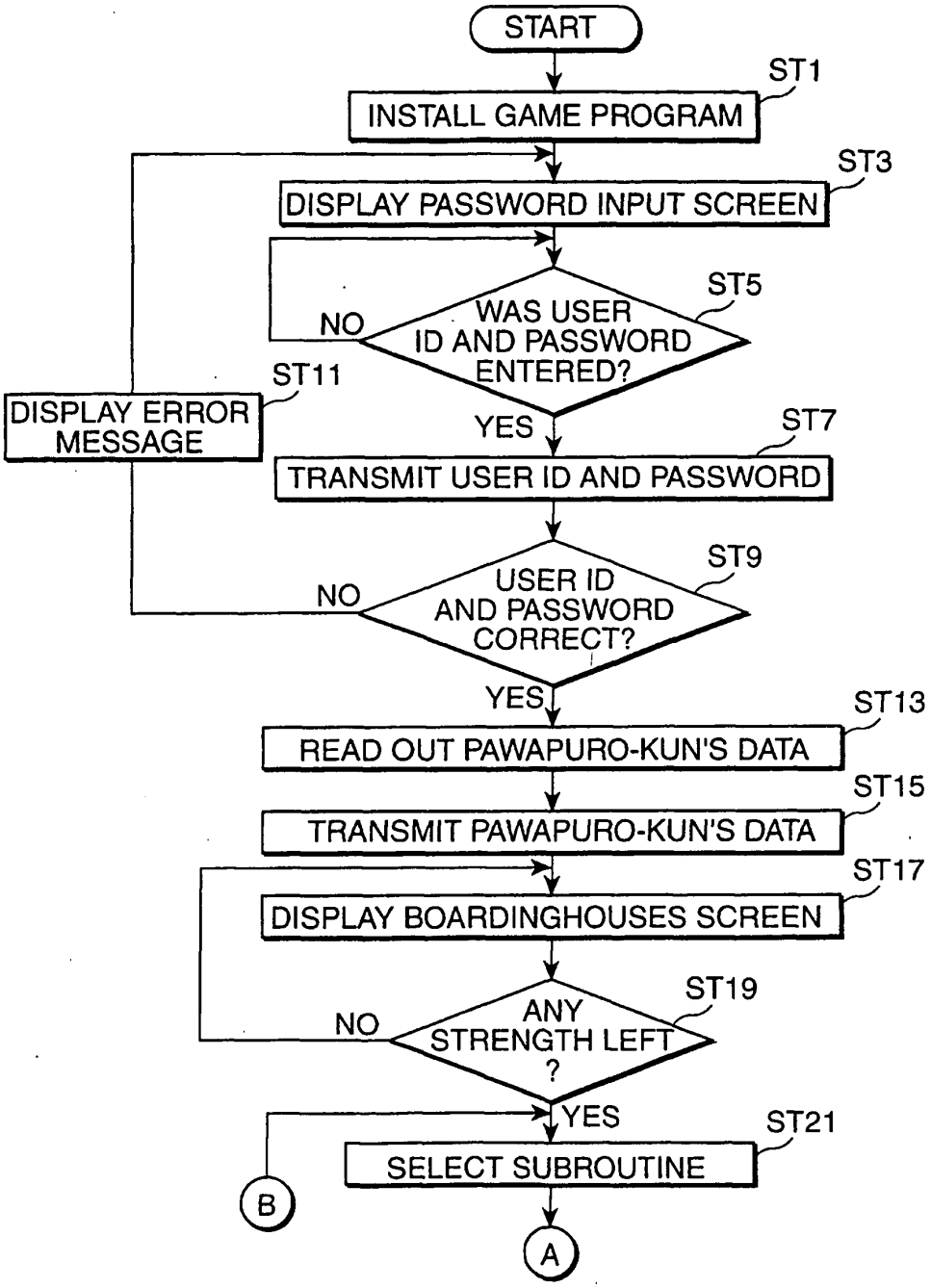


FIG.10

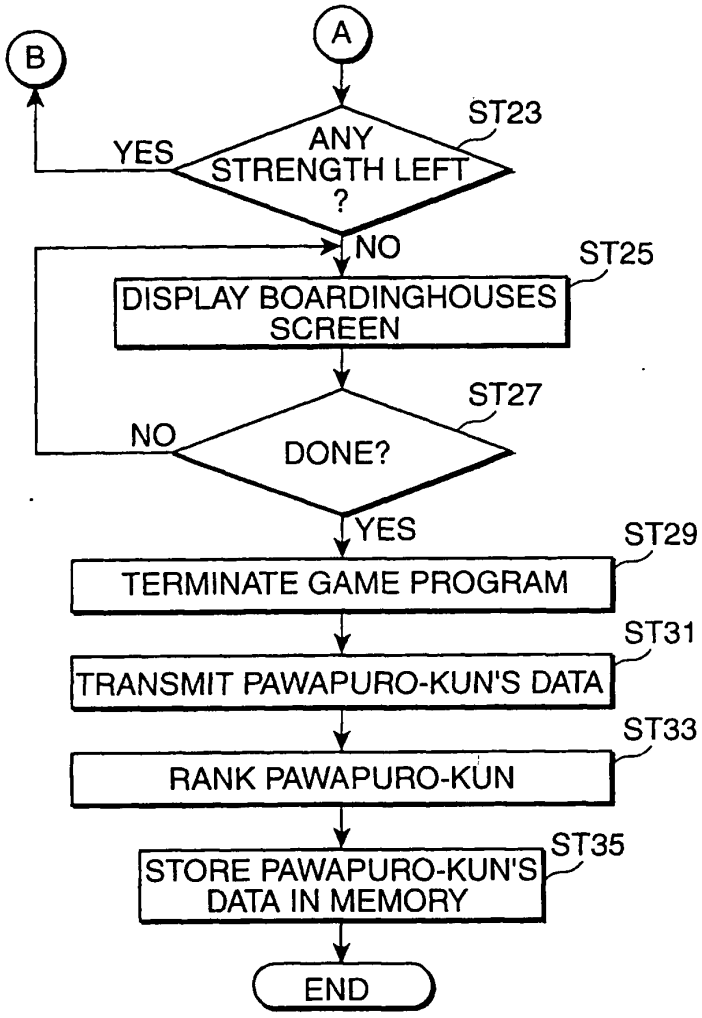


FIG.11

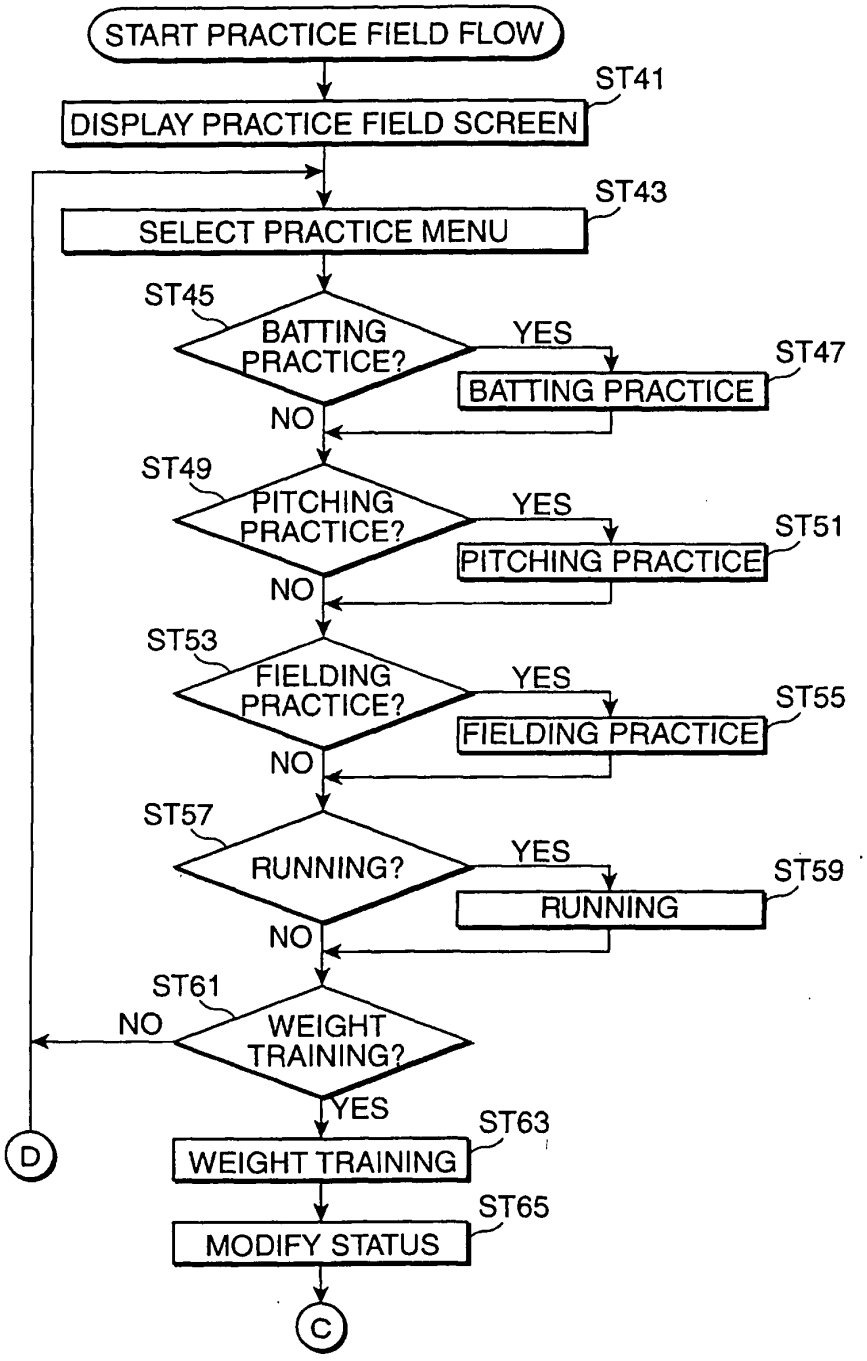


FIG.12

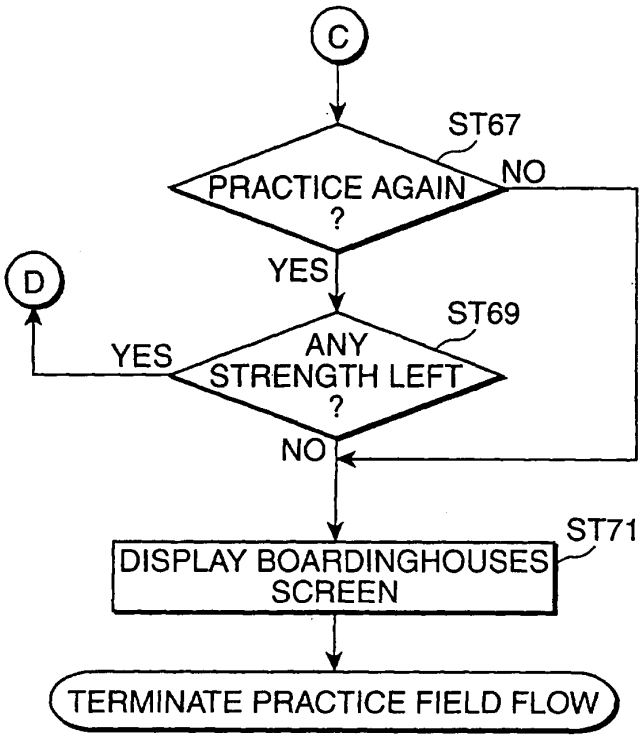


FIG.13

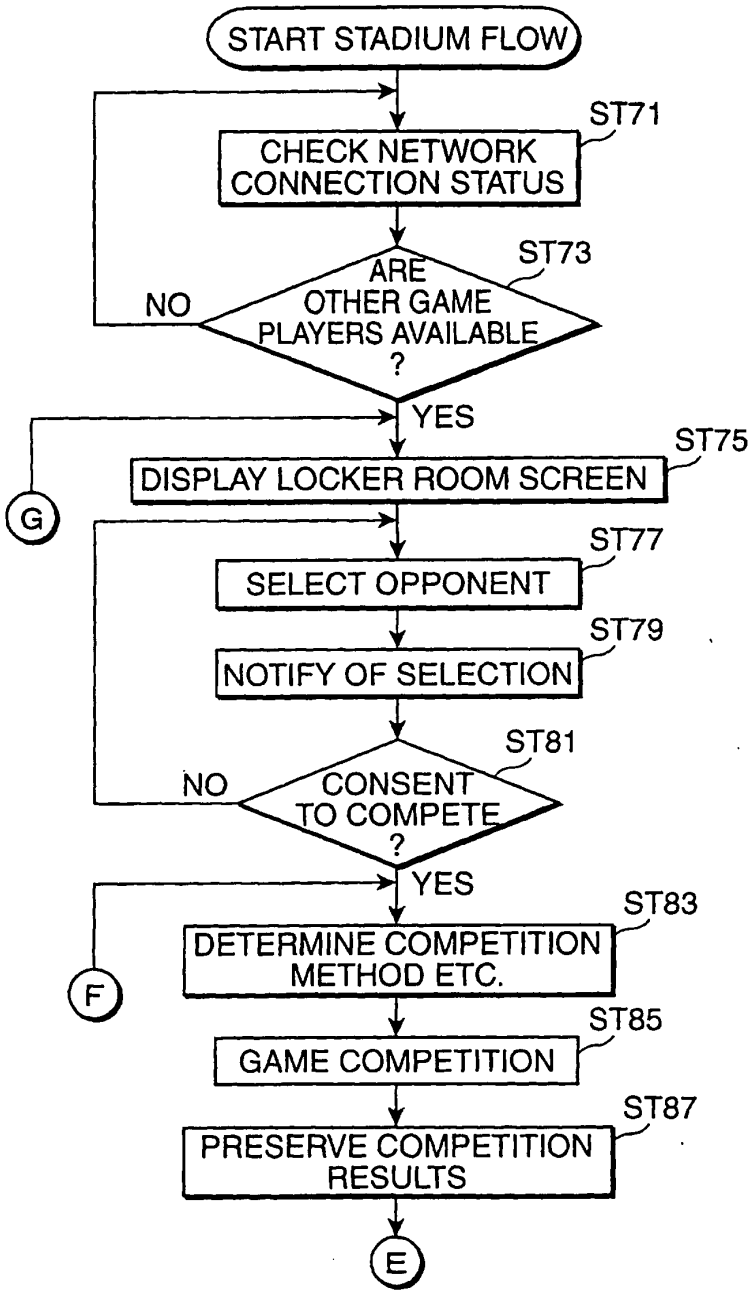
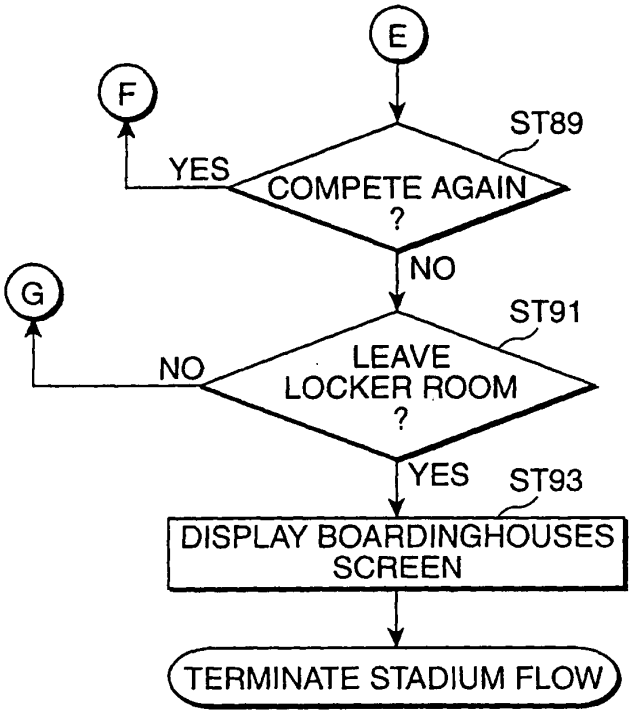


FIG.14



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 11 8426

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y A	US 5 971 855 A (NG VICTOR) 26 October 1999 (1999-10-26) * column 3, line 46 - column 4, line 22 * * column 5, line 41 - line 51 * * column 5, line 66 - column 6, line 13 * * column 7, line 38 - column 8, line 21 * ---	1,3, 11-13, 15,16 2,6,7, 10,14,17 4,5	A63F13/12
Y	EP 0 962 900 A (RICOS KK) 8 December 1999 (1999-12-08) * paragraph [0038] - paragraph [0039] * ---	2,14,17	
Y	US 5 860 862 A (JUNKIN WILLIAM W) 19 January 1999 (1999-01-19) * column 3, line 46 - column 4, line 6 * ---	6,7	
Y	GB 2 332 863 A (NAMCO LTD) 7 July 1999 (1999-07-07) * page 16, line 17 - line 21 * ---	10	TECHNICAL FIELDS SEARCHED (Int.Cl.7) A63F
A	EP 1 010 447 A (KONAMI COMPUTER ENTERTAINMENT) 21 June 2000 (2000-06-21) * abstract * -----	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	2 November 2001	Sindic, G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 11 8426

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02-11-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5971855 A	26-10-1999	AU 9676898 A	23-04-1999
		WO 9916520 A1	08-04-1999
EP 0962900 A	08-12-1999	JP 5228259 A	07-09-1993
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		JP 6044160 A	18-02-1994
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		JP 11226252 A	24-08-1999
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		EP 1010447 A1	21-06-2000
		US 6270402 B1	07-08-2001

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

Application No. 09/688,501

Attorney Docket No.: 247079-00077USPT

IFW

Certificate of Mailing Under 37 CFR 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as **First Class Mail** in an envelope addressed to:

Commissioner for Patents
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Alexandria, VA 22313-1450

on January 3, 2008
Date

Signature

Christine Pisarski
Typed or printed name of person signing Certificate

N/A
Registration Number, if applicable

(312) 425-3900
Telephone Number

Note: Each paper must have its own certificate of mailing, or this certificate must identify each submitted paper.

1. Supplemental Information Disclosure Statement – in duplicate (4 pgs);
2. PTO-1449 Form (1 pg);
3. (3) Foreign References (B01 – B03);
4. IDS Filing Fee $180.00 (Check No. 116000602);
5. Certificate of Mailing (1 pg); and
6. Acknowledgement Postcard

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	09/688,501
Applicants	:	Shridhar P. Joshi
Filed	:	October 16, 2000
Title	:	METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK
TC/A.U.	:	3714
Examiner	:	Alex P. Rada
Docket No.	:	247079-00077USPT
Customer No.	:	70243

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to the Commissioner for Patents, Mail Stop AF, P.O. Box 1450, Alexandria, VA 22313-1450, on January 3, 2008.

Signature: Christine Pisarski
Christine Pisarski

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §§ 1.97 AND 1.98

Dear Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, it is respectfully requested that this Supplemental Information Disclosure Statement be entered, and the references listed on enclosed Form PTO-1449 be considered by the Examiner and made of record.

In accordance with 37 C.F.R. § 1.98(d), any necessary copies are enclosed. However, in accordance with the October 12, 2004 Official Gazette Notice, copies of U.S. patents and U.S. published application references are no longer required and, thus, are not enclosed.

In accordance with 37 C.F.R. §§ 1.97(g) and (h), this Supplemental Information Disclosure Statement is not to be construed as a representation that a search has been made, or an admission that the information disclosed is, or is considered to be, prior art with respect to the present application or material to patentability, as defined in 37 C.F.R. § 1.56.

01/07/2008 SLUANG 00000011 09688501
01 FC:1806 180.00 OP

This Supplemental Information Disclosure Statement is being filed after the mailing date of either a final Office Action under 37 C.F.R. § 1.113 or a Notice of Allowance under 37 C.F.R. § 1.311, but before payment of the issue fee. Accordingly, enclosed is Check No. 116000602 in the amount of $180.00 for the fee set forth in 37 C.F.R. § 1.17(p) for submission of an Information Disclosure Statement under 37 C.F.R. § 1.97(d). If any additional fees are due, please charge Deposit Account No. 50-4181 (247079-00077USPT). A duplicate copy of this Statement is enclosed for that purpose.

Respectfully submitted,

Date: January 3, 2008

Daniel J. Burnham
Reg. No. 39,618
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161 North Clark Street, 48th Floor
Chicago, IL 60601-3213
(312) 425-3900
Attorney for Applicants

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	09/688,501
Applicants	:	Shridhar P. Joshi
Filed	:	October 16, 2000
Title	:	METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK
TC/A.U.	:	3714
Examiner	:	Alex P. Rada
Docket No.	:	247079-00077USPT
Customer No.	:	70243

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT FOLLOWING RCE FILED DECEMBER 3, 2007

Dear Sir:

An RCE was filed on December 3, 2007 and a Supplemental Information Disclosure Statement was presented. Please enter the following amendments and remarks into the record for this application.

Amendments to the claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 9 of this paper.

Listing of Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application.

Claims 1-36. (Cancelled)

37. (Previously Presented) A remote gaming method comprising:

accessing, via a remote terminal, a gaming site on a global computer network connected to said remote terminal;

providing, via said remote terminal, personal identification information to said gaming site;

selecting, via said remote terminal, a game of chance from a plurality of gaming machines located at a gaming establishment for remote play, said remote terminal being located outside said gaming establishment;

placing, via said remote terminal, a wager for playing said selected game; and

receiving randomly-generated text or graphical outcome data at said remote terminal for said selected game, said outcome data being generated by one of said plurality of gaming machines at said gaming establishment and relayed to said gaming site through a gaming server connected to said gaming site.

38. (Previously Presented) A remote gaming method using a gaming server, a remote terminal, and a gaming site on a global computer network, said gaming server being located at a gaming establishment, said remote terminal being located outside said gaming establishment, said gaming site being provided on said global computer network, the method comprising:

receiving, at said gaming server, personal identification information, game selection information, and wager information from a player accessing said gaming site via said remote terminal, said remote terminal being connected to said global computer network;

randomly generating outcome data at one of a plurality of gaming machines communicatively coupled to said gaming server, said outcome data being generated for a game selected according to said game selection information, said plurality of gaming machines being located at said gaming establishment;

receiving said outcome data at said gaming server; and

transmitting said outcome data from said gaming server to said gaming site for display to said player on said remote terminal in text or graphical form.

39. (Previously Presented) A method for playing a gaming machine located inside a gaming establishment from a remote terminal located outside the gaming establishment comprising:

establishing a communication link between said remote terminal and a gaming site on a global computer network, said gaming site in communication with a gaming server for collecting outcome data from gaming machines located inside the gaming establishment;

selecting a gaming machine at said gaming establishment using said remote terminal;

making a wager to play the selected gaming machine;

receiving outcome data, including game outcome, at said remote terminal resulting from a play of said gaming machine; and

generating a payout if said game outcome meets predetermined criteria.

40. (Previously Presented) The method of claim 39 wherein said outcome data comprises information identifying the value of said payout; and further comprising the step of using said payout information to simulate a display of said game outcome at said remote location.

41. (Previously Presented) The method of claim 39 further comprising using said outcome data to simulate a display of said game outcome on said remote terminal.

42. (Previously Presented) The method of claim 39, wherein said selected gaming machine comprises a slot machine and wherein said game outcome data includes a reel position.

43. (Previously Presented) The method of claim 39 wherein said selected gaming machine comprises a video poker machine including a display for displaying a poker hand.

44. (Previously Presented) The method of claim 39 wherein said step of receiving outcome data includes receiving outcome data from a plurality of gaming machines for remote play.

45. (Previously Presented) The method of claim 44 wherein said step of receiving outcome data includes receiving a gaming machine identifier.

46. (Previously Presented) The method of claim 44 wherein said step of receiving outcome data includes receiving a gaming machine type.

47. (Previously Presented) The method of claim 44 wherein said step of receiving outcome data includes receiving player preferences.

48. (Previously Presented) The method of claim 39 wherein said selected gaming machine comprises a slot machine and wherein said game outcome comprises information identifying a reel position of said gaming machine; and further comprising the step of using said outcome information to display said reel position on said remote terminal.

49. (Previously Presented) The method of claim 39 and further including the steps of receiving a player identifier; and transmitting said player identifier for identification of said player.

50. (Previously Presented) The method of claim 39 wherein said game outcome results from the server initiating game play on the selected gaming machine.

51. (Previously Presented) The method of claim 39 wherein said game outcome results from the manual game play on the selected gaming machine.

Claims 52-62. (Cancelled)

63. (New) A remote computer for the remote play of a local gaming machine located within a gaming establishment and connected to a gaming server, said remote computer being located outside said gaming establishment, said remote computer connected to a gaming site through a global computing network served by said gaming server, said gaming server collecting outcome data from a plurality of local gaming machines in said gaming establishment, said remote computer comprising:

a microprocessor;

memory connected to said microprocessor and including instructions for controlling said microprocessor; and

said microprocessor being operative with said instructions in said memory to:

receive information identifying said plurality of local gaming machines located within said gaming establishment from a gaming server;

transmit data selecting of at least one said plurality of local gaming machines for remote play;

receive, from said gaming server, a text or graphical outcome corresponding to said collected outcome data for each of said selected local gaming machines, said text or graphical outcome resulting from a local play of each of said selected local gaming machines; and

generate a payout if said outcome meets predetermined criteria.

64. (New) The remote computer of claim 63, wherein each of said selected gaming machines comprises a slot machine and wherein said text or graphical outcome includes a reel position.

65. (New) The remote computer of claim 63 wherein said operation of said microprocessor to receive information includes receiving information selecting at least two of said plurality of local gaming machines for remote play.

66. (New) The remote computer of claim 63 wherein said operation of said microprocessor to receive information includes receiving a gaming machine identifier.

67. (New) The remote computer of claim 63 wherein said operation of said microprocessor to receive information includes receiving a gaming machine type.

68. (New) The remote computer of claim 63 wherein said operation of said microprocessor to receive information includes receiving player preferences.

69. (New) The remote computer of claim 63 wherein one of said selected gaming machines comprises a video poker machine and said text or graphical outcome includes a display of a poker hand.

70. (New) The remote computer of claim 63 wherein said outcome data comprises payout data identifying a value of said payout, and said microprocessor is further operative to use said payout data to simulate a display of said outcome on a display of said remote computer.

71. (New) The remote computer of claim 63 wherein said outcome data comprises information identifying a reel position of said selected gaming machine, and said microprocessor is further operative to use said reel position information to display said reel position on a display of said remote computer.

72. (New) The remote computer of claim 63, wherein said microprocessor is further operative to receive a player identifier and transmit said player identifier for identification of said player.

73. (New) A remote computer located outside a gaming establishment, said gaming establishment having a plurality of gaming machines linked by a gaming server, said remote computer connected to a gaming site through a global computing network served by said gaming server, said gaming server collecting outcome data from said plurality of gaming machines, said remote computer comprising:

means for receiving information identifying a plurality of local gaming machines, each of said plurality of local gaming machines engaged in play within said gaming establishment;

means for transmitting data from said remote computer for selecting at least one of said plurality of local gaming machines for information transfer;

means for receiving, from said gaming server, a text or graphical outcome resulting from a play of said selected local gaming machines, said text or graphical outcome being included in said outcome data collected at said gaming server; and

for generating a payout if said outcome meets predetermined criteria.

REMARKS/ARGUMENTS

Claims 37-51 and 63-73 are now pending in the application for further prosecution. No claims have been amended. New claims 63-73 have been added.

Claims 37-51 were previously allowed following a Decision on Appeal dated August 8, 2007.

As requested by Examiner Rada in the brief phone call on March 11, 2008 explaining the reasons for the newly added claims, the Applicants provide the following explanation regarding the relatedness between new claims 63-73 and former claims 52-62.

New Claims 63-73 Correspond to Former Claims 52-62, in an Amended Form

Because the Board maintained the rejections of former claims 52-62, former claims 52-62 were previously canceled after the Decision on Appeal to expedite the Notice of Allowance. Considering that an RCE was then filed for consideration of a Supplemental Information Disclosure Statement after receiving the Notice of Allowance, the Applicants now desire to add the subject matter of cancelled claims 52-62 back into the case in an amended form that takes into account the statements of the Board related to the patentability of the subject matter.

Specifically, in the Decision on the Appeal, the rejection of claims 52-62 was maintained because the Board noted that, unlike allowable claim 39, claims 52-62 did not include the claim element related to the relaying outcome data through a gaming site, noting that "Wiltshire does not teach that the website was in communication with a gaming server for collecting outcome data from gaming machines located inside a gaming establishment." Decision, p. 11. New independent claims 63 and 73 (corresponding to former independent claims 52 and 62) have been amended to require the collection of outcome data at the gaming server. Thus, they are believed to be in a condition for allowance.

Applicants also note that, while new dependent claims 64-72 generally correspond to former dependent claims 53-61, new dependent claims 64-72 have been slightly amended for clarity purposes that should not affect their patentability.

Conclusion

It is the Applicants' belief that all of the claims are now in condition for allowance and action towards that effect is respectfully requested.

If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney at the number indicated. It is believed that no fees are presently due; however, should any additional fees be required (except for payment of the issue fee), the Commissioner is authorized to deduct the fees from Nixon Peabody Deposit Account No. 50-4181, Order No. 247079-00077USPT.

Respectfully submitted,

Date: March 11, 2008

/William D. PEGG, Reg. #42,988/
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AMENDMENT TRANSMITTAL LETTER

Docket No. 247079-00077USPT

Application No.	Filing Date	Examiner	Art Unit
09/688,501	October 16, 2000	Alex P. Rada	3714

Applicant(s): Shridhar P. Joshi, *et al.*

Invention: METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK

TO THE COMMISSIONER FOR PATENTS

Transmitted herewith is an amendment in the above-identified application.

The fee has been calculated and is transmitted as shown below.

CLAIMS AS AMENDED

	Claims Remaining After Amendment	Highest Number Previously Paid	Number Extra Claims Present	Rate	
Total Claims	26	- 62 =	0	x 50.00	0.00
Independent Claims	5	- 5 =	0	x 210.00	0.00
Multiple Dependent Claims (check if applicable) ☐					
Other fee (please specify):					
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT:					0.00

☒ Large Entity ☐ Small Entity

☐ No additional fee is required for this amendment.

☐ Please charge Deposit Account No. _____ in the amount of $ _____ . A duplicate copy of this sheet is enclosed.

☐ A check in the amount of $ _____ to cover the extension filing fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☒ The Director is hereby authorized to charge and credit Deposit Account No. 50-4181 as described below. A duplicate copy of this sheet is enclosed.

☒ Credit any overpayment.

☒ Charge any additional filing or application processing fees required under 37 CFR 1.16 and 1.17.

/William D. PEGG, Reg. # 42,988/ Dated: March 11, 2008

William D. Pegg
Attorney/Agent Reg. No.: 42,988

NIXON PEABODY, LLP.
161 N. Clark Street., 48th Floor
Chicago, Illinois 60601-3213
(312) 425-3900

Electronic Acknowledgement Receipt

EFS ID:	2981783
Application Number:	09688501
International Application Number:	
Confirmation Number:	3225
Title of Invention:	METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK
First Named Inventor/Applicant Name:	Shridhar P. Joshi
Customer Number:	70243
Filer:	William Daniel Pegg
Filer Authorized By:	
Attorney Docket Number:	47079-00077
Receipt Date:	11-MAR-2008
Filing Date:	16-OCT-2000
Time Stamp:	16:50:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	247079_00077USPT_Prelim_Amendment.pdf	86140 c1e57892937da7b7eb6dc382cea79b0f3e513dc1	no	10
Warnings:					
Information:					

2	Miscellaneous Incoming Letter	247079000077USPT_AmendmentTransmittal.pdf	70082 99018e29883a065e366398f3dfc7e0a86e99d977	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	156222	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
09/688,501	10/16/2000	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	03/11/2008	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 26	Minus	** 39	= 0	X $ =		OR	X $50=	0
	Independent (37 CFR 1.16(h))	* 5	Minus	***8	= 0	X $ =		OR	X $210=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/CAROL BARNES/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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NOTICE OF ALLOWANCE AND FEE(S) DUE

70243 7590 04/01/2008

NIXON PEABODY LLP
161 N CLARK ST.
48TH FLOOR
CHICAGO, IL 60601-3213

EXAMINER	
RADA, ALEX P	
ART UNIT	PAPER NUMBER
3714	

DATE MAILED: 04/01/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,501	10/16/2000	Shridhar P. Joshi	47079-00077	3225

TITLE OF INVENTION: METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1440	$0	$0	$1440	07/01/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

70243 7590 04/01/2008

NIXON PEABODY LLP
161 N CLARK ST.
48TH FLOOR
CHICAGO, IL 60601-3213

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,501	10/16/2000	Shridhar P. Joshi	47079-00077	3225

TITLE OF INVENTION: METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1440	$0	$0	$1440	07/01/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
RADA, ALEX P	3714	463-042000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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70243 7590 04/01/2008

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CHICAGO, IL 60601-3213

EXAMINER	
RADA, ALEX P	
ART UNIT	PAPER NUMBER
3714	

DATE MAILED: 04/01/2008

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 551 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 551 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Notice of Allowability	Application No.	Applicant(s)	
	09/688,501	JOSHI, SHRIDHAR P.	
	Examiner	Art Unit	
	ALEX P. RADA	3714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *an RCE filed 5 December 2007*.

2. ☒ The allowed claim(s) is/are *37-51 and 63-73*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 12/5/07;1/7/08
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Response to Amendment

In response to the Request for Continued Examination filed 5 December 2007 wherein applicant cancels claims 1-36 and 52-62, submits an IDS, adds new claims 63-73 and claims 37-51 and 63-73 are pending in this application.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 5 December 2007 and 7 January 2008 was filed after the mailing date of the Request for Continued Examination on 5 December 2007 and 7 January 2008. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Reasons for Allowance

Claims 37-51 and 63-73 are allowed for the reasons set forth in the decision of the Board of Patent Appeals and Interferences filed August 7, 2007.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX P. RADA whose telephone number is (571)272-4452. The examiner can normally be reached on Monday - Friday, 08:00-16:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pezzuto can be reached on 571-272-6996. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert E Pezzuto/
Supervisory Patent Examiner, Art Unit 3714

Robert E. Pezzuto
Examiner
Art Unit 3714

/A. P. R./
Examiner, Art Unit 3714

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United States Patent and Trademark Office
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BIB DATA SHEET

CONFIRMATION NO. 3225

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/688,501	10/16/2000 RULE	463	3714	47079-00077

APPLICANTS
Shridhar P. Joshi, Skokie, IL;

**** CONTINUING DATA **************************

**** FOREIGN APPLICATIONS **************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
12/21/2000

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged /ALEX P RADA/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		IL	3	26 ~~36~~	5 ~~8~~

ADDRESS

NIXON PEABODY LLP
161 N CLARK ST.
48TH FLOOR
CHICAGO, IL 60601-3213
UNITED STATES

TITLE

METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK

FILING FEE RECEIVED		
1398	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	45	("20010044337" | "20010044339" | "20020037767" | "20020045484" | "20020073043" | "20020087876" | "20020116615" | "20020137217" | "20020138594" | "20030028567" | "20030162589" | "20040209660" | "20050193209" | "20060165235" | "4858930" | "5489103" | "5655961" | "5707286" | "5759102" | "5800268" | "5816918" | "5971271" | "5999808" | "6077162" | "6080062" | "6089975" | "6113495" | "6135884" | "6135887" | "6210274" | "6272223" | "6273821" | "6287200" | "6334104" | "6346048" | "6354946" | "6402618" | "6409602" | "6428413" | "6454650" | "6652378" | "6749510" | "6805634" | "6986055" | "7260834").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:22
L2	3162525	@ad<="20001016"	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:23
L3	28	1 and 2	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:23
L4	5412	(463/16-25,29,40-42).CCLS.	US-PGPUB	OR	OFF	2008/03/27 16:32
L5	38	4 and 2	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:33
L6	0	((remote with terminal) and network and (personal with identification) and wager and ((text graphical) with outcome) and server and (gam$3 with site)).clm.	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:35

L7	0	((remote with terminal) and network and (personal with identification) and wager and server and (gam$3 with site)).clm.	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:36
L8	1283	(463/42).CCLS.	US-PGPUB	OR	OFF	2008/03/27 16:36
L9	1137	(463/16).CCLS.	US-PGPUB	OR	OFF	2008/03/27 16:36
L10	7	8 and 2	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:37
L11	10	9 and 2	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:37
L12	27	(joshi with shridhar).in.	US-PGPUB; USPAT; USOCR	OR	ON	2008/03/27 16:37

3/27/08 4:38:09 PM
C:\Documents and Settings\ARada\My Documents\EAST\Workspaces\09-688501 gaming network.wsp

Index of Claims

Application/Control No.	Applicant(s)/Patent under Reexamination
09/688,501	JOSHI, SHRIDHAR P.
Examiner	**Art Unit**
ALEX P. RADA	3714

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

Claim		Date
Final	Original	3/27/08
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Claim		Date
Final	Original	3/27/08
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Claim		Date
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Search Notes

Application/Control No.	Applicant(s)/Patent under Reexamination	
09/688,501	JOSHI, SHRIDHAR P.	
Examiner	**Art Unit**	
ALEX P. RADA	3714	

SEARCHED			
Class	Subclass	Date	Examiner
463	16-25 29 40-42	3/27/2008	APR
Above	Updated	3/27/2008	APR

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
463	**42**	3/27/2008	**APR**
463	16	3/27/08	APR

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
East Search Updated PGPUB USPAT OCR	3/27/2008	APR
Intereference and Class/subclass search	3/27/2008	APR

Issue Classification	Application/Control No. 09/688,501	Applicant(s)/Patent under Reexamination JOSHI, SHRIDHAR P.
	Examiner ALEX P. RADA	Art Unit 3714

ISSUE CLASSIFICATION

ORIGINAL		INTERNATIONAL CLASSIFICATION											
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED						
463	42	A	63	F	9	/24				/			
CROSS REFERENCES						/				/			
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)												
463	16					/				/			
						/				/			
						/				/			
						/				/			
						/				/			

Alex F. R. P. Rada II 03/27/2008 (Assistant Examiner) (Date)	/Robert E Pezzuto/ Supervisory Patent Examiner Art Unit 3714	**Total Claims Allowed: 26**
(Legal Instruments Examiner) (Date)	(Primary Examiner) (Date)	O.G. Print Claim(s): 1 / O.G. Print Fig.: 1

☐ **Claims renumbered in the same order as presented by applicant** ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		31		61		91		121		151		181
	2		32		62		92		122		152		182
	3		33	16	63		93		123		153		183
	4		34	17	64		94		124		154		184
	5		35	18	65		95		125		155		185
	6		36	19	66		96		126		156		186
	7	1	37	20	67		97		127		157		187
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	9	3	39	22	69		99		129		159		189
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	11	5	41	24	71		101		131		161		191
	12	6	42	25	72		102		132		162		192
	13	7	43	26	73		103		133		163		193
	14	8	44		74		104		134		164		194
	15	9	45		75		105		135		165		195
	16	10	46		76		106		136		166		196
	17	11	47		77		107		137		167		197
	18	12	48		78		108		138		168		198
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	21	15	51		81		111		141		171		201
	22		52		82		112		142		172		202
	23		53		83		113		143		173		203
	24		54		84		114		144		174		204
	25		55		85		115		145		175		205
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	29		59		89		119		149		179		209
	30		60		90		120		150		180		210

Form PTO-1449 (modified)	Atty. Docket No. 247079-00077USPT	Serial No. 09/688,501
List of Patents and Publications for Applicant's **INFORMATION DISCLOSURE STATEMENT**	Applicants Shridhar P. Joshi	
Page 1 of 1	Filing Date: October 16, 2000	Group: 3714

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date if App.
	A01	4,339,798	07/13/1982	Hedges et al.	364	412	
	A02	5,762,552	06/09/1998	Vuong et al.	463	25	
	A03	5,980,384	11/09/1999	Barrie	463	16	
	A04	6,089,982	07/18/2000	Holch et al.	463	42	
	A05	6,098,985	08/08/2000	Moody	273	292	
	A06	6,183,366	02/06/2001	Goldberg et al.	463	42	
	A07	6,264,560	07/24/2001	Goldberg et al.	463	42	
	A08	6,273,820	08/14/2001	Haste, III	463	40	
	A09	6,280,325	08/28/2001	Fisk	463	19	
	A10	6,575,834	06/10/2003	Lindo	463	40	
	A11	7,303,473	12/04/2007	Rowe	463	42	

Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	Class	Sub Class	Translation Yes/No
	B01	EP 1013321	06/28/2000	Europe	A63F	9/22	
	B02	EP 1078667	02/28/2001	Europe	A63F	13/12	
	B03	EP 1177822	02/06/2002	Europe	A63F	13/12	

Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation

EXAMINER:	/Alex Rada/	DATE CONSIDERED:	03/27/2008

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List of Patents and Publications for Applicant's **3RD INFORMATION DISCLOSURE STATEMENT**	Applicant Shridhar P. Joshi	
Page 1 of 2	Filing Date: 10/16/00	Group: 3714

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date if App.
	C01	4,858,930	8/22/89	Sato	273	85	
	C02	5,489,103	2/6/96	Okamoto	273	433	
	C03	5,655,961	8/12/97	Acres et al.	463	27	
	C04	5,707,286	1/13/98	Carlson	463	16	
	C05	5,759,102	6/2/98	Pease et al.	463	42	
	C06	5,800,268	9/1/98	Molnick	463	40	
	C07	5,816,918	10/6/98	Kelly et al.	463	16	
	C08	5,971,271	10/26/99	Wynn et al.	235	380	
	C09	5,999,808	12/7/99	LaDue	455	412	
	C10	6,077,162	6/20/00	Weiss	463	26	
	C11	6,080,062	6/27/00	Olson	463	42	
	C12	6,089,975	7/18/00	Dunn	463	16	
	C13	6,113,495	9/5/00	Walker et al.	463	42	
	C14	6,135,884	10/24/00	Hedrick et al.	463	20	
	C15	6,135,887	10/24/00	Pease et al.	463	42	
	C16	6,210,274	4/3/01	Carlson	463	16	
	C17	6,272,223	8/7/01	Carlson	380	251	
	C18	6,273,821	8/14/01	Moriguchi	463	42	
	C19	6,287,200	9/11/01	Sharma	463	40	
	C20	6,334,104	12/25/01	Hirai	704	258	
	C21	6,346,048	2/12/02	Ogawa et al.	463	42	
	C22	6,354,946	3/12/02	Finn	463	40	
	C23	6,402,618	6/11/02	Reed et al.	463	40	
	C24	6,409,602	6/25/02	Wiltshire et al.	463	42	
	C25	6,428,413	8/6/02	Carlson	463	16	
	C26	6,454,650	9/24/02	Aronin	463	17	
	C27	6,652,378	11/25/03	Cannon et al.	463	20	

EXAMINER: /Alex Rada/	**DATE CONSIDERED:** 03/27/2008

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Page 2 of 2	Filing Date: 10/16/00	Group: 3714

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date if App.
	C28	6,749,510	6/15/04	Giobbi	463	42	
	C29	6,805,634	10/19/04	Wells et al.	463	42	
	C30	6,986,055	1/10/06	Carlson	713	200	
	C31	7,260,834	8/21/07	Carlson	726	4	
	C32	2001/0044337 A1	11/22/01	Rowe et al.	463	29	
	C33	2001/0044339 A1	11/22/01	Cordero et al.	463	42	
	C34	2002/0045484 A1	4/18/02	Eck et al.	463	42	
	C35	2002/0037767 A1	3/28/02	Ebin	463	25	
	C36	2002/0137217 A1	9/26/02	Rowe	436	42	
	C37	2002/0138594 A1	9/26/02	Rowe	709	219	
	C38	2002/0073043 A1	6/13/02	Herman et al.	705	64	
	C39	2002/0087876 A1	7/4/02	Larose	713	200	
	C40	2002/0116615 A1	8/22/02	Nguyen et al.	713	168	
	C41	2003/0162589 A1	8/28/03	Nguyen et al.	463	25	
	C42	2003/0028567	2/6/03	Carlson	708	250	
	C43	2004/0209660 A1	10/21/04	Carlson et al.	463	01	
	C44	2005/0193209	9/1/05	Saunders et al.	713	182	
	C45	2006/0165235	7/27/06	Carlson	380	268	

FOREIGN PATENT DOCUMENTS

Examiner Initial	Ref.	Document Number	Date	Country	Class	Sub-Class	Translation Yes/No
	D1	WO 98/35309 A1	8/13/98	PCT	G06F		
	D2	WO 01/91866 A1	12/6/01	PCT	A63F		
	D3	WO 04/034223 A2	4/22/04	PCT	G06F		

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	Applicant Shridhar P. Joshi	
	Filing Date: 10/16/00	Group: 3714

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	C07	5,816,918	10/6/98	Kelly et al.	463	16	
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EXAMINER: /A.R./	**DATE CONSIDERED:** 03/27/2008

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70243 7590 04/01/2008

NIXON PEABODY LLP
161 N CLARK ST.
48TH FLOOR
CHICAGO, IL 60601-3213

05/28/2008 LTRUONG1 00000016 09688501

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Christine Pisarski	(Depositor's name)
Christine Pisarski	(Signature)
May 23, 2008	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,501	10/16/2000	Shridhar P. Joshi	47079-00077	3225

TITLE OF INVENTION: METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1440	$0	$0	$1440	07/01/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
RADA, ALEX P	3714	463-042000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Nixon Peabody LLP.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: WMS Gaming, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Waukegan, Illinois

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

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☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

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Application No.: 09/688,501 Attorney Docket No.: 247079-77USPT

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RE: U.S. Patent Application Serial No. 09/688,501, filed October 16, 2003
Title: Method Of Transferring Gaming Data On A Global Computer Network
Our File No.: 247079-00077USPT

Dear Commissioner:

Transmitted for filing with the U.S. Patent and Trademark Office are the following documents for the above-referenced patent application:

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Respectfully submitted,

Daniel J. Burnham
Registration No. 39,618

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NIXON PEABODY
ATTORNEYS AT LAW

161 North Clark Street
48th Floor
Chicago, Illinois 60601-3213
(312) 425-3900
Fax: (312) 425-3909
Direct Dial: (425) 8513
E-Mail: dburnham@nixonpeabody.com

May 23, 2008

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Christine Pisarski

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Daniel J. Burnham
Registration No. 39,618

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REVOCATION AND POWER OF ATTORNEY WITH NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

I hereby revoke all previous powers of attorney given in the applications identified below. Furthermore, I hereby appoint the practitioners at Customer Number **70243**.

Please change the correspondence address for the following applications to the address associated with Customer Number **70243**.

Attorney Docket No.	Application No. (Patent No.)	Filing Date (or Issue Date)
47079-00077USPT	09/688501	10/16/2000
47079-00086USPT	09/821195	03/29/2001
47079-00102USPT	09/912970	07/25/2001
47079-00115USPT	10/077443	02/15/2002
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47079-00161USP1	10/342817	01/16/2003
47079-00167USPT	10/366948	02/14/2003
47079-00164USPT	10/369021	02/19/2003
47079-00494USD1	10/375652	02/26/2003
47079-00140USP1	10/375675	02/26/2003
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47079-00201USPT	10/428516	05/01/2003
47079-00196USPT	10/436453	05/12/2003
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Attorney Docket No.	Application No. (Patent No.)	Filing Date (or Issue Date)
47079-00189USPT	10/463173	06/17/2003
47079-00223USPX	10/571372	03/09/2006
47079-00234USPX	10/571407	03/09/2006
47079-00233USPX	10/571447	03/09/2006
47079-00224USPX	10/571448	03/09/2006
47079-00295USPX	10/590792	08/25/2006
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47079-00238USPX	10/594803	09/28/2006
47079-00212USPT	10/612419	07/02/2003
47079-00207USPT	10/612478	07/02/2003
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47079-00191USPT	10/616459	07/09/2003
47079-00219USPT	10/621152	07/15/2003
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47079-00107USD2	10/630141	07/30/2003
47079-00222USPT	10/641368	08/14/2003
47079-00134USPT	10/657650	09/08/2003
47079-00231USPT	10/658921	09/10/2003
47079-00225USPT	10/659878	09/11/2003
47079-00311USPT	10/660271	09/11/2003
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47079-00262USPT	10/702323	11/06/2003
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47079-00243USPT	10/748489	12/30/2003
47079-00292USPT	10/757151	01/14/2004
47079-00239USPT	10/758151	01/15/2004
47079-00291USPT	10/759619	01/16/2004

I am the Assignee of record of the entire interest. See 37 C.F.R. § 3.71. A Statement Under 37 C.F.R. § 3.73(b) is enclosed.

Signature of Assignee of Record:

Signature: Michael Blankstein

Name: Michael J. Blankstein

Date: 7/30/08

Telephone: 773-961-1480

*Total of 1 form is submitted.

THE UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT UNDER 37 C.F.R. § 3.73(b)

WMS Gaming Inc., a Delaware corporation states that it is the Assignee of the entire right, title and interest in the patent applications/patents identified below by virtue of an assignment from the inventors of the patent applications identified below and recorded in the United States Patent and Trademark Office at the Reel and Frame numbers, also identified below:

Attorney Docket No.	Application No. (Patent No.)	Filing Date (or Issue Date)	Assignment Reel/Frame
47079-00077USPT	09/688501	10/16/2000	011687/0842
47079-00086USPT	09/821195	03/29/2001	011665/0557
47079-00102USPT	09/912970	07/25/2001	012049/0517
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47079-00295USPX	10/590792	08/25/2006	018306/0491
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47079-00238USPX	10/594803	09/28/2006	018546/0325
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47079-00237USPT	10/735511	12/12/2003	014812/0168
47079-00235USPT	10/744972	12/22/2003	014849/0396
47079-00243USPT	10/748489	12/30/2003	015069/0834
47079-00292USPT	10/757151	01/14/2004	014904/0021
47079-00239USPT	10/758151	01/15/2004	015826/0924
47079-00291USPT	10/759619	01/16/2004	014905/0343

The undersigned, whose title is supplied below, is authorized to act on behalf of the assignee.

7/30/08
Date

Michael Blankstein
Michael J. Blankstein
Vice President – Patents
WMS Gaming Inc.

773-961-1480
Telephone No.

Electronic Acknowledgement Receipt

EFS ID:	3699552
Application Number:	09688501
International Application Number:	
Confirmation Number:	3225
Title of Invention:	METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK
First Named Inventor/Applicant Name:	Shridhar P. Joshi
Customer Number:	70243
Filer:	Daniel J. Burnham/Christine Pisarski
Filer Authorized By:	Daniel J. Burnham
Attorney Docket Number:	47079-00077
Receipt Date:	30-JUL-2008
Filing Date:	16-OCT-2000
Time Stamp:	11:55:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	POA.PDF	81907 6bb503551e329b39fdc4ae5a1f677f13e abc58da	no	2
Warnings:					
Information:					

2	Assignee showing of ownership per 37 CFR 3.73(b).	Statement.pdf	97138 f6cf2ae2095245af6055db76b28c3d391a27bc11	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	179045

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/688,501	10/16/2000	Shridhar P. Joshi	47079-00077

CONFIRMATION NO. 3225

70243
NIXON PEABODY LLP
161 N CLARK ST.
48TH FLOOR
CHICAGO, IL 60601-3213

POWER OF ATTORNEY NOTICE

OC000000031331456

Date Mailed: 08/01/2008

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/30/2008.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/wlange/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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09/688,501	10/16/2000	Shridhar P. Joshi	47079-00077

CONFIRMATION NO. 3225

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NIXON PEABODY LLP
161 N CLARK ST.
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CHICAGO, IL 60601-3213

POA ACCEPTANCE LETTER

OC000000031331474

Date Mailed: 08/01/2008

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/30/2008.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/wlange/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

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Bib Data Sheet

CONFIRMATION NO. 3225

SERIAL NUMBER	FILING OR 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/688,501	10/16/2000 RULE	463	3714	47079-00077

APPLICANTS
Shridhar P. Joshi, Skokie, IL;

** CONTINUING DATA **********

** FOREIGN APPLICATIONS **********

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 12/21/2000

Foreign Priority claimed	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ yes ☐ no 35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance Verified and Acknowledged Examiner's Signature Initials	IL	3	36	8

ADDRESS
70243

TITLE
METHOD OF TRANSFERRING GAMING DATA ON A GLOBAL COMPUTER NETWORK

FILING FEE RECEIVED	FEES: Authority has been given in Paper	
1398	No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,501	12/30/2008	7470196	47079-00077	3225

70243 7590 12/10/2008

NIXON PEABODY LLP
161 N CLARK ST.
48TH FLOOR
CHICAGO, IL 60601-3213

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 645 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Shridhar P. Joshi, Skokie, IL;