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Transmittal Number: 13224737
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Primary Contact:
Zach Peret
Plaid Technologies, Inc.
25 Maiden Lane
Suite 304
San Francisco, CA 94108

Entity:	Plaid Technologies, Inc. Entity ID Number 3124201
Entity Served:	Plaid Technologies Inc.
Title of Action:	Yodlee, Inc. vs. Plaid Technologies Inc.
Document(s) Type:	Summons/Complaint
Nature of Action:	Trademark / Copyright / Patent
Court/Agency:	U.S. District Court, Delaware
Case/Reference No:	1:14-cv-01445-UNA
Jurisdiction Served:	Delaware
Date Served on CSC:	12/02/2014
Answer or Appearance Due:	21 Days
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Plaid Technologies Inc.
Exhibit 1002

AO 440 (Rev. 06/12) Summons in a Civil Action

UNITED STATES DISTRICT COURT

for the

District of Delaware

YODLEE, INC.,

Plaintiff(s)

v.

PLAID TECHNOLOGIES INC.,

Defendant(s)

Civil Action No. 14-1445

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)* PLAID TECHNOLOGIES INC.,
c/o Corporation Service Company
2711 Centerville Road, Suite 400
Wilmington, DE 19808

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it) — or 60 days if you are the United States or a United States agency, or an officer or employee of the United States described in Fed. R. Civ. P. 12 (a)(2) or (3) — you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are: Robert M. Oakes / Tel: (302) 652-5070
Fish & Richardson P.C.
222 Delaware Ave., 17th Floor
Wilmington, DE 19801
Email: oakes@fr.com

If you fail to respond, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

CLERK OF COURT

Date: DEC 2 2014

Signature of Clerk or Deputy Clerk

Civil Action No.

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____

was received by me on *(date)* _____.

☐ I personally served the summons on the individual at *(place)* _____

_____ on *(date)* _____ ; or

☐ I left the summons at the individual's residence or usual place of abode with *(name)* _____

_____, a person of suitable age and discretion who resides there,

on *(date)* _____, and mailed a copy to the individual's last known address; or

☐ I served the summons on *(name of individual)* _____, who is

designated by law to accept service of process on behalf of *(name of organization)* _____

_____ on *(date)* _____ ; or

☐ I returned the summons unexecuted because _____ ; or

☐ Other *(specify)*:

My fees are $ _____ for travel and $ _____ for services, for a total of $ 0.00 .

I declare under penalty of perjury that this information is true.

Date: _____

_____

Server's signature

_____

Printed name and title

_____

Server's address

Additional information regarding attempted service, etc:

UNITED STATES DISTRICT COURT

for the

District of Delaware

_____ *Plaintiff*	)	
v.	)	Civil Action No.
_____ *Defendant*	)	

NOTICE, CONSENT, AND REFERENCE OF A CIVIL ACTION TO A MAGISTRATE JUDGE

Notice of a magistrate judge's availability. A United States magistrate judge of this court is available to conduct all proceedings in this civil action (including a jury or nonjury trial) and to order the entry of a final judgment. The judgment may then be appealed directly to the United States court of appeals like any other judgment of this court. A magistrate judge may exercise this authority only if all parties voluntarily consent.

You may consent to have your case referred to a magistrate judge, or you may withhold your consent without adverse substantive consequences. The name of any party withholding consent will not be revealed to any judge who may otherwise be involved with your case.

Consent to a magistrate judge's authority. The following parties consent to have a United States magistrate judge conduct all proceedings in this case including trial, the entry of final judgment, and all post-trial proceedings.

Parties' printed names	*Signatures of parties or attorneys*	*Dates*
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Reference Order

IT IS ORDERED: This case is referred to a United States magistrate judge to conduct all proceedings and order the entry of a final judgment in accordance with 28 U.S.C. § 636(c) and Fed. R. Civ. P. 73.

Date: _____

_____
District Judge's signature

_____
Printed name and title

Note: Return this form to the clerk of court only if you are consenting to the exercise of jurisdiction by a United States magistrate judge. Do not return this form to a judge.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

YODLEE, INC., Plaintiff, v. PLAID TECHNOLOGIES INC., Defendant.	C. A. No. _____ **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Yodlee Inc. ("Yodlee") for its complaint against Plaid Technologies Inc. ("Plaid" or "Defendant") requesting damages and other relief, and alleging as follows:

NATURE OF THE ACTION

1. This is an action for infringement of United States Patent No. 6,199,077 (the "'077 patent"), United States Patent No. 6,317,783 (the "'783 patent"), United States Patent No. 6,510,451 (the "'451 patent"), United States Patent No. 7,263,548 (the "'548 patent"), United States Patent No. 7,424,520 (the "'520 patent"), United States Patent No. 7,752,535 (the "'535 patent"), and United States Patent No. 8,266,515 (the "'515 patent") (collectively, "Asserted Patents") under 35 U.S.C. §§ 271, *et seq.*

THE PARTIES

2. Plaintiff Yodlee is a corporation organized and existing under the laws of the State of Delaware with a principal place of business at 3600 Bridge Parkway, Suite 200, Redwood City, California 94065. Yodlee develops software and services that allow users to view all financial and other personal accounts in one place. Yodlee also develops applications to

help consumers manage their finances online through features such as personal financial management, bill payment, expense tracking, and investment management.

3. Upon information and belief, Defendant Plaid is a corporation organized and existing under the laws of the State of Delaware with a principal place of business at 25 Maiden Lane, San Francisco, California 94108. According to its website, Plaid offers a competing software application programming interface ("API") that allows users and developers to interact with financial institutions.

4. Upon information and belief, the officers of Defendant Plaid formerly operated under the name CopperDog Inc. ("CopperDog"), which was also a corporation organized and existing under the laws of the State of Delaware with a principal place of business at 4230 Stoney Brook Rd, Clemmons, NC 27012.

JURISDICTION AND VENUE

5. This action arises under the patent laws of the United States of America, United States Code, Title 35, Section 1, *et seq.* This Court has subject matter jurisdiction over the action pursuant to 28 U.S.C. §§ 1331 and 1338.

6. Venue is proper in the District of Delaware under 28 U.S.C. § 1391(b) and 28 U.S.C. § 1400(b).

7. This Court has personal jurisdiction over Plaid because Plaid is incorporated in the State of Delaware and has purposefully availed itself of the privilege of conducting activities within this State and District.

BACKGROUND

8. Plaintiff Yodlee was founded in 1999. Over the past fifteen years, it has become the leading provider of account aggregation services and personal financial management

applications through software it developed from the ground up. More than 750 organizations in over 10 countries use Yodlee's services and applications, including 9 of the 15 largest banks in the United States. Yodlee has over 16 million paid users and reaches more than 100 million end users through its network of financial institutions. In October 2014, Yodlee completed its initial public offering.

9. According to its website, Defendant Plaid considers itself to be "the API for banking data." The API gives developers the ability to integrate with banking institutions and access and authorize personal user accounts at those institutions.

10. On February 11, 2012, Zach Perret, co-founder of Defendant Plaid and president of CopperDog, signed a nondisclosure agreement ("NDA") with Yodlee. The NDA was a proactive measure taken prior to granting CopperDog access to Yodlee's confidential technology. By signing the agreement, Zach Perret and his company CopperDog agreed to protect the secrecy of Yodlee's confidential information and technology and not use that confidential information and technology for unauthorized purposes.

11. On April 5, 2012, Zach Perret signed a 30-day evaluation license agreement ("Evaluation Agreement") giving him, William Hockey, another co-founder of Defendant Plaid and the technical contact at CopperDog, and the company access to use and explore Yodlee's software development kit ("SDK"). Specifically, the Evaluation Agreement provided access to Yodlee's core technology in the form of C# source code, Java binary files, sample application codes, and development environments. The Evaluation Agreement also provided use of Yodlee's aggregation services to pull real user account data from financial institutions.

12. On April 6, 2012, Zach Perret was provided login credentials to Yodlee's developer resources. The login credentials allowed downloading of a multitude of confidential,

and highly informative, technical documents including the "Yodlee Aggregation SDK FAQs," "Yodlee Aggregation SDK Quick Reference Guide," "Yodlee SDK Developers Guide v11.0," "Yodlee PersonalFinance SDK Implementation Guide v11.0," and application files.

13. According to its website, at around this time Defendant Plaid started operations, acquiring its first customer shortly thereafter. On July 20, 2012, Plaid became an official corporation of the State of Delaware.

14. On November 16, 2012, Zach Perret was provided another set of 30-day evaluation login credentials to Yodlee's developer resources.

15. On November 16, 2012, Defendant also received two pricing proposals from Yodlee that would grant Defendant a one-year license to use Yodlee's aggregation APIs. Along with those pricing proposals were hyperlinks to four documents containing Yodlee confidential technical and security information. Two of those documents, "Yodlee Categorization Engine Overview v11.0" and "Yodlee Data Model v11," contain notices that the technology presented in the documentation is "protected by one or more U.S. Patents or Patents Pending." Furthermore, it is highly likely that both of these documents were read by both co-founders of Defendant because both documents state that they should be read by the "Product Functional Lead" and "Technical Lead" of the licensee. Upon information and belief, in the case of Defendant, those people are Zach Perret and William Hockey, respectively.

16. On January 10, 2013, Defendant entered into a one-year services agreement ("Services Agreement") to begin fully licensing Yodlee's services. Pursuant to the Services Agreement, Defendant was required to pay Yodlee on January 21, 2013.

17. After three months of maintaining Defendant's user environment without payment, on April 9, 2013, Defendant was notified that the contract would be terminated if payment was not received by April 15, 2013.

18. On April 15, 2013, Defendant stated that it wanted to cancel the Services Agreement and avoid full payment. Defendant sent a payment amount for a portion of the total outstanding, and the Services Agreement was terminated.

19. Upon information and belief, Defendant has used the knowledge acquired through its prolonged use of Yodlee's technology, including Yodlee's technical documentation, developer resources, and aggregation platform, to develop competing software and services that also infringe the Asserted Patents. Upon information and belief, by leveraging its infringing software and services, Defendant has managed to raise at least $2.8 million in funding as of September 2013.

20. Upon information and belief, Defendant has sold and offered for sale and continues to sell and offer for sale use of its software and services in the United States, including in Delaware. Defendant instructs its customers on how to use and access its software and services from publicly available documentation on its website. Defendant encourages its customers to visit its developer page which provides code and support helpful to use and access its software and services.

21. Upon information and belief, Defendant has used and continues to use its software and services in the United States, including in Delaware, to provide account aggregation and personal financial management services to its customers.

22. Upon information and belief, Defendant has knowledge of the Asserted Patents by at least the date of this Complaint. Upon information and belief, at least Plaid founders Zach

Perret and William Hockey were aware since 2012 that Yodlee had issued and pending patents relating to its account aggregation and personal financial management technology.

PATENTS-IN-SUIT

23. The '077 patent, titled "Server-Side Web Summary Generation and Presentation," issued on March 6, 2001. A copy of the '077 patent is attached hereto as Exhibit A.

24. The '783 patent, titled "Apparatus and Methods for Automated Aggregation and Delivery of and Transactions Involving Electronic Personal Information or Data," issued on November 13, 2001. A copy of the '783 patent is attached hereto as Exhibit B.

25. The '451 patent, titled "System for Completing a Multi-Component Task Initiated by a Client Involving Web Sites without Requiring Interaction from the Client," issued on January 21, 2003. A copy of the '451 patent is attached hereto as Exhibit C.

26. The '548 patent, titled "Method and Apparatus for Restructuring of Personalized Data for Transmission from a Data Network to Connected and Portable Network Appliances," issued August 28, 2007. A copy of the '548 patent is attached hereto as Exhibit D.

27. The '520 patent, titled "Method and Apparatus for Restructuring of Personalized Data for Transmission from a Data Network to Connected and Portable Network Appliances," issued September 9, 2008. A copy of the '520 patent is attached hereto as Exhibit E.

28. The '535 patent, titled "Categorization of Summarized Information," issued July 6, 2010. A copy of the '535 patent is attached hereto as Exhibit F.

29. The '515 patent, titled "Categorization of Summarized Information," issued September 11, 2012. A copy of the '515 patent is attached hereto as Exhibit G.

30. The Asserted Patents have been assigned to Yodlee and Yodlee is the owner of all right, title, and interest in and to those patents, including the right to sue, enforce, and recover all damages, past and future, for all infringements.

31. Yodlee has incurred substantial effort and expenses to develop the technologies leading to the Asserted Patents.

COUNT I
PATENT INFRINGEMENT OF U.S. PATENT NO. 6,199,077

32. The allegations of paragraphs 1-31 are incorporated as though fully set forth herein.

33. Upon information and belief, Defendant had knowledge of the '077 patent at least as of the filing of this Complaint.

34. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '077 patent.

35. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '077 patent. Upon information and belief,

Defendant has acted and continues to act with specific intent to contribute to infringement of the '077 patent.

36. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '077 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '077 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

37. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

38. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

39. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT II
PATENT INFRINGEMENT OF U.S. PATENT NO. 6,317,783

40. The allegations of paragraphs 1-39 are incorporated as though fully set forth herein.

41. Upon information and belief, Defendant had knowledge of the '783 patent at least as of the filing of this Complaint.

42. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '783 patent.

43. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '783 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '783 patent.

44. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '783 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '783 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

45. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

46. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

47. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT III
PATENT INFRINGEMENT OF U.S. PATENT NO. 6,510,451

48. The allegations of paragraphs 1-47 are incorporated as though fully set forth herein.

49. Upon information and belief, Defendant had knowledge of the '451 patent at least as of the filing of this Complaint.

50. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that

Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '451 patent.

51. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '451 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '451 patent.

52. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '451 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '451 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

53. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

54. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

55. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT IV
PATENT INFRINGEMENT OF U.S. PATENT NO. 7,263,548

56. The allegations of paragraphs 1-55 are incorporated as though fully set forth herein.

57. Upon information and belief, Defendant had knowledge of the '548 patent at least as of the filing of this Complaint.

58. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '548 patent.

59. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '548 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '548 patent.

60. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '548 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '548 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

61. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

62. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

63. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT V
PATENT INFRINGEMENT OF U.S. PATENT NO. 7,424,520

64. The allegations of paragraphs 1-63 are incorporated as though fully set forth herein.

65. Upon information and belief, Defendant had knowledge of the '520 patent at least as of the filing of this Complaint.

66. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '520 patent.

67. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '520 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '520 patent.

68. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '520 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '520 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

69. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

70. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus,

Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

71. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT VI
PATENT INFRINGEMENT OF U.S. PATENT NO. 7,752,535

72. The allegations of paragraphs 1-71 are incorporated as though fully set forth herein.

73. Upon information and belief, Defendant had knowledge of the '535 patent at least as of the filing of this Complaint.

74. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology.

Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '535 patent.

75. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '535 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '535 patent.

76. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '535 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '535 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

77. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

78. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

79. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT VII
PATENT INFRINGEMENT OF U.S. PATENT NO. 8,266,515

80. The allegations of paragraphs 1-79 are incorporated as though fully set forth herein.

81. Upon information and belief, Defendant had knowledge of the '515 patent at least as of the filing of this Complaint.

82. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '515 patent.

83. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '515 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '515 patent.

84. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '515 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '515 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

85. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

86. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

87. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Yodlee prays for relief as follows:

(a) judgment that Defendant Plaid has infringed and is infringing the '077 patent, directly, contributorily, and by inducement;

(b) judgment that Defendant Plaid has infringed and is infringing the '783 patent, directly, contributorily, and by inducement;

(c) judgment that Defendant Plaid has infringed and is infringing the '451 patent, directly, contributorily, and by inducement;

(d) judgment that Defendant Plaid has infringed and is infringing the '548 patent, directly, contributorily, and by inducement;

(e) judgment that Defendant Plaid has infringed and is infringing the '520 patent, directly, contributorily, and by inducement;

(f) judgment that Defendant Plaid has infringed and is infringing the '535 patent, directly, contributorily, and by inducement;

(g) judgment that Defendant Plaid has infringed and is infringing the '515 patent, directly, contributorily, and by inducement;

(h) judgment that Defendant's infringement of the '077, '783, '451, '548, '520, '535, and '515 patents was and continues to be willful;

(i) a preliminary injunction and a permanent injunction preventing Defendant and its officers, directors, agents, servants, employees, attorneys, licensees, successors, assigns, and customers, and those in active concert or participation with any of them, from making, using, offering to sell, or selling in the United States or importing into the United States any software or services that infringe any claim of the '077, '783, '451, '548, '520, '535, and '515 patents, or contributing to or inducing the same by others;

(j) judgment against Defendant for money damages sufficient to compensate Yodlee for Defendant's infringement of the '077, '783, '451, '548, '520, '535, and '515 patents in an amount to be determined at trial;

(k) that any such money judgment be trebled as a result of the willful nature of Defendant's infringement;

(l) an accounting for infringing sales not presented at trial and an award by the Court of additional damages for any such infringing sales;

(m) that this Court declare this case an exceptional case pursuant to 35 U.S.C. § 285;

(n) costs and reasonable attorneys' fees incurred in connection with this action pursuant to 35 U.S.C § 285; and

(o) such other and further relief as this Court finds just and proper.

DEMAND FOR JURY TRIAL

Plaintiff Yodlee requests trial by jury on all issues so triable.

Dated: December 1, 2014

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Exhibit A

US006199077B1

(12) **United States Patent**
Inala et al.

(10) **Patent No.: US 6,199,077 B1**
(45) **Date of Patent: Mar. 6, 2001**

(54) **SERVER-SIDE WEB SUMMARY GENERATION AND PRESENTATION**

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(73) Assignee: **Yodlee.com, Inc.**, Sunnyvale, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/323,598**

(22) Filed: **Jun. 1, 1999**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/208,740, filed on Dec. 8, 1998.

(51) **Int. Cl.**[7] **G06F 17/21**

(52) **U.S. Cl.** **707/501**; 709/202; 709/218; 713/202; 704/1

(58) **Field of Search** 707/501, 513, 707/1, 3, 4, 5, 9–10; 713/201–202; 705/26–27; 709/202, 218; 704/1

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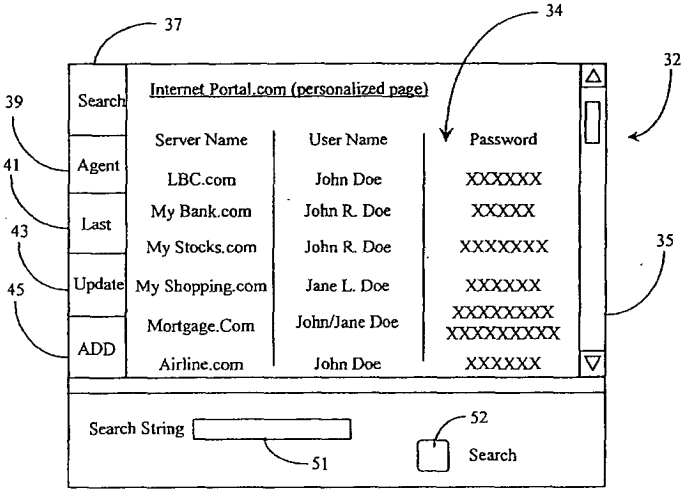
Primary Examiner—Joseph H. Feild
(74) *Attorney, Agent, or Firm*—Donald R. Boys; Central Coast Patent Agency

(57) **ABSTRACT**

A portal server includes a software agent configured to do summary searches for subscribers based on Internet destinations provided by the subscribers, to retrieve information from such destinations based on pre-programmed site information, and to download the summary information to the subscriber. The destinations and the nature of the information to be retrieved is pre-programmed. There is further a configuration and intitiation interface for a subscriber to set up and start a summary search. In some cases the summary searches are configured for individual clients as templates stored and retrieved at the Internet-connected server. Also in some cases retrieved information is immediately sent to the subscriber, and in other situations such information is saved at the portal to be retrieved by a subscriber at a later time. In preferred embodiments of the invention autologins are accomplished for a subscriber at Internet destinations by use of pre-stored configuration information.

12 Claims, 6 Drawing Sheets



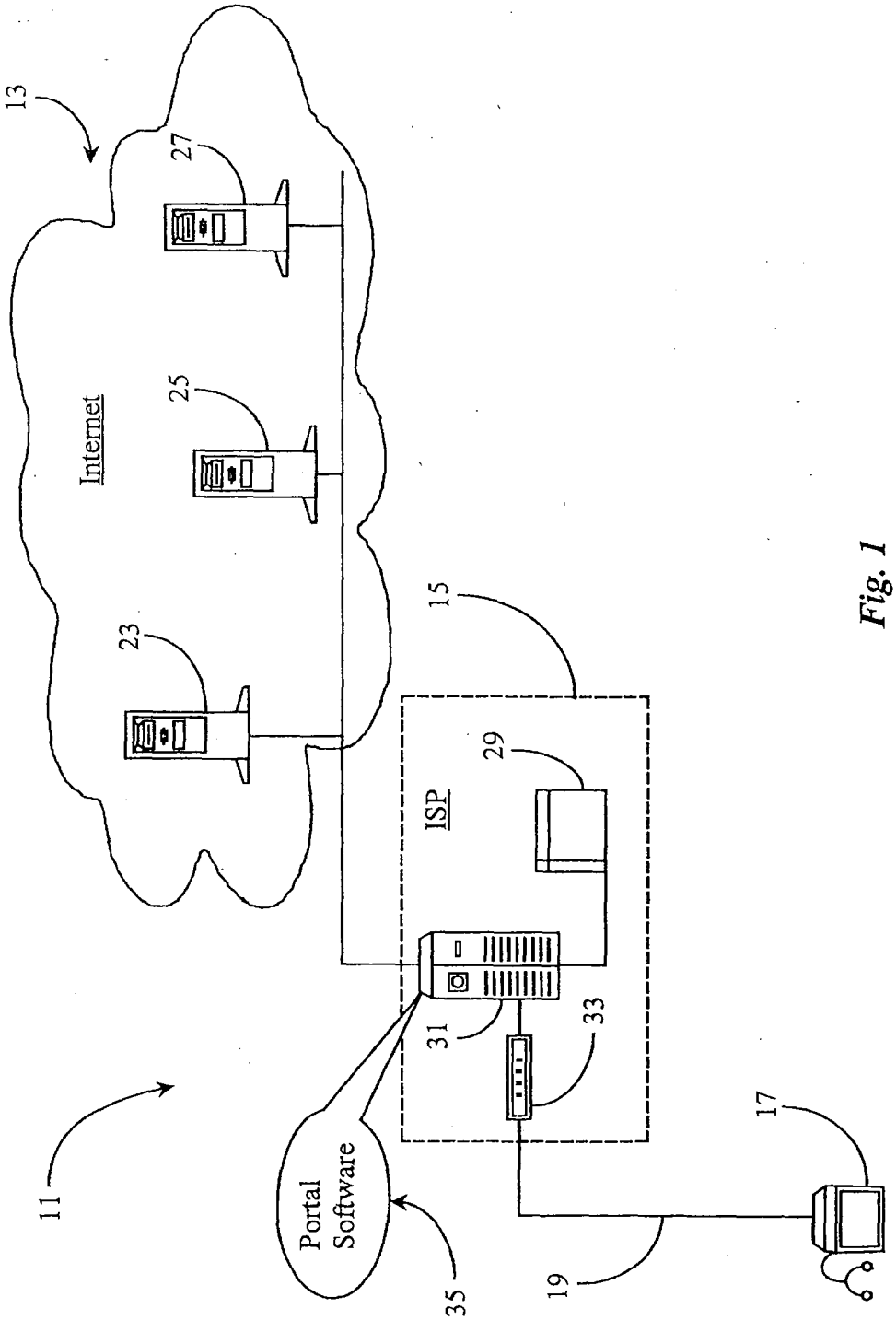


Fig. 1

Ex. 1002 Page 29

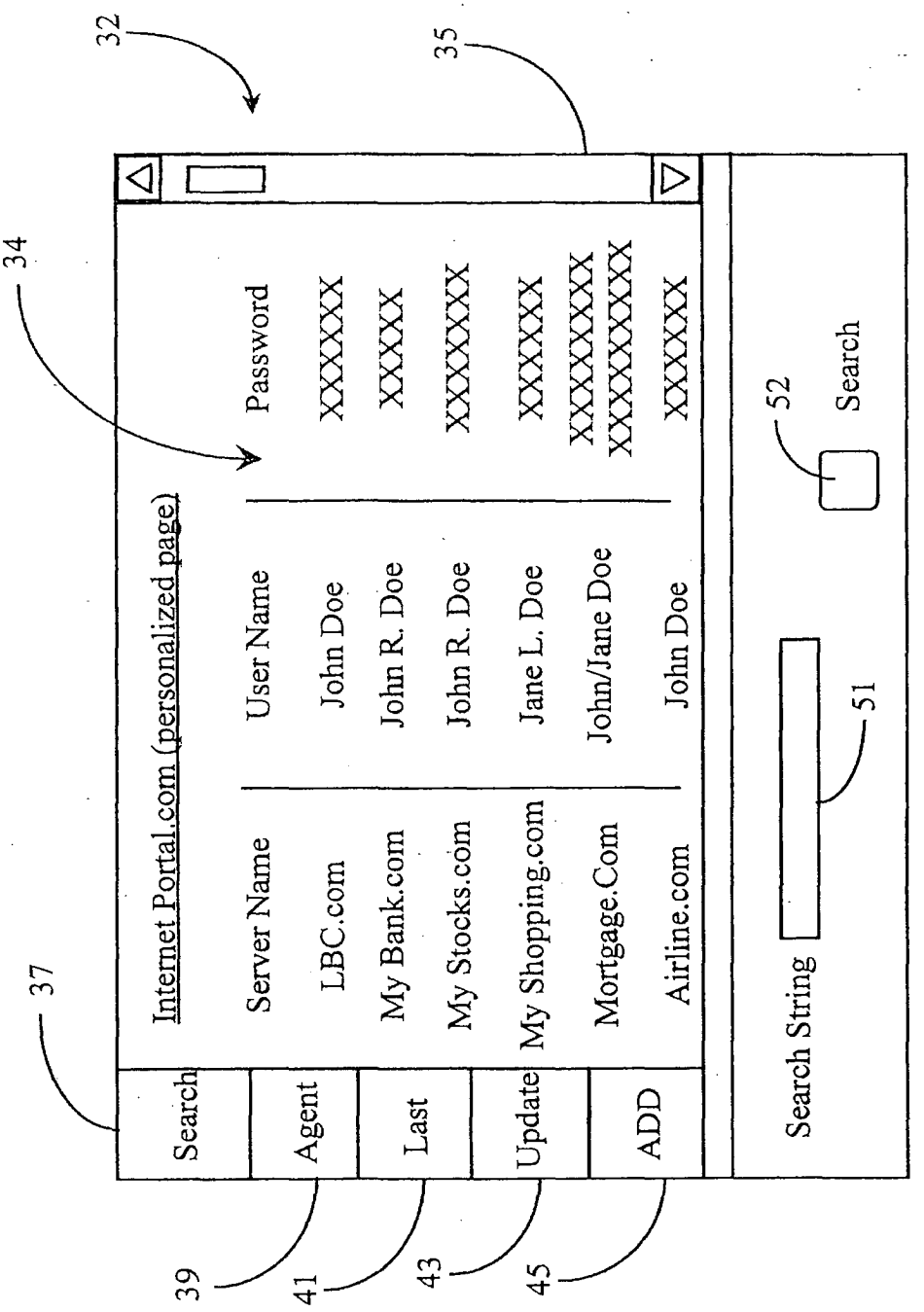


Fig. 2

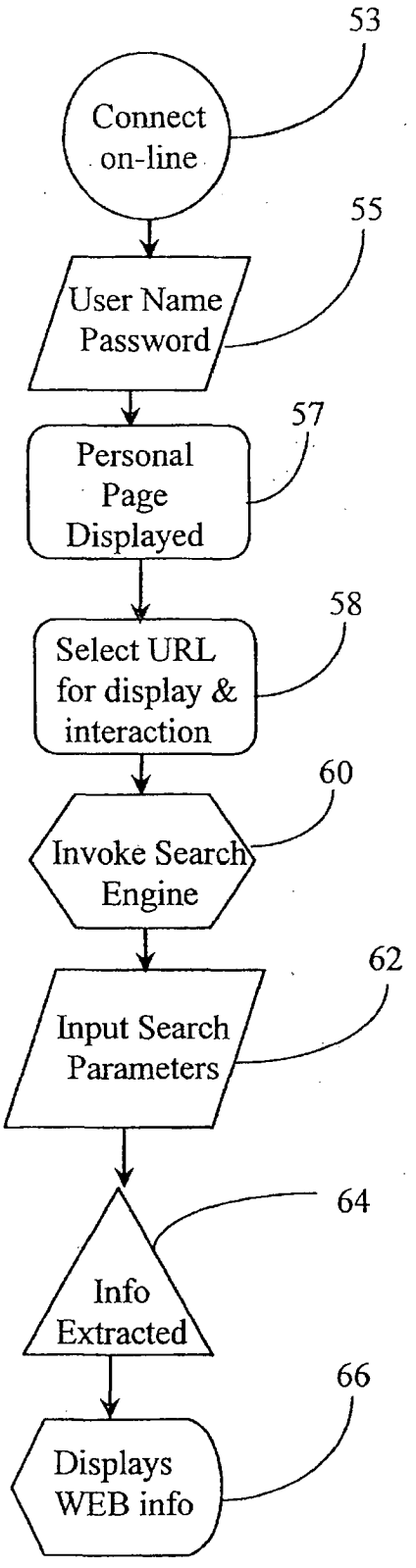

53
Connect on-line
55
User Name Password
57
Personal Page Displayed
58
Select URL for display & interaction
60
Invoke Search Engine
62
Input Search Parameters
64
Info Extracted
66
Displays WEB info

Fig. 3

Ex. 1002 Page 31

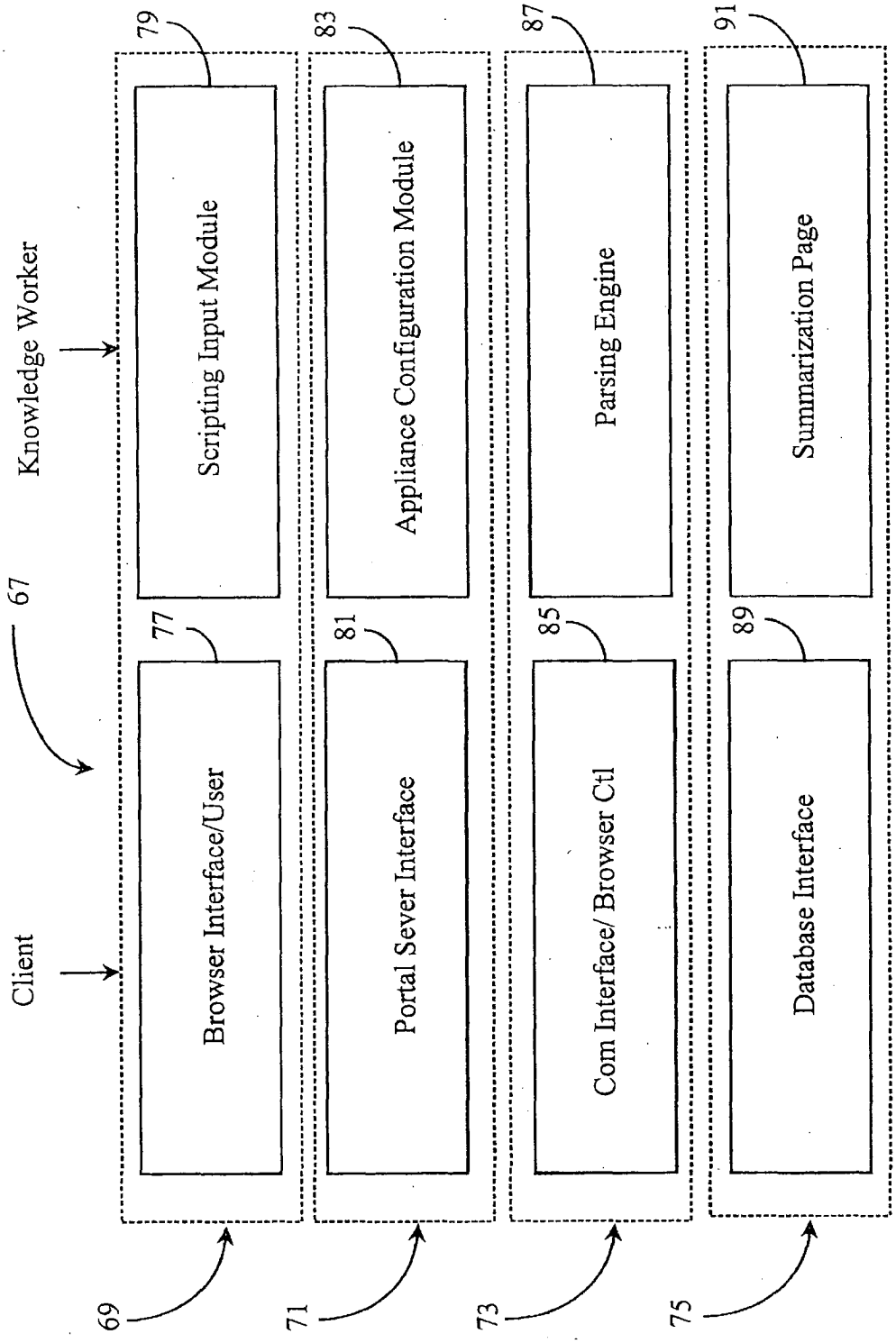


Fig. 4

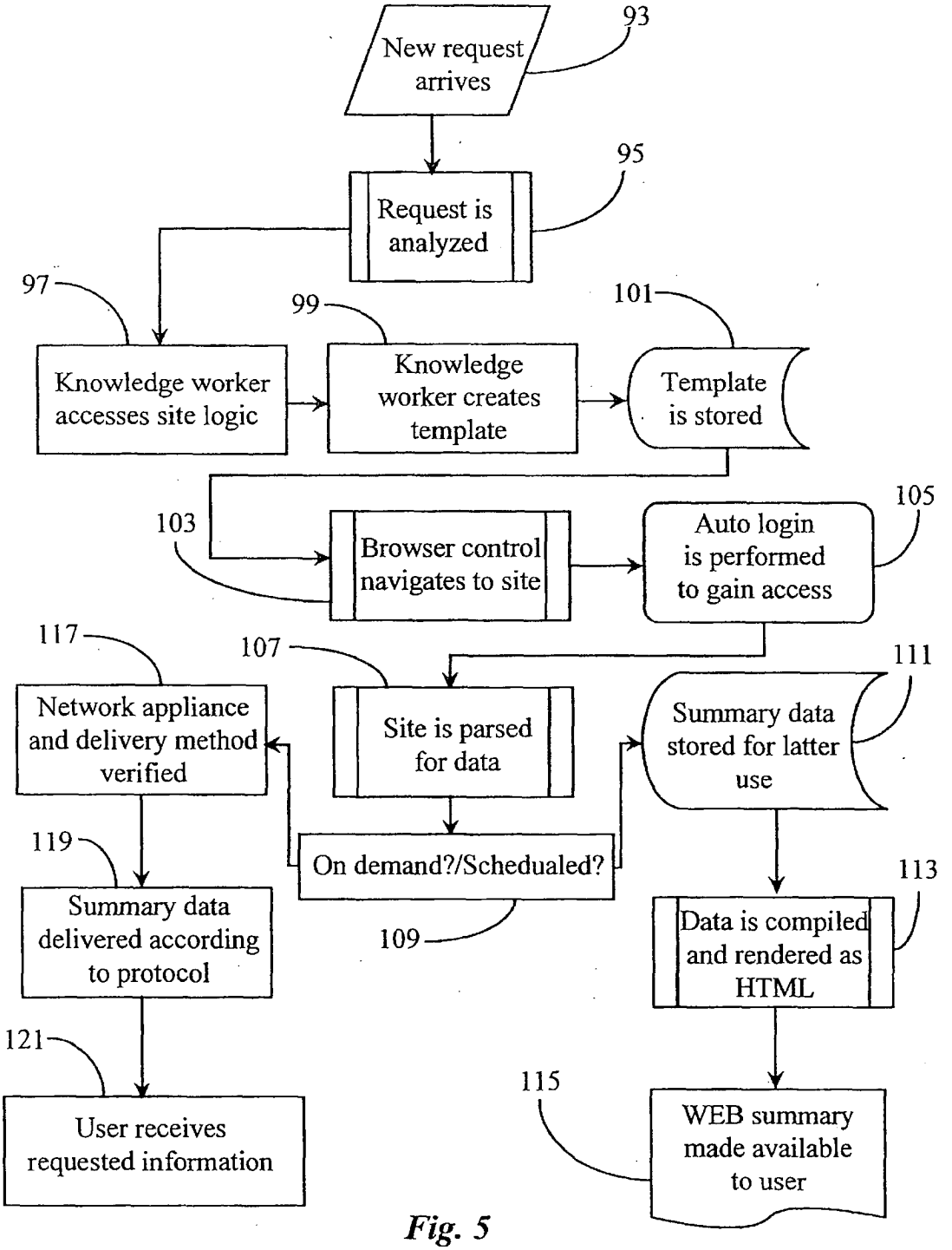

New request arrives
93
Request is analyzed
95
97
Knowledge worker accesses site logic
99
Knowledge worker creates template
101
Template is stored
103
Browser control navigates to site
Auto login is performed to gain access
105
117
Network appliance and delivery method verified
107
Site is parsed for data
111
Summary data stored for latter use
119
Summary data delivered according to protocol
On demand?/Schedualed?
109
113
Data is compiled and rendered as HTML
121
User receives requested information
115
WEB summary made available to user

Fig. 5

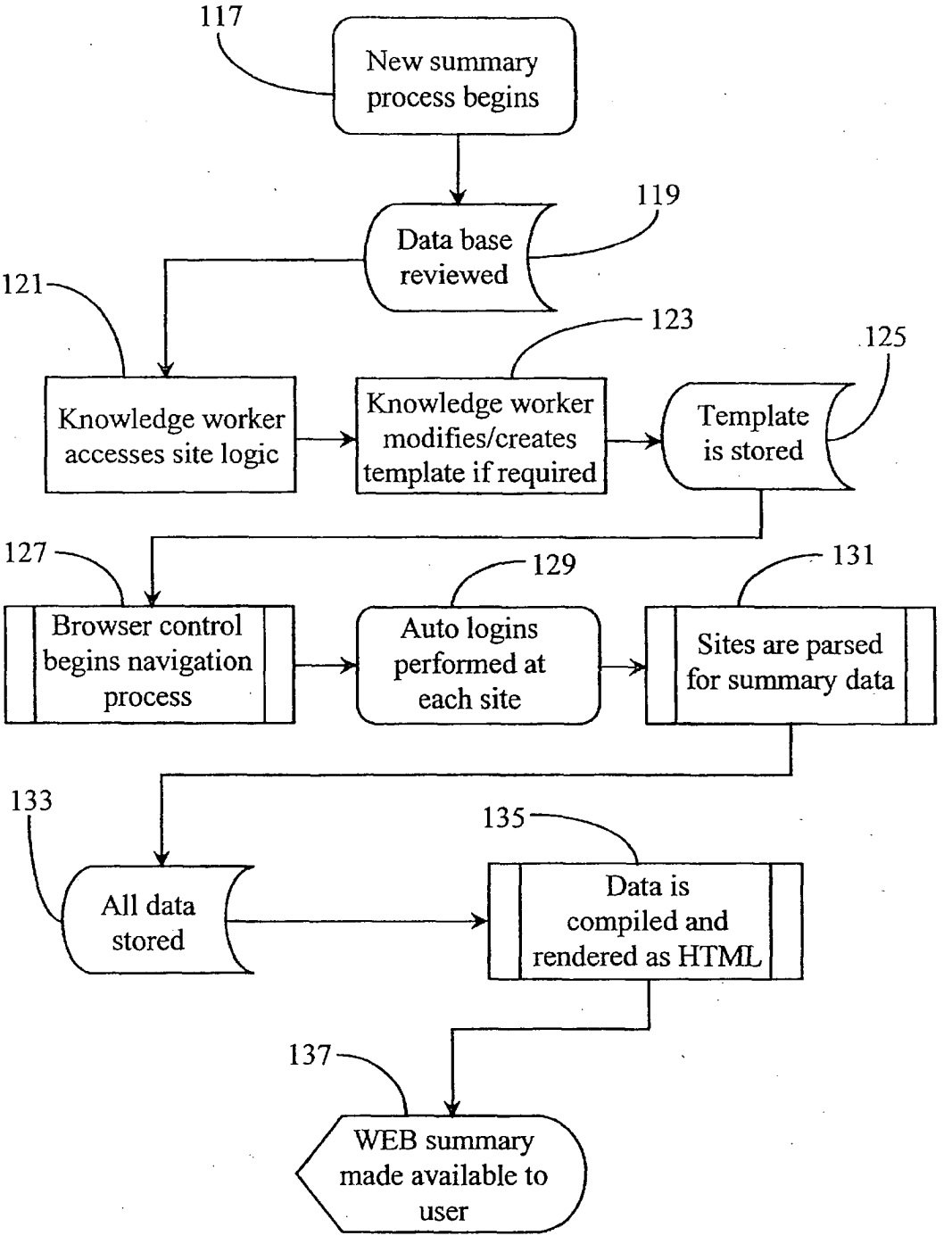

117
New summary process begins
119
Data base reviewed
121
123
125
Knowledge worker accesses site logic
Knowledge worker modifies/creates template if required
Template is stored
127
129
131
Browser control begins navigation process
Auto logins performed at each site
Sites are parsed for summary data
133
135
All data stored
Data is compiled and rendered as HTML
137
WEB summary made available to user

Fig. 6

SERVER-SIDE WEB SUMMARY GENERATION AND PRESENTATION

CROSS-REFERENCE TO RELATED DOCUMENTS

The present invention is a continuation in part (CIP) to patent application Ser. No. 09/208,740 entitled "Method and Apparatus for Providing and Maintaining a User-Interactive Portal System Accessible via Internet or other Switched-Packet-Network" filed on Dec. 8, 1998,pending, disclosure of which is incorporated herein in its entirety herein by reference.

FIELD OF THE INVENTION

The present invention is in the field of Internet navigation including various communication means and connection technologies and pertains more particularly to methods and apparatus, including software, for gathering summary information from users or enterprise-selected WEB sites and presenting the information as HTML to the user using either a push or pull technology.

BACKGROUND OF THE INVENTION

The information network known as the World Wide Web (WWW), which is a subset of the well-known Internet, is arguably the most complete source of publicly accessible information available. Anyone with a suitable Internet appliance such as a personal computer with a standard Internet connection may access (go on-line) and navigate to information pages (termed web pages) stored on Internet-connected servers for the purpose of garnering information and initiating transactions with hosts of such servers and pages.

Many companies offer various subscription services accessible via the Internet. For example, many people now do their banking, stock trading, shopping, and so forth from the comfort of their own homes via Internet access. Typically, a user, through subscription, has access to personalized and secure WEB pages for such functions. By typing in a user name and a password or other personal identification code, a user may obtain information, initiate transactions, buy stock, and accomplish a myriad of other tasks.

One problem that is encountered by an individual who has several or many such subscriptions to Internet-brokered services is that there are invariably many passwords and/or log-in codes to be used. Often a same password or code cannot be used for every service, as the password or code may already be taken by another user. A user may not wish to supply a code unique to the user such as perhaps a social security number because of security issues, including quality of security, that may vary from service to service. Additionally, many users at their own volition may choose different passwords for different sites so as to have increased security, which in fact also increases the number of passwords a user may have.

Another issue that can plague a user who has many passworded subscriptions is the fact that they must book-mark many WEB pages in a computer cache so that they may quickly find and access the various services. For example, in order to reserve and pay for airline travel, a user must connect to the Internet, go to his/her book-marks file and select an airline page. The user then has to enter a user name and password, and follow on-screen instructions once the page is delivered. If the user wishes to purchase tickets from the WEB site, and wishes to transfer funds from an on-line banking service, the user must also look for and select the personal bank or account page to initiate a funds transfer for the tickets. Different user names and passwords may be required to access these other pages, and things get quite complicated.

Although this preceding example is merely exemplary, it is generally known that much work related to finding WEB pages, logging in with passwords, and the like is required to successfully do business on the WEB.

A service known to the inventor and described in the related case listed under the cross-reference to related documents section provides a WEB service that allows a user to store all of his password protected pages in one location such that browsing and garnering information from them is much simplified. A feature of the above service allows a user to program certain tasks into the system such that requested tasks are executed by an agent (software) based on user instruction. The service stores user password and log-in information and uses the information to log-in to the user's sites, thus enabling the user to navigate without having to manually input log-in or password codes to gain access to the links.

The above-described service uses a server to present a user-personalized application that may be displayed as an interactive home page that contains all of his listed sites (hyperlinks) for easy navigation. The application lists the user's URL's in the form of hyperlinks such that a user may click on a hyperlink and navigate to the page wherein login, if required, is automatic, and transparent to the user.

The application described above also includes a software agent that may be programmed to perform scheduled tasks for the user including returning specific summaries and updates about user-account pages. A search function is provided and adapted to cooperate with the software agent to search user-entered URL's for specific content if such pages are cached somewhere in their presentable form such as at the portal server, or on the client's machine.

In addition to the features described above, it is desirable that the software agent in conjunction with the search function be enabled to navigate to any URL or group of URL's, provided as input by a user or otherwise deemed appropriate by the service provider, for the purpose of providing summary information regarding updated content for each URL, which may be presented as an HTML information-page to the user.

What is clearly needed is a method and apparatus that can independently navigate to user-supplied or known URL's, login with the appropriate password information at each URL (if required), and return requested summary information to a user in the form of a human and machine-readable HTML document. Such a system would provide an effective summarization service wherein important information may be presented to a user without requiring that the user invoke hyperlinks at his personal portal home page.

SUMMARY OF THE INVENTION

In a preferred embodiment of the present invention an Internet Portal is provided, comprising an Internet-connected server; and a portal software executing on the server, including a summary software agent. The Portal maintains a list of Internet destinations specific for a subscriber, and the summary software agent accesses the Internet destinations, retrieves information according to pre-programmed criteria, and summarizes the retrieved information for delivery to the subscriber.

In one embodiment the Portal further comprises a configuration and intitiation interface for a subscriber to set up and start a summary search, and summary searches may be configured for individual clients as templates stored and retrieved at the Internet-connected server. In some cases summary information is stored to be later downloaded at request of the subscriber, and in others the information is immediately pushed to the client. Also in some embodiments autologins are performed for the subscriber at each Internet site according to a data stored for the subscriber at the Portal.

Methods for practicing the invention in several embodiments are provided as well in the descriptions that follow, and for the first time a system is enabled allowing subscribers to quickly access multiple WEB sites without lengthy log-in procedures, and to also summarize and download the data resulting from a summary search.

BRIEF DESCRIPTION OF THE DRAWINGS FIGURES

FIG. **1** is an overview of an Internet portal system and network according to an embodiment of the present invention.

FIG. **2** is an exemplary plan view of a personalized Portal home page application as it may be seen on a display monitor according to an embodiment of the present invention.

FIG. **3** is a flow diagram illustrating user interaction with the Internet portal of FIG. **1**.

FIG. **4** is a block diagram illustrating a summarization software agent and capabilities thereof according to an embodiment of the present invention.

FIG. **5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** operating in a user-defined mode.

FIG. **6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** in a User-independent smart mode with minimum user input.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to a preferred embodiment of the present invention, a unique Internet portal is provided and adapted to provide unique services to users who have obtained access via an Internet or other network connection from an Internet-capable appliance. Such an interface provides users with a method for storing many personal WEB pages and further provides search function and certain task-performing functions. The methods and apparatus of the present invention are taught in enabling detail below.

FIG. **1** is an overview of an Internet portal system **11** and Internet network **13** according to an embodiment of the present invention. Portal system **11**, in this embodiment, operates as an ISP in addition to a unique network portal, but may, in other embodiments be implemented as a stand-alone Internet server. In yet other embodiments the service and apparatus described herein may also be provided by such as a search and listing service (AltaVista™, Yahoo™) or by any other enterprise hosting a WEB-connected server.

Internet **13** is representative of a preferred use of the present invention, but should not be considered limiting, as the invention could apply in other networks and combinations of networks.

ISP **15** in this embodiment comprises a server **31**, a modem bank **33**, represented here by a single modem, and a mass storage repository **29** for storing digital data. The modem bank is a convenience, as connection to the server could be by another type of network link. ISP **15**, as is typical in the art, provides Internet access services for individual subscribers. In addition to well-known Internet access services, ISP **15** also provides a unique subscription service as an Internet portal for the purpose of storing many WEB pages or destinations along with any passwords and or personal codes associated with those pages, in a manner described in more detail below. This unique portal service is provided by execution of Portal Software **35**, which is termed by the inventors the Password-All suite. The software of the invention is referred to herein both as the Portal Software, and as the Password-all software suite. Also, in much of the description below, the apparatus of the invention is referred to by the Password-All terminology, such as the *Password-All Server or Password-All Portal.*

ISP **15** is connected to Internet **13** as shown. Other equipment known in the art to be present and connected to a network such as Internet **13**, for example, IP data routers, data switches, gateway routers, and the like, are not illustrated here but may be assumed to be present. Access to ISP **15** is through a connection-oriented telephone system as is known in the art, or through any other Internet/WEB access connection, such as through a cable modem, special network connection (e.g. T1), ISDN, and so forth. Such connection is illustrated via access line **19** from Internet appliance **17** through modem bank **33**.

In a preferred embodiment a user has access to Internet Password-All Portal services by a user name and password as is well known in the art, which provides an individualized WEB page to the subscriber. In another embodiment wherein a user has other individuals that use his or her Internet account, then an additional password or code unique to the user may be required before access to portal **31** is granted. Such personalized Portal WEB pages may be stored in repository **29**, which may be any convenient form of mass storage.

Three Internet servers **23**, **25**, and **27**, are shown in Internet **13**, and represent Internet servers hosted by various enterprises and subscribed to by a user operating appliance **17**. For example, server **23** may be a bank server wherein interactive on-line banking and account managing may be performed. Server **25** may be an investment server wherein investment accounts may be created and managed. Server **27** may be an airline or travel server wherein flights may be booked, tickets may be purchased, and so on. In this example, all three servers are secure servers requiring user ID and password for access, but the invention is not necessarily limited to just secure services.

In a preferred embodiment of the present invention, a subscribing user operating an Internet-capable appliance, such as appliance **17**, connects to Password-All Portal system **11** hosted by ISP **15**, and thereby gains access to a personalized, interactive WEB page, which in turn provides access to any one of a number of servers on Internet **13** such as servers **23**, **25**, and **27**, without being required to enter additional passwords or codes. In a preferred embodiment the software that enables this service is termed Password-All by the inventors. Password-All may be considered to be a software suite executing on the unique server, and in some instances also on the user's station (client). Additional interactivity provided by portal software **35** allows a connected user to search his listed pages for information associated with keywords, text strings, or the like, and allows a user to program user-defined tasks involving access and interaction with one or more Internet-connected servers such

as servers 23, 25, and 27 according to a pre-defined time schedule. These functions are taught in enabling detail below.

FIG. 2 is an illustration of a personalized portal page as may be seen on a display monitor according to an embodiment of the present invention, provided by Password-All Portal software 35 executing on server 31, in response to secure access by a subscriber. Page 32 presents an interactive listing 34 of user-subscribed or member WEB pages, identified in this example by URL, but which may also be identified by any convenient pseudonym, preferably descriptive, along with user name and typically encrypted password information for each page. Listed in a first column under destination, are exemplary destinations LBC.com, My Bank.com, My Stocks.com, My shopping.com, Mortgage.com, and Airline.com. These are but a few of many exemplary destinations that may be present and listed as such on page 33. In order to view additional listings listed but not immediately viewable from within application 33, a scroll bar 35 is provided and adapted to allow a user to scroll up or down the list to enable viewing as is known in the art.

Items listed in list 34 in this example may be considered destinations on such as servers 23, 25, and 27 of FIG. 1. Typically the URL associated with an item on this list will not take a user to a server, per se, but to a page stored on a server. User names and password data associated with each item in list 34 are illustrated in respective columns labeled user name, and password, to the right of the column labeled destination. Each listing, or at least a portion of each listing, is a hyperlink invoking, when selected, the URL to that destination. In some instances a particular service may have more than one associated URL. For example, My Bank.com may have more than one URL associated for such as different accounts or businesses associated also with a single subscriber. In this case there may be a sub-listing for different destinations associated with a single higher-level listing. This expedient is not shown, but given this teaching the mechanism will be apparent to those with skill in the art.

In some embodiments one page 33 may be shared by more than one user, such as a husband and wife sharing a common account and subscription. An instance of this is illustrated herein with respect to the server labeled Mortgage.com wherein both a John and a Jane Doe are listed together under the column labeled user name. In another embodiment, a network of individuals, perhaps business owners, authorized co-workers, investment parties, or the like may share one application. In this way, system 11 may be adapted for private individuals as well as business uses.

After gaining access to application 33 which is served via Internet portal server 31 of FIG. 1, a user may scroll, highlight, and select any URL in his or her list 34 for the purpose of navigation to that particular destination for further interaction. Application 33 already has each password and user name listed for each URL. It is not necessary, however, that the password and user name be displayed for a user or users. These may well be stored transparently in a user's profile, and invoked as needed as a user makes selections. Therefore, a user is spared the need of entering passwords and user names for any destinations enabled by list 34. Of course, each list 34 is built, configured and maintained by a subscribing user or users, and an editing facility is also provided wherein a user may edit and update listings, including changing URL's adding and deleting listings, and the like.

In another aspect of the invention new listings for a user's profile, such as a new passthrough to a bank or other enterprise page, may be added semi-automatically as follows: Typically, when a user opens a new account with an enterprise through interaction with a WEB page hosted by the enterprise, the user is required to provide certain information, which will typically include such as the user's ID, address, e-mail account, and so forth, and typically a new user name and password to access the account. In this process the user will be interacting with the enterprise's page from his/her browser. A Password-All plug-in is provided wherein, after entering the required information for the new enterprise, the user may activate a pre-determined signal (right click, key stroke, etc.), and the Password-All suite will then enter a new passthrough in the user's Password. All profile at the Password-All Portal server.

In a related method for new entries, the enterprise hosting the Password-All Portal may, by agreement with other enterprises, provide log-in and sign-up services at the Password-All Portal, with most action transparent to the user. For example, there may be, at the Password-All Portal, a selectable browser list of cooperating enterprises, such as banks, security services, and the like, and a user having a Password-All Portal subscription and profile may select among such cooperating enterprises and open new accounts, which will simultaneously and automatically be added to the Password-All Portal page for the user and to the server hosted by the cooperating enterprise. There may be some interactivity required for different accounts, but in the main, much information from the user's profile may be used directly without being re-entered.

The inventors have anticipated that many potential users may well be suspicious of providing passwords and user names to an enterprise hosting a Password-All Portal Server executing a service like Password-All according to embodiments of the present invention. To accommodate this problem, in preferred embodiments, it is not necessary that the user provide the cleartext password to Password. All. Instead, an encrypted version of each password is provided. When a user links to his passthrough page in Password-All at the Password-All Portal server, when he/she invokes a hyperlink, the encrypted password is returned to the user's system, which then, by virtue of the kept encryption key or master password, invokes the true and necessary password for connection to the selected destination. It is thus not necessary that cleartext passwords be stored at the Password-All Portal server, where they may be vulnerable to attack from outside sources, or to perceived misuse in other ways as well.

In a related safety measure, in a preferred embodiment of the invention, a user's complete profile is never stored on a single server, but is distributed over two or more, preferably more, servers, so any problem with any one server will minimize the overall effect for any particular user.

Password-All, as described above, allows a user to access a complete list of the user's usual cyberspace destinations, complete with necessary log-on data, stored in an encrypted fashion, so a user may simply select a destination (a hyperlink) in the Password-All list, and the user's browser then invokes the URL for the selected destination. In an added feature, Password-All may display banner ads and other types of advertisement during the navigation time between a hyperlink being invoked and the time the destination WEB page is displayed.

In yet another embodiment of the invention, a user/subscriber need not access the Password-All page to enjoy the advantages of the unique features provided. In this variation, a Plug-In is provided for the subscriber's WEB

browser. If the subscriber navigates by use of the local browser to a WEB page requiring a secure log-in, such as his/her on-line banking destination, when the subscriber is presented with an input window for ID and Password, the plug in may be activated by a predetermined user input, such as a hot key or right click of the mouse device. The plug-in then accesses, transparently, the Password-All page (which may be cached at the client), and automatically accesses and provides the needed data for log-on.

In yet another aspect of the invention a search option **37** allows a user to search list **34** for specific URL's based on typed input such as keywords or the like. In some cases, the number of URL's stored in list **34** can be extensive making a search function such as function **37** an attractive option. A criteria dialog box **51** illustrated as logically separated from and below list **34** is provided and adapted to accept input for search option **37** as is known in the art. In one embodiment, search option **37** may bring up a second window wherein a dialog box such as box **51** could be located.

In another aspect of the invention the search function may also be configured in a window invoked from window **33**, and caused to search all or selected ones of listed destinations, and to return results in a manner that may be, at least to some extent, configured by a user. For example, a dialog box may be presented wherein a user may enter a search criteria, and select among all of the listed destinations. The search will then be access each of the selected destinations in turn, and the result may be presented to the user as each instance of the criteria is found, or results may be listed in a manner to be accessed after the search.

Preferably the search function is a part of the Password-All Portal software, available for all users, and may be accessed by hyperlinks in user's personal pages. In some embodiments users may create highly individualized search functions that may be stored in a manner to be usable only by the user who creates such a function.

In many aspects of the present invention, knowledge of specific WEB pages, and certain types of WEB pages, is highly desirable. In many embodiments characteristics of destination WEB pages are researched by persons (facilitators) maintaining and enhancing Password-All Portal software **35**, and many characteristics may be provided in configuration modules for users to accomplish specific tasks. In most cases these characteristics are invoked and incorporated transparent to the user.

In yet another aspect of the present invention, the Password-All suite is structured to provide periodic reports to a user, in a manner to be structured and timed by the user, through the user's profile. For example, reports of changes in account balances in bank accounts, stock purchases, stock values, total airline travel purchases, frequent-flier miles, and the like may be summarized and provided to the users in many different ways. Because the Password-All Portal server with the Password-All software site handles a broad variety of transactional traffic for a user, there is an opportunity to summarize and collect and process statistics in many useful ways. In preferred embodiments of the invention such reports may be furnished and implemented in a number of different ways, including being displayed on the user's secure personal WEB page on the Password-All Portal.

In addition to the ability of performing tasks as described above, task results including reports, and hard documents such as airline tickets may be sent over the Internet or other data packet-networks to user-defined destinations such as fax machines, connected computer nodes, e-mail servers, and other Internet-connected appliances. All tasks may be set-up and caused to run according to user-defined schedules while the user is doing something else or is otherwise not engaged with the scheduled task.

In another embodiment of the present invention, recognizing the increasing use of the Internet for fiscal transactions, such as purchasing goods and services, a facility is provided in a user's profile to automatically track transactions made at various destinations, and to authorize payment either on a transaction-by-transaction basis, or after a session, using access to the user's bank accounts, all of which may be pre-programmed and authorized by the user.

Other functions or options illustrated as part of application **35** include a last URL option **41**, an update function **43**, and an add function **45**. Function **41** allows a user to immediately navigate to a last visited URL. Update function **43** provides a means of updating URL's for content and new address. An add function enables a user to add additional URL's to list **34**. Similarly, function **45** may also provide a means to delete entries. Other ways to add accounts are described above. It should be noted that the services provided by the unique Password-All Portal in embodiments of the present invention, and by the Password-All software suite are not limited to destinations requiring passwords and user names. The Password-All Portal and software in many embodiments may also be used to manage all of a user's bookmarks, including editing of bookmarks and the like. In this aspect, bookmarks will typically be presented in indexed, grouped, and hierarchical ways.

There are editing features provided with Password-All for adding, acquiring, deleting, and otherwise managing bookmarks. As a convenience, in many embodiments of the invention, bookmarks may be downloaded from a user's Password-All site, and loaded onto the same user's local browser. In this manner, additions and improvements in the bookmark set for a user may be used without the necessity of going to Password-All. Further, bookmarks may be uploaded from a user's local PC to his/her home page on the Password-All site by use of one or more Password-All plug-ins.

It will be apparent to the skilled artisan, given the teaching herein, that the functionality provided in various embodiments of the invention is especially applicable to Internet-capable appliances that may be limited in input capability. For example, a set-top box in a WEB TV application may well be without a keyboard for entering IDs and Passwords and the like. In practice of the present invention keyboard entry is minimized or eliminated. The same comments apply to many other sorts of Internet appliances.

In preferred embodiments of the invention, once a subscriber-user is in Password-All, only an ability to point-and-click is needed for all navigation. To get into the Password-All site, using a limited apparatus, such as an appliance without a keyboard or keypad, a Smartcard or embedded password may be used, or some other type of authentication.

It will be apparent to one with skill in the art that an interactive application such as application **33** may be provided in a form other than a WEB page without departing from the spirit and scope of the present invention. For example, an application such as application **33** may be provided as a downloadable module or program that may be set-up and configured off-line and made operational when on-line.

FIG. **3** is a flow diagram illustrating user interaction with the Internet Password-All Portal of FIG. **1**. The following

process steps illustrated, according to an embodiment of the present invention, are intended to illustrate exemplary user-steps and automated software processes that may be initiated and invoked during interaction with an Internet portal of the present invention such as portal **31** of FIG. **1**. In step **53** a user connects to the Internet or another previously described switched-packet network via a compatible appliance such as Internet appliance **17** of FIG. **1**.

At step **55**, a user enters a user-name and password, which, in one embodiment, may simply be his ISP user name and password. In another embodiment, a second password or code would be required to access an Internet portal such as portal server **31** of FIG. **1** after logging onto the Internet through the ISP. In some cases, having a special arrangement with the ISP, there may be one password for both Internet access through the ISP and for Password-All. At step **57** a personal WEB page such as page **32** of FIG. **2** is displayed via Internet portal server **31**. At minimum, the personalized WEB page will contain all user configured URL's, and may also be enhanced by a search function, among other possibilities.

In step **58** a user will, minimally, select a URL from his or her bookmarked destinations, and as is known by hyperlink technology, the transparent URL will be invoked, and the user will navigate to that destination for the purpose of normal user interaction. In this action, the Password-All Portal software transparently logs the user on to the destination page, if such log-on is needed.

At step **60** the user invokes a search engine by clicking on an option such as described option **37** of FIG. **2**. At step **62**, the user inputs search parameters into a provided text field such as text field **51** of FIG. **2**. After inputting such parameters, the user starts the search by a button such as button **52**. The search engine extracts information in step **64**. Such information may be, in one option, of the form of URL's fitting the description provided by search parameters. A searched list of URL's may be presented in a separate generated page in step **66** after which a user may select which URL to navigate to. In an optional search function, the user may provide search criteria, and search any or all of the possible destinations for the criteria.

In another embodiment wherein WEB pages are cached in their presentable form, information extracted in step **64** may include any information contained in any of the stored pages such as text, pictures, interactive content, or the like. In this case, one displayed result page may provide generated links to search results that include the URL associated with the results. Perhaps by clicking on a text or graphic result, the associated WEB page will be displayed for the user with the result highlighted and in view with regards to the display window.

Enhanced Agent for WEB Summaries

In another aspect of the present invention, a software agent, termed a gatherer by the inventors, is adapted to gather and return summary information about URL's according to user request or enterprise discretion. This is accomplished in embodiments of the present invention by a unique scripting and language parsing method provided by the inventor wherein human knowledge workers associated with the service provide written scripts to such a gatherer according to subscriber or enterprise directives. Such a software gatherer, and capabilities thereof, is described in enabling detail below.

Referring now to FIG. **1**, there is illustrated an exemplary architecture representing a portal service-network which, in this case is hosted by ISP **15**. Portal software **35** in this embodiment executes on portal server **31** set-up at the ISP location. Mass repository **29** is used for storing subscriber information such as passwords, login names, and the like. Internet servers **23**, **25**, and **27** represent servers that are adapted to serve WEB pages of enterprises patronized by a subscriber to the portal service such as one operating Internet appliance **17**.

The main purpose of portal software **35** as described above with reference to FIG. **2**, is to provide an interactive application that lists all of the subscriber's WEB sites in the form of hyperlinks. When a user invokes a hyperlink from his personal list, software **35** uses the subscriber's personal information to provide an automatic and transparent login function for the subscriber while jumping the subscriber to the subject destination.

Referring again to FIG. **2**, an interactive list **34** containing user-entered hyperlinks and a set of interactive tools is displayed to a subscriber by portal software **35** of FIG. **1**. One of the tools available to a subscriber interacting with list **34** is agent (software) **39**. Agent **39** may be programmed to perform certain tasks such as obtaining account information, executing simple transactions, returning user-requested notification information about upcoming events, and so on. Search function **37** and update function **43** may be integrated with agent **39** as required to aid in functionality.

It is described in the above disclosure that agent **39** may, in some embodiments, search for and return certain summary information contained on user-subscribed WEB pages, such as account summaries, order tracking information and certain other information according to user-defined parameters. This feature may be programmed by a user to work on a periodic time schedule, or on demand.

In the following disclosure, enhancements are provided to agent **39**. Such enhancements, described in detail below, may be integrated into agent **39** of portal software **35** (FIGS. **1** and **2**); and may be provided as a separate agent or gatherer to run with portal software **35**; or may, in some embodiments, be provided as a standalone service that is separate from portal software **35**.

FIG. **4** is a block diagram illustrating a summarization software agent **67** and various capabilities and layers thereof according to an embodiment of the present invention. Summarization agent **67**, hereinafter termed gatherer **67**, is a programmable and interactive software application adapted to run on a network server. Gatherer **67** may, in one embodiment, be integrated with portal software **35** of FIG. **1** and be provided in the form of a software module separate from agent **39** (FIG. **2**). In another embodiment, gatherer **67** may be a part of agent **39** as an enhancement to the function of that agent as previously described. In still another embodiment, gatherer **67** may be provided as a parent or client-side application controlled by a separate service from the portal service described above.

In this exemplary embodiment gatherer **67** is a multi-featured software application having a variety of sub-modules and interface modules incorporated therein to provide enhanced function. Gatherer **67** has a client/service interface layer **69** adapted to enable directive input from both a client (user) and a knowledge worker or workers associated with the service. A browser interface **77** is provided in layer **69**, and adapted to provide access to application **67** from a browser running on a client's PC or other Internet or network appliance. Interface **77** facilitates bi-directional communication with a user's browser application (not shown) for the purpose of allowing the user to input summary requests into gatherer **67** and receive sum-

mary results. Interface 77 supports all existing network communication protocols such as may be known in the art, and may be adapted to support future protocols.

Layer 69 also comprises a unique input scripting module 79 that is adapted to allow a human knowledge worker to create and supply directive scripts containing the site logic needed by gatherer 67 to find and retrieve data from a WEB site. In this case, gatherer 67 executes and runs on a network server such as server 31 of FIG. 1. However, this is not required in order to practice the present invention.

It is assumed in this example that gatherer 67 is part of the portal software suite 35 running on server 31 of FIG. 1. Gatherer 67 may be provided as several dedicated agents, or as one multi-functional agent without departing from the spirit and scope of the present invention. For example, one gatherer 67 may be scripted and programmed to execute a single user request with additional gatherers 67 called upon to perform additional user-requests. Alternatively, one gatherer 67 may be dedicated and assigned to each individual user and adapted to handle all requests from that user.

Interface layer 69 facilitates exchange of information from both a client and a knowledge worker. A client operating a WEB browser with an appropriate plug-in is enabled to communicate and interact with gatherer 67. For example, a user may enter a request to return a summary of pricing for all apartments renting for under $1000.00 per month located in a given area (defined by the user) from apartments.com (one of user's registered WEB sites). The just mentioned request would be categorized as either a periodic request, or a one time (on demand) request. The communicated request initiates a service action wherein a knowledge worker associated with the service uses module 79 to set-up gatherer 67 to perform it's function. Module 79 is typically executed from a network-connected PC operated by the knowledge worker.

According to an embodiment of the present invention, a unique scripting method facilitated by module 79 is provided to enable gatherer 67 to obtain the goal information requested by a user. For example, the above mentioned example of WEB-site apartments.com has a specific HTML (hyper-text-markup-language) logic that it uses to create its site and post its information. Such site logic is relatively standard fare for a majority of different sites hosted by different entities. Using this knowledge, a knowledge worker creates a site-specific script or template for gatherer 67 to follow. Such a template contains descriptions and locations of the appropriate fields used, for example, at apartments.com. Apartment description, location, deposit information, rental information, agent contact information, and other related fields are matched in terms of location and label description on the template created with module 79. Completed templates are stored in a database contained in a storage facility such as, perhaps, repository 29 of FIG. 1. Such templates may be reused and may be updated (edited) with new data.

In one embodiment, one script may contain site logics for a plurality of WEB pages, and instructions for specific navigational instruction and password or login information may be contained therein and executed serially, such as one site at a time. It is important to note that the knowledge worker or workers may perform much of their scripting via automatic controls such as by object linking and embedding (OLE) and a minor portion of scripting may be performed manually in an appropriate computer language, many of which are known in the art).

Gatherer 67 also has a process layer 71 adapted for internal information gathering and parameter configuration. An optional portal server interface 81 is provided and adapted to allow gatherer 67 to provide updated information to a user's list of hyperlinks and also to obtain data from portal server 31 if required. For example, required hyperlinks may be mirrored from a user's home page to a scripting template for navigational purposes. In an embodiment wherein gatherer 67 is part of a standalone service, a convention for providing user login information may be supplied at the client's end when a request is made. For example, an encrypted password may be supplied by a client plug-in and gatherer 67 may temporarily borrow the user's encryption key when auto login is performed.

An appliance configuration module 83 is provided and adapted to allow a user to define and configure an Internet appliance to communicate with the service and receive summary information. Such appliances may include but are not limited to palm top PC's, lap top PC's, cellular telephones, WEB TV's, and so on. Typically, a user will be presented a configuration WEB page from a network server that displays in his browser window on his desktop PC. The page contains an interface for communicating device parameters and communication protocol types to module 83. In this way, a user may configure a preferred device for receipt of summary information. Device parameters and communication protocols inherent to such a device are incorporated into the scripting of the site template and are used as instructions for WEB summary delivery.

A navigation layer 73 is provided and adapted to perform the function of external site navigation and data gathering for gatherer 67. To this end, a communication interface/browser control module 85 is provided and adapted to function as a WEB browser to access WEB sites containing WEB data. Control 85 receives it's instruction from the scripted template created by the knowledge worker.

A parsing engine 87 is provided and adapted to parse individual WEB sites according to a template created via scripting module 79. Parsing engine 87 may be a PERL engine, an IE HTML engine, or any other or combination of known parsing engines. The template (not shown) tells control 85 and parsing engine 87 where to go and what fields at the destination site to look for to access desired data. Once the data fields are located, parsing engine 87 gathers current data in the appropriate field, and returns that data to the service for further processing such as data conversion, compression and storage, and the like.

Because WEB sites use tools that use consistent logic in setting up their sites, this logic may be used by the summarization service to instruct control 83 and parsing engine 87. The inventor provides herein an exemplary script logic for navigating to and garnishing data from Amazon™.com. The hyperlinks and/or actual URLs required for navigation are not shown, but may be assumed to be included in the template script. In this example, a company name Yodlee (known to the inventors) is used in the script for naming object holders and object containers, which are in this case Active X™ conventions. In another embodiment, Java™ script or another object linking control may be used. The scripted template logic example is as follows:

```
# Site amazon.orders.x - shows status of orders from Amazon
login( 7 );
get( "/exec/obidos/order-list/" );
my @tables = get_tables_containing_text( "Orders:" );
my $order_list = new Yodlee::ObjectHolder( 'orders' );
```

-continued

```
$order_list->source( 'amazon' );
$order_list->link_info( get_link_info( ) );
my @href_list;
my @container_list;
foreach my $table ( @tables ) {
        my @rows = get_table_rows( );
foreach my $i ( 0 . . $#rows ) {
        select_row( $i );
        my $text = get_text( $rows[ $i ] );
        next if $text =~ /Orders:|Status/;
        my @items = get_row_items( );
        next unless @items >= 4;
        my( $order_num, $date, $status );
        select_cell( 1 );
        $order_num = get_cell_text( );
        my $href = get_url_of_first_href( get_cell( ) );
        select_cell( 2 );
        $date = get_cell_text( );
        select_cell( 3 );
        $status = get_cell_text( );
        next unless defined $order_num and defined $date and defined
$status;
        my $order = new Yodlee::Container( 'orders' );
        $order->order_number( $order_num );
        $order->date( $date );
        $order->status( $status );
        $order_list->push_object( $order );
        if( defined $href ) {
          push( @href_list, $href );
          push( @container_list, $order );
foreach my $i ( 0 . . $#href_list ) {
        get( $href_list[ $i ] );
        @tables = get_tables_containing_text( "Items Ordered:" );
foreach my $table ( @tables ) {
        my @rows = get_table_rows( );
foreach my $j ( 0 . . $#rows ) {
        select_row( $j );
        my $href = get_url_of_first_href( get_row( ) );
        next unless defined $href;
        my @child_list = get_children( get_row( ), 'a' );
        next unless defined $child_list[ 0 ];
        my $text = get_text( $child_list[ 0 ] );
        $container_list[ i ]->description( $text );
      }
    }
}
result( $order_list );
```

The above example is a script that instructs control **85** and parser **87** to navigate to and obtain data from Amazon™.com, specifically that data that reflects the user's current order status. Scripts may also be written to obtain virtually any type of text information available from any site. For example, a user may wish to obtain the New York Times headlines, the top ten performing stocks, a comparative list of flights from San Francisco to New York, etc. In one embodiment, metadata may be associated with and used in-place of the actual scripted language for the purpose of reducing complication in the case of many scripts on one template.

A data processing layer **75** is provided and adapted to store, process, and present returned data to users according to enterprise rules and client direction. A database interface module **89** is provided and adapted to provide access for gatherer **67** to a mass repository such as repository **29** of FIG. **1**, for the purpose of storing and retrieving summary data, templates, presentation directives, and so on. Gatherer agent **67** may also access data through interface **89** such as profile information, user account and URL information, stored site logics and so on. Data scanned from the WEB is stored in a canonical format in a database such as repository **29**, or in another connected storage facility. All stored data is, of course, associated with an individual who requested it, or for whom the data is made available according to enterprise discretion.

A summarization page module **91** is provided and adapted to organize and serve a WEB summary page to a user. Module **91**, in some embodiments, may immediately push a WEB summary to a user, or module **91** may store such summarized pages for a user to access via a pull method, in which case a notification may be sent to the user alerting him of the summary page availability. Summarization module **91** includes an HTML renderer that is able to format data into HTML format for WEB page display. In this way, e-mail messages and the like may be presented as HTML text on a user's summarization page. Moreover, any summary data from any site may include an embedded hyperlink to that site. In this way, a user looking at an e-mail text in HTML may click on it and launch the appropriate e-mail program. Other sites will, by default, be linked through the summary page.

Many users will access their summary data through a WEB page as described above, however, this is not required in order to practice the present invention. In some embodiments, users will want their summary information formatted and delivered to one of a variety of Internet-capable appliances such as a palm top or, perhaps a cell phone. To this end, the renderer is capable of formatting and presenting the summary data into a number of formats specific to alternative devices. Examples of different known formats include, but are not limited to XML, plain text, VoxML, HDML, audio, video, and so on.

In a preferred embodiment of the present invention, gather **67** is flexible in such a way as it may act according to enterprise rules, client directives, or a combination of the two. For example, if a user makes a request for summary data about a user/subscribed WEB page to be periodically executed and presented in the form of a HTML document, then gather **67** would automatically access and analyze the required internal information and user provided information to formulate a directive. Using scripting module **79**, a knowledge worker provides a template (if one is not already created for that site) that contains the "where to go" and "what to get" information according to site logic, user input, and known information.

Alternatively, if a user requests a summary about data on one of his sites such as, perhaps, current interest rates and re-finance costs at his mortgage site, the service may at it's own discretion provide an additional unsolicited summary from an alternate mortgage site for comparison. This type of summarization would be designed to enhance a user's position based on his profile information. In this case, updated data about latest interest rates, stock performances, car prices, airline ticket discounts, and so on would be stored by the service for comparative purposes. If a user request for a summary can be equaled or bettered in terms of any advantage to the user, such summary data may be included.

In many cases, created templates may be re-used unless a WEB site changes it's site logic parameters, in which case, the new logic must be accessed and any existing templates must be updated, or a new template may be created for the site. The templates contain site-specific script obtained from the site and stored by the knowledge workers. In one embodiment, companies hosting WEB pages automatically provide their site logics and any logic updates to the service by virtue of an agreement between the service and the WEB hosts.

In an alternative embodiment gatherer **67** may be implemented as a client application installed on a user's PC. In

this embodiment, a user would not be required to supply log-in or password codes. Summarization scripts may be sent to the client software and templates may be automatically created with the appropriate scripts using log-in and password information encrypted and stored locally on the user's machine.

In addition to providing WEB summary information, gatherer **67** may also be used to provide such as automatic registration to new sites, and for updating old registration information to existing sites. For example, if a user whishes to subscribe, or register at a new site, only the identification of the site is required from the user as long as his pertinate information has not changed. If a new password or the like is required, gatherer **67** through control module **73** may present login or password codes from a list of alternative codes provided by a user. In another embodiment, a database (not shown) containing a wealth of password options may be accessed by gatherer **67** for the purpose of trying different passwords until one is accepted by the site. Once a password or log-in code is accepted, it may be sent to a user and stored in his password list and at the network level.

It will be apparent to one with skill in the art that a software application such as gatherer **67** may be implemented in many separate locations connected in a data network. For example, a plurality of gatherer applications may be distributed over many separate servers linked to one or more mass repositories. Client applications include but are not limited to a WEB-browser plug-in for communicating to the service. Plug-in extensions may also be afforded to proxy servers so that auto-login and data access may still be performed transparent to a user.

In another embodiment, plug-ins enabling communication with gatherer **67** may be provided and configured to run on other network devices for the purpose of enabling such a device to initiate a request and get a response without the need for a desktop computer.

In most embodiments a user operating a desktop PC will order a one time or periodic summary related to some or all of his subscribed WEB sites. A logical flow of an exemplary request/response interaction is provided below.

FIG. **5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** operating in a user-defined mode. In step **93**, a user has initiated a new request for a summary (summary order). It is assumed for the purpose of discussion, that the request of step **93** involves a site wherein no template has been created. In step **95**, the request is received and analyzed. A knowledge worker will likely perform this step. The new request may be posted to the user's portal home page, sent directly to gatherer **67**, or even communicated through e-mail or other media to the service.

In step **97** a knowledge worker accesses particular site logic associated with the request URLs. For example, if the request involves a plurality of URLs, then all site logics for those URLs are accessed. Logic may be available in a repository such as repository **29** of FIG. **1** if they were obtained at the time of user registration to a particular URL, or sent in by WEB-site hosts shortly after registration. If it is a completely new URL, then the logic must be obtained from the site. In most cases however, the logic will be known by virtue of a plurality of users accessing common URLs. Therefore cross-linking in a database of logic/user associations may be performed to access a logic for a site that is new to one particular user, but not new to another.

In step **99**, the knowledge worker creates a template by virtue of scripting module **79** (FIG. **4**) containing all site logic, URLs, log-in and password information, and the user request information. As described previously, templates may be re-used for a same request. In most cases, scripting may be mostly automated with minimum manual input performed by the knowledge worker. In many cases, an existing template will match a new request exactly, and may be re-used. In that case steps **97**, **99**, and **101** would not be required.

In step **101** the template is stored and associated with the requesting user. The stored template may now be retrieved at a scheduled time for performing the summary gathering. At step **103**, a browser control such as module **85** of FIG. **4** is activated to access the stored template and navigate to specified URLs for the purpose of gathering summary data. If a timing function is attributed to the template stored in step **101**, then the template may self execute and call up the browser function. In another embodiment, the knowledge worker may notify the browser control to get the template for it's next task. In some embodiments, a plurality of controls may be used with one template as previously described.

In step **105**, automatic log-in is performed, if required, to gain access to each specified URL. In step **107**, a specified WEB-page is navigated to and parsed for requested data according to the logic on the template. If there are a plurality of WEB -pages to parse, then this step is repeated for the number of pages. A variety of parsing engines may be used for this process such as an IE™ parser, or a PERL™ parser. Only the requested data is kept in step **107**.

A request may be an on-demand request requiring immediate return, or a scheduled request wherein data may be posted. At step **109**, such logic is confirmed. If the data is to be presented according to a periodic schedule, then summary data parsed in step **107** is stored for latter use in step **111**. In step **113**, the summary data is rendered as HTML if not already formatted, and displayed in the form of a summary WEB-page in step **115**. The summary page may be posted for access by a user at a time convenient to the user (pull), or may be pushed as a WEB-page to the user and be made to automatically display on the user's PC. Notification of summary page availability may also be sent to a user to alert him of completion of order.

If the summary data is from a one-time on-demand request and required immediately by a user, then a network appliance and data delivery method (configured by the user) is confirmed, and the data is rendered in the appropriate format for delivery and display in step **117**. In step **119**, the summary data is delivered according to protocol to a user's designated appliance. In step **121** a user receives requested information in the appropriate format.

It will be apparent to one with skill in the art that there may be more or fewer logical steps as well as added sub-steps than are illustrated in this example. For example, step **105** may in other embodiments include sub-steps such as getting an encryption key from a user. In still another embodiment, part of a request may be rendered as HTML as in step **113** while certain other portions of the same request data might be rendered in another format and delivered via alternative methods. There are many possibilities.

The method and apparatus of the present invention may be used to present summaries to users without user input. Process logic such as this is detailed below.

FIG. **6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** in a User-independent smart mode with minimum or no user input. In step **117** an enterprise-initiated summary

process begins. In this case, the enterprise may be assisting a user in finding a better deal or, perhaps presenting the individual with summaries from and links to alternative pages not yet subscribed to by a user.

In step **119**, a database containing user information and parameters is accessed and reviewed. Certain information specific to a user may be required to initiate an enterprise-sponsored summary report. At step **121**, the knowledge worker accesses the site logic specific to the specified target site or sites for summarization. In step **123**, the knowledge worker modifies an existing user template, or creates a new one if necessary. At step **125** the template is stored in a repository such as repository **29** and associated with the user.

As described in FIG. **5**, the template either self-executes according to a timed function and invokes a browser control such as control **85** (FIG. **4**), or is accessed by control **85** as a result of task notification. In step **127**, the browser control begins navigation. Auto logins are performed, if required, in step **129** to gain access to selected sites. If the WEB pages are new to a user, and the user has no registration with the WEB site, then through agreement, or other convention, the service may be provided access to such sites. Such an agreement may be made, for example, if the host of the WEB site realizes a possibility of gaining a new customer if the customer likes the summary information presented. In many other situations, no password or login information is required to obtain general information that is not personal to a client.

In step **131**, all sites are parsed for summary data and stored in canonical fashion in step **133**. At step **135**, the data is compiled and rendered as HTML for presentation on a summary page. In step **137**, a WEB summary containing all of the data is made available to a user and the user is notified of it's existence.

Providing certain information not requested by a user may aid in enhancing a user's organization of is current business on the WEB. Moreover, unsolicited WEB summaries may provide better opportunities than the current options in the user's profile. Of course, assisting a user in this manner will require that the enterprise (service) have access to the user's profile and existing account and service information with various WEB sites on the user's list. A user may forbid use of a user's personal information, in which case, no enterprise-initiated summaries would be performed unless they are conducted strictly in an offer mode instead of a comparative mode.

The method and apparatus also may be practiced in a language and platform independent manner, and be implemented over a variety of scalable server architectures.

The method and apparatus of the present invention may be practiced via private individuals on the Internet, businesses operating on a WAN connected to the Internet, businesses operating via private WAN, and so on. There are many customizable situations.

The present invention as taught herein and above should be afforded the broadest of scope. The spirit and scope of the present invention is limited only by the claims that follow.

What is claimed is:

1. An Internet Portal, comprising:

an Internet-connected server;

a list of addresses of Internet sites associated with a specific person, which sites store information specific to the person; and

a software suite executing on the server, the software suite including a set of gathering spitware agents, with at least one gatherer agent dedicated to each of the Internet sites;

wherein the Portal accomplishes a gathering cycle by accessing individual ones of the Internet sites, authenticating too each site accessed as the person, and the gathering agent dedicated to each site accessed extracts data from that site.

2. The Portal of claim **1** further comprising a configuration and initiation interface for the person to set up and start a gathering cycle.

3. The Portal of claim **1** wherein the data gathered by the gathering agents is summarized and/or aggregated at the portal to be provided to the person.

4. The Portal of claim **1** wherein the data gathered by the path agents is data specific to the person.

5. The Portal of claim **1** wherein the portal stores user names and passwords for the person for each Internet site visited and uses the stored user games and passwords to authenticate to each site as the person.

6. The Portal of claim **1** wherein the gathering agents comprise a parsing process in searching the accessed sites for data.

7. In an Internet Portal system, a method for gathering data specific to a person from a plurality of Internet sites storing data specific to that person, the method comprising the steps of:

(a) initiating a gathering cycle accessing individual ones of the plurality of sites;

(b) authenticating to the sites as the person; and

(c) executing a software gathering agent at each site accessed to gather data from the site, the gathering agent dedicated to each site accessed.

8. The method of claim **7** wherein the Portal further comprises a configuration and initiation interface, and further comprising a step for the person to configure and initiate a gathering cycle through the interface.

9. The method of claim **7** further comprising a step for summarizing at the Portal the data gathered by the gathering agents, the resulting summary to be provided to the person.

10. The method of claim **7** wherein the data gathered by the gathering agents is specific to the person.

11. The method of claim **7** wherein in step (a) the portal stores user names and passwords for the person for each Internet site visited, and uses the stored user names and passwords to authenticate to each site as the person.

12. The method of claim **7** wherein in step (c) the gathering agents comprise a parsing process in searching the accessed sites for data.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,199,077 B1
DATED : March 6, 2001
INVENTOR(S) : Suman Kumar Inala et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

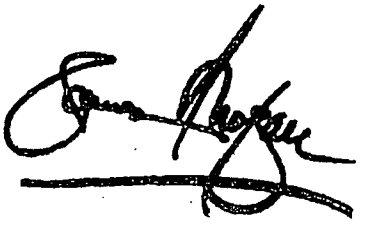
Title page,

Item [75], Inventor, now reads: "**Suman Kumar Inala**, Santa Clara;
P Venkat Rangan, San Diego;
Ramakrishna Satyavolu, Santa Clara,
all of CA (US)"

should read: -- **Suman Kumar Inala**, Santa Clara;
P Venkat Rangan, San Diego;
Ramakrishna Satyavolu, Santa Clara,
Sreeranga Prasannakumar Rajan, Santa Clara
all of CA (US) --

Signed and Sealed this

Eighteenth Day of February, 2003



JAMES E. ROGAN
Director of the United States Patent and Trademark Office

Exhibit B

US006317783B1

(12) **United States Patent**
Freishtat et al.

(10) **Patent No.: US 6,317,783 B1**
(45) **Date of Patent: Nov. 13, 2001**

(54) **APPARATUS AND METHODS FOR AUTOMATED AGGREGATION AND DELIVERY OF AND TRANSACTIONS INVOLVING ELECTRONIC PERSONAL INFORMATION OR DATA**

(75) Inventors: **Gregg Freishtat; Palaniswamy Rajan**, both of Atlanta, GA (US)

(73) Assignee: **Verticalone Corporation**, Atlanta, GA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/428,511**

(22) Filed: **Oct. 27, 1999**

Related U.S. Application Data

(60) Provisional application No. 60/105,917, filed on Oct. 28, 1998, and provisional application No. 60/134,395, filed on May 17, 1999.

(51) **Int. Cl.**[7] **G06F 13/00**
(52) **U.S. Cl.** **709/218**; 707/10
(58) **Field of Search** 707/10; 709/217, 709/218

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Primary Examiner—Kenneth R. Coulter
(74) *Attorney, Agent, or Firm*—Needle & Rosenberg. P.C.

(57) **ABSTRACT**

A system for delivering personal information according to the present invention includes a user store including end user data, a provider store including information provider data, a personal information store including personal information and a processor that communicates with these data stores. The processor selects an end user for personal infonmation aggregation. The processor connects with one or more information providers. The processor then proceeds to retrieve personal information for the selected end user from the connected information providers. This retrieval is based on end user data associated with the selected end user and provider data associated with the connected information providers. The retrieved personal information is stored in the personal information store.

36 Claims, 11 Drawing Sheets

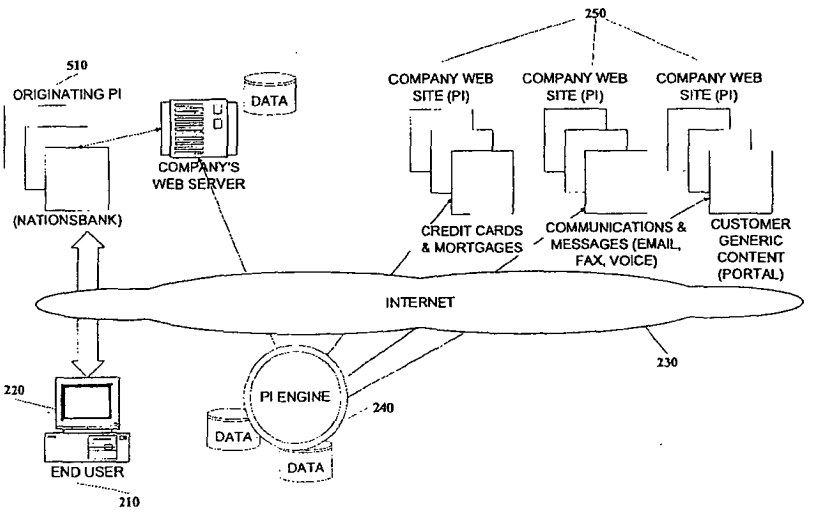

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Figure 1
(Prior Art)

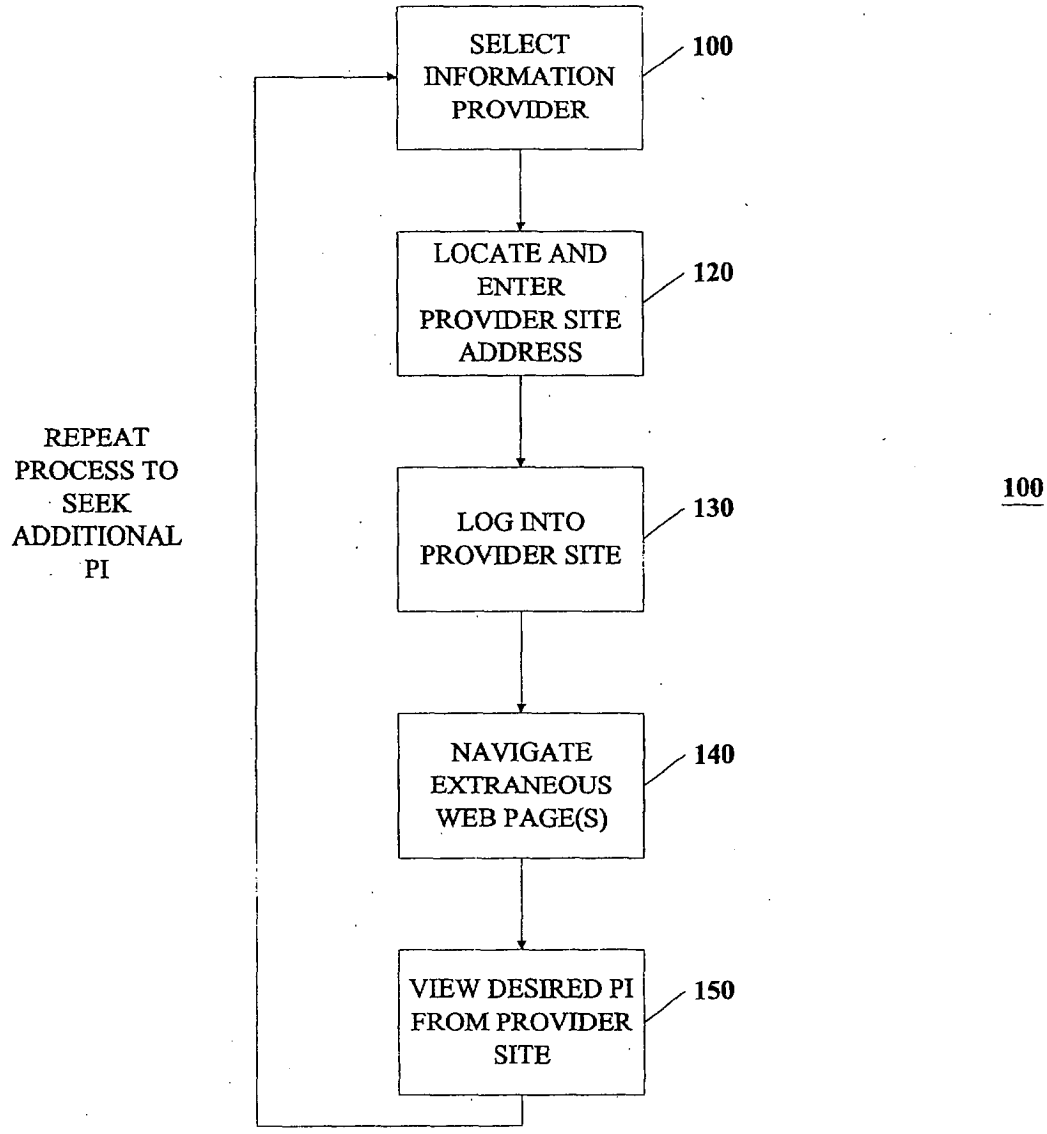


Figure 2

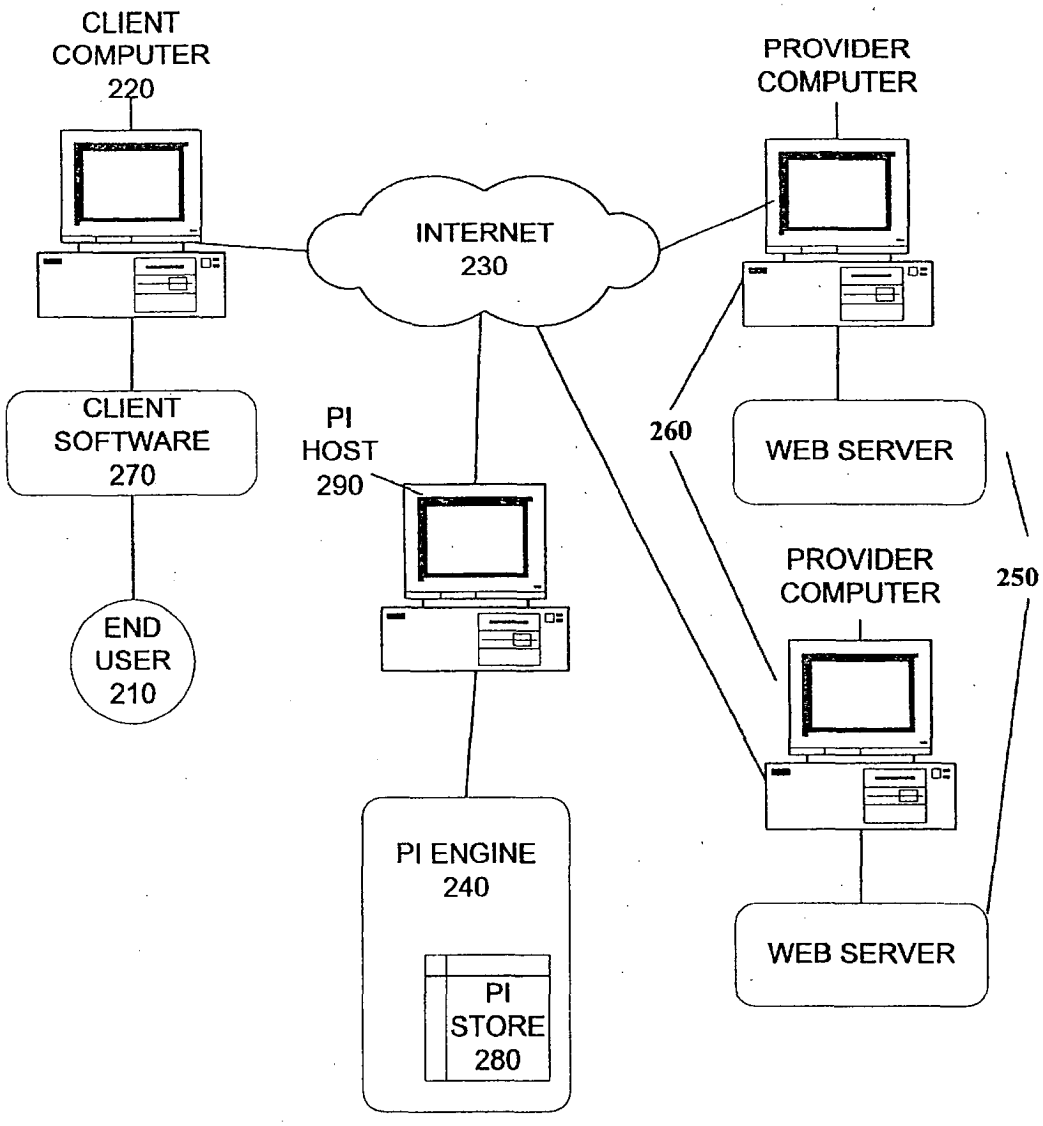
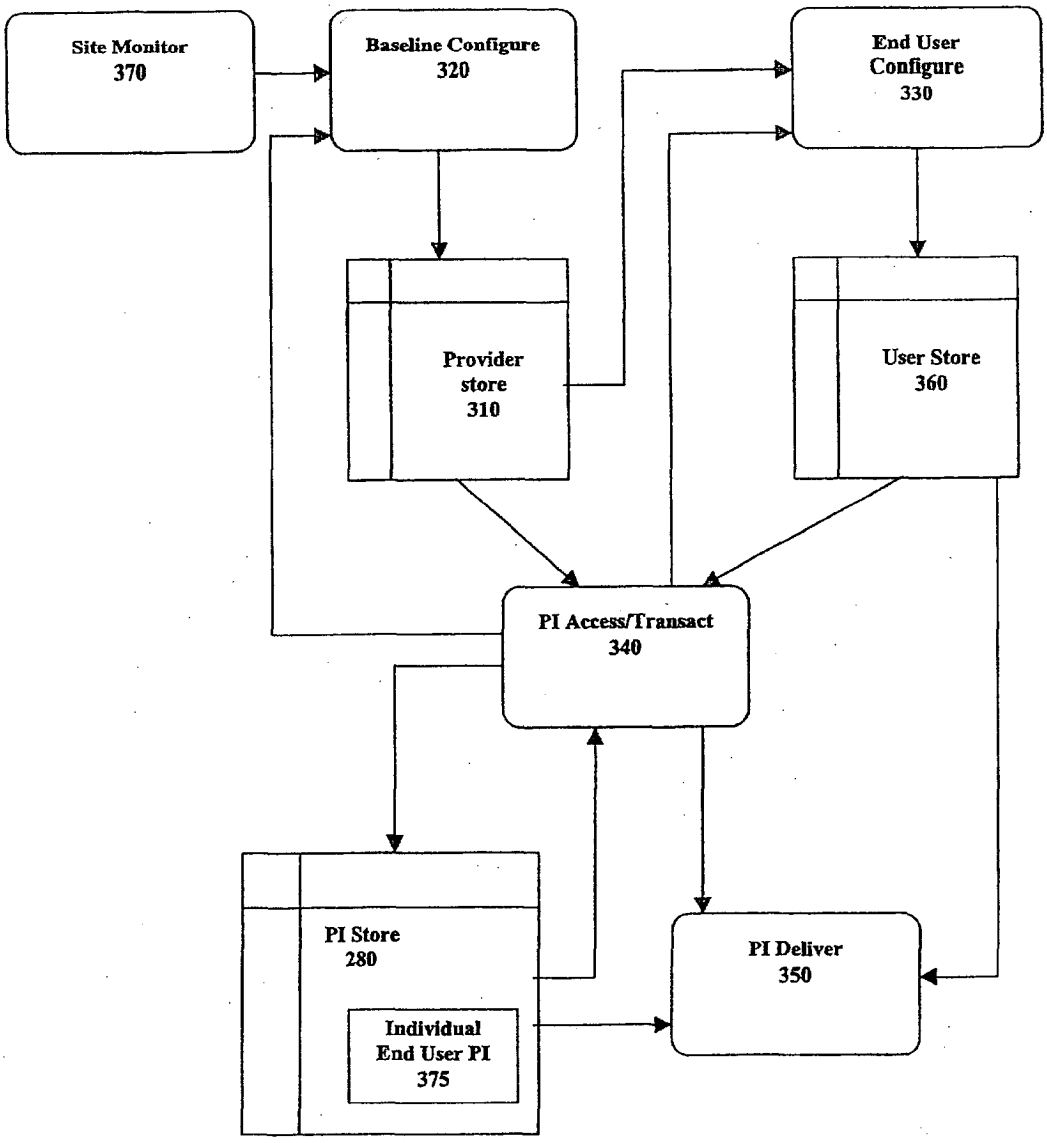

CLIENT COMPUTER 220
PROVIDER COMPUTER
INTERNET 230
CLIENT SOFTWARE 270
PI HOST 290
260
WEB SERVER
PROVIDER COMPUTER
250
END USER 210
PI ENGINE 240
PI STORE 280
WEB SERVER

Figure 3
240


Site Monitor
370
Baseline Configure
320
End User
Configure
330
Provider
store
310
User Store
360
PI Access/Transact
340
PI Store
280
Individual
End User PI
375
PI Deliver
350

Ex. 1002 Page 50

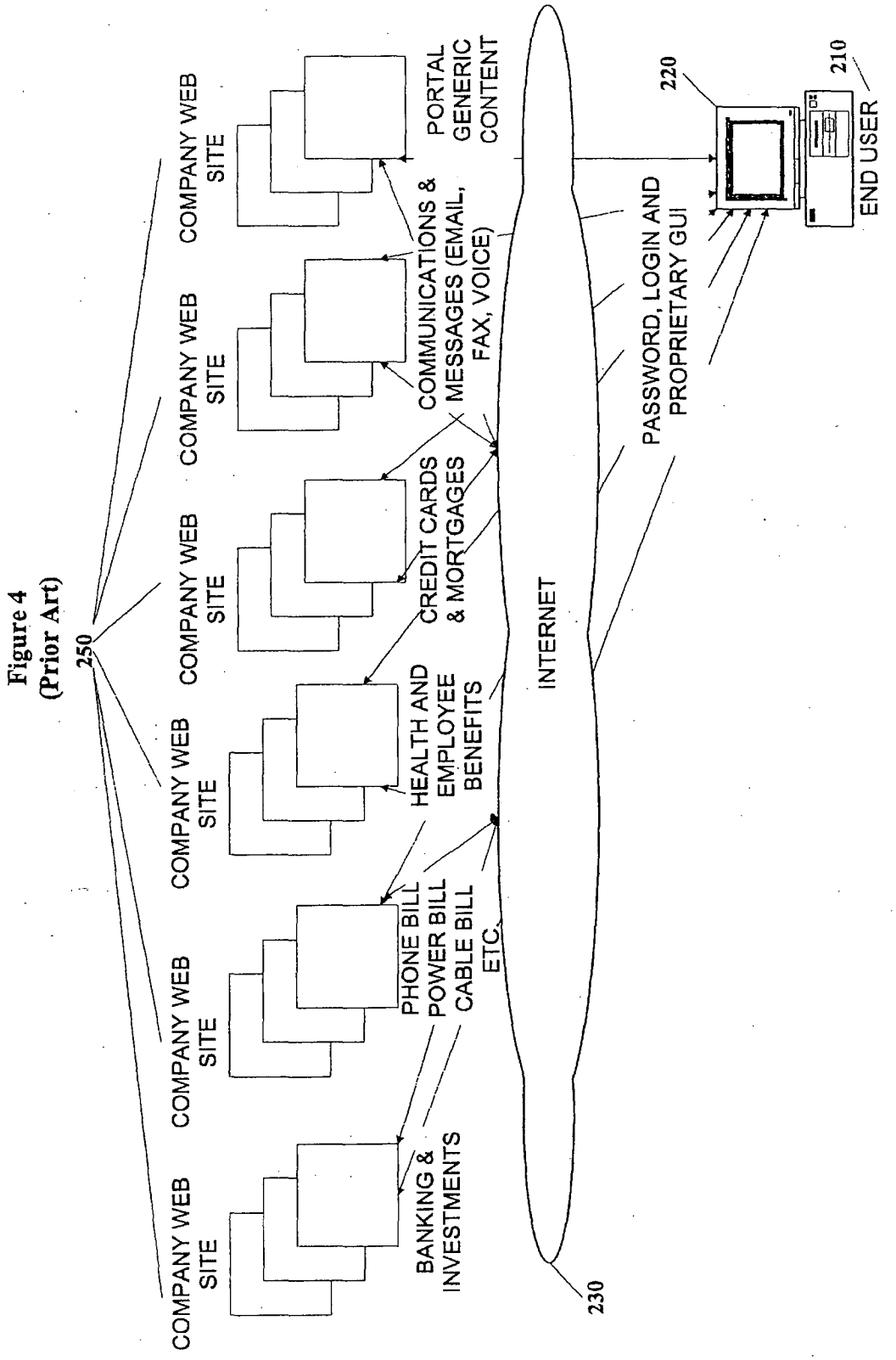


Figure 4
(Prior Art)

Ex. 1002 Page 51

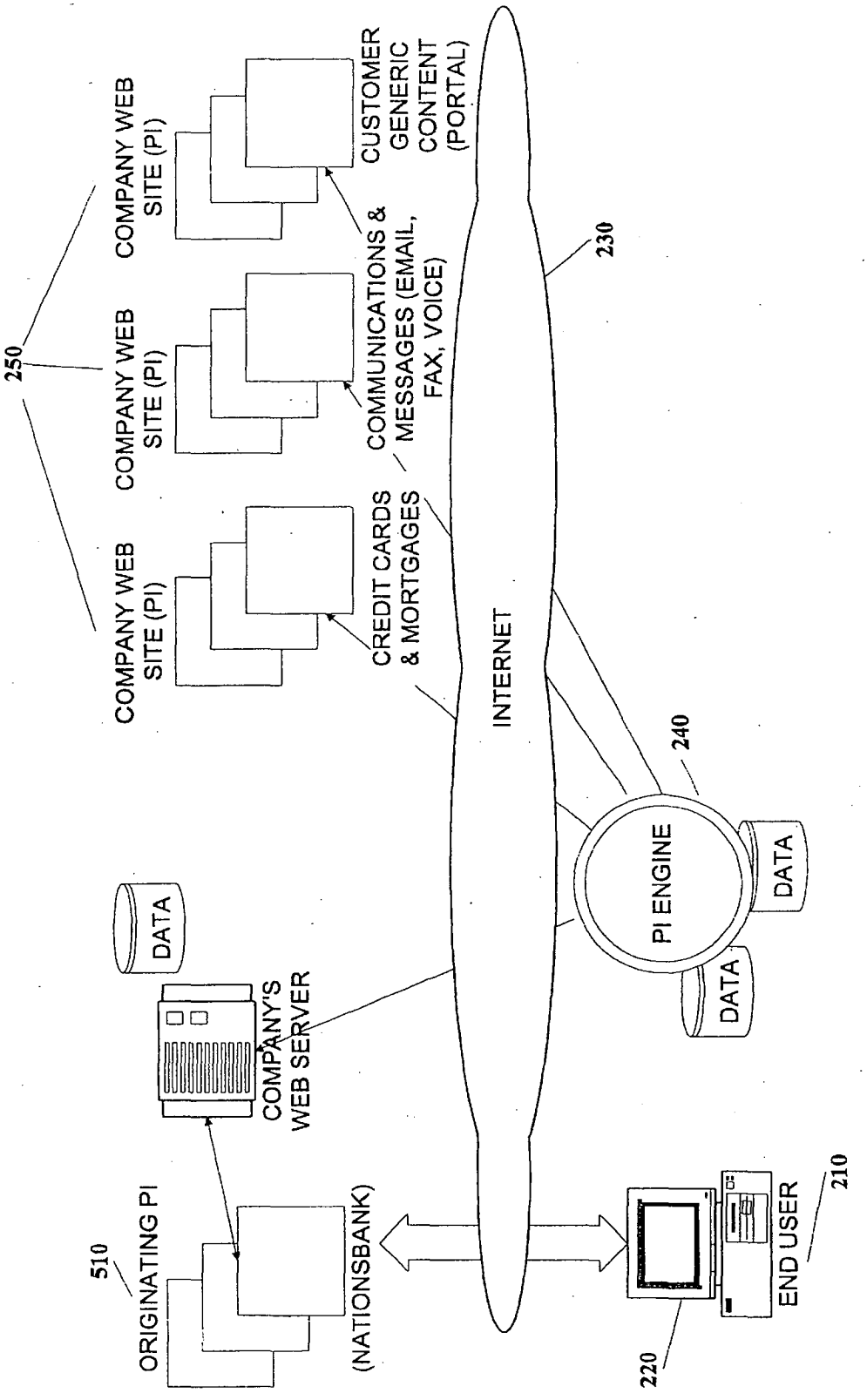


Figure 5

Figure 6

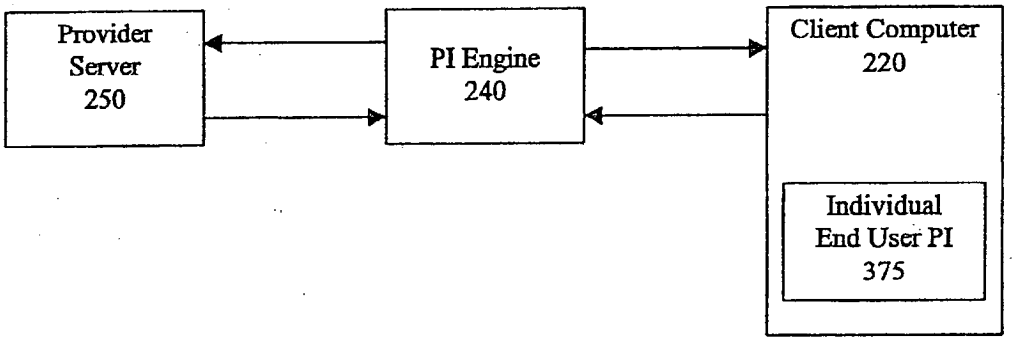

Provider
Server
250
PI Engine
240
Client Computer
220
Individual
End User PI
375

Figure 7

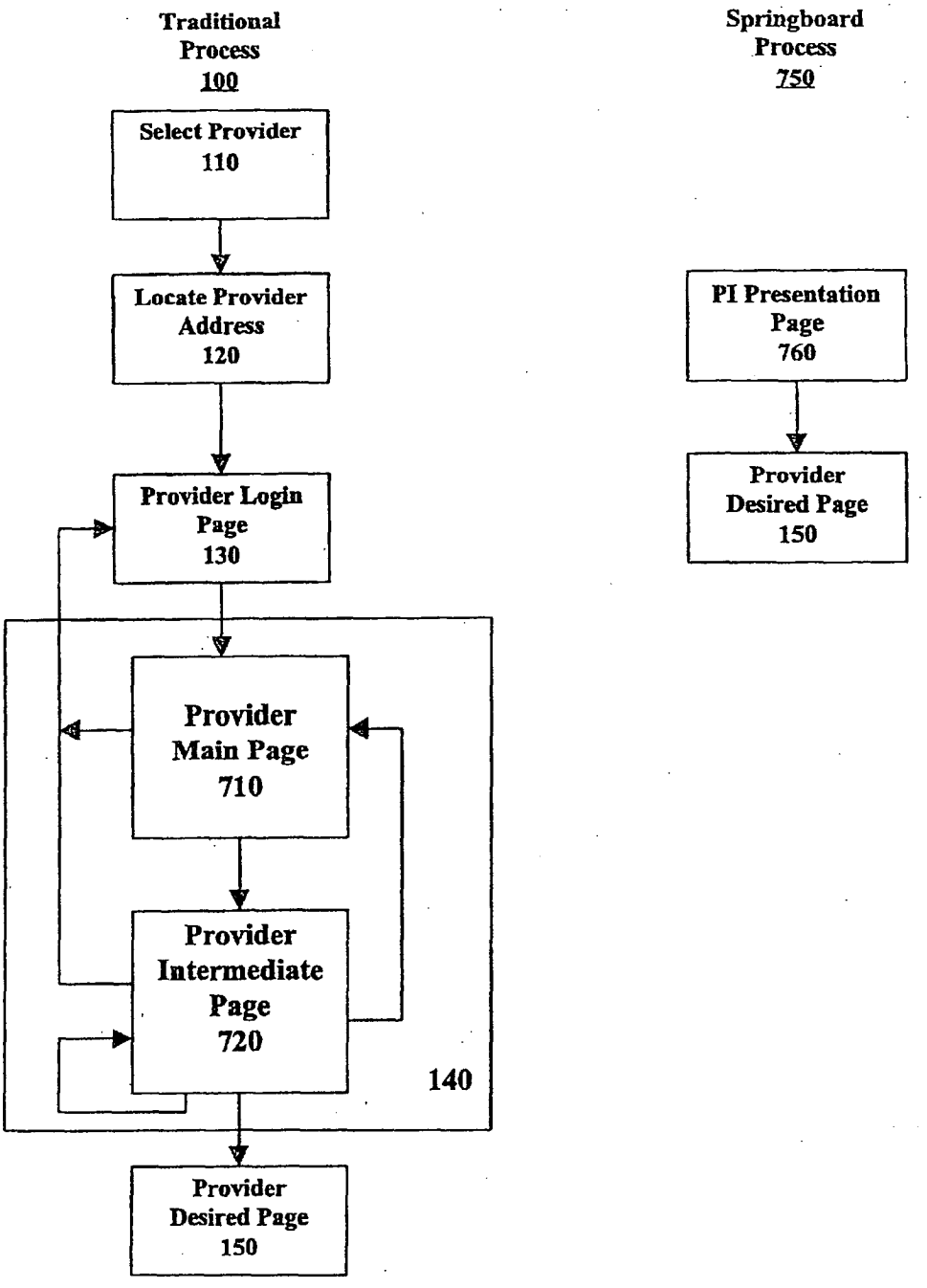

Traditional Process 100
Select Provider 110
Locate Provider Address 120
Provider Login Page 130
Provider Main Page 710
Provider Intermediate Page 720
140
Provider Desired Page 150
Springboard Process 750
PI Presentation Page 760
Provider Desired Page 150

Figure 8

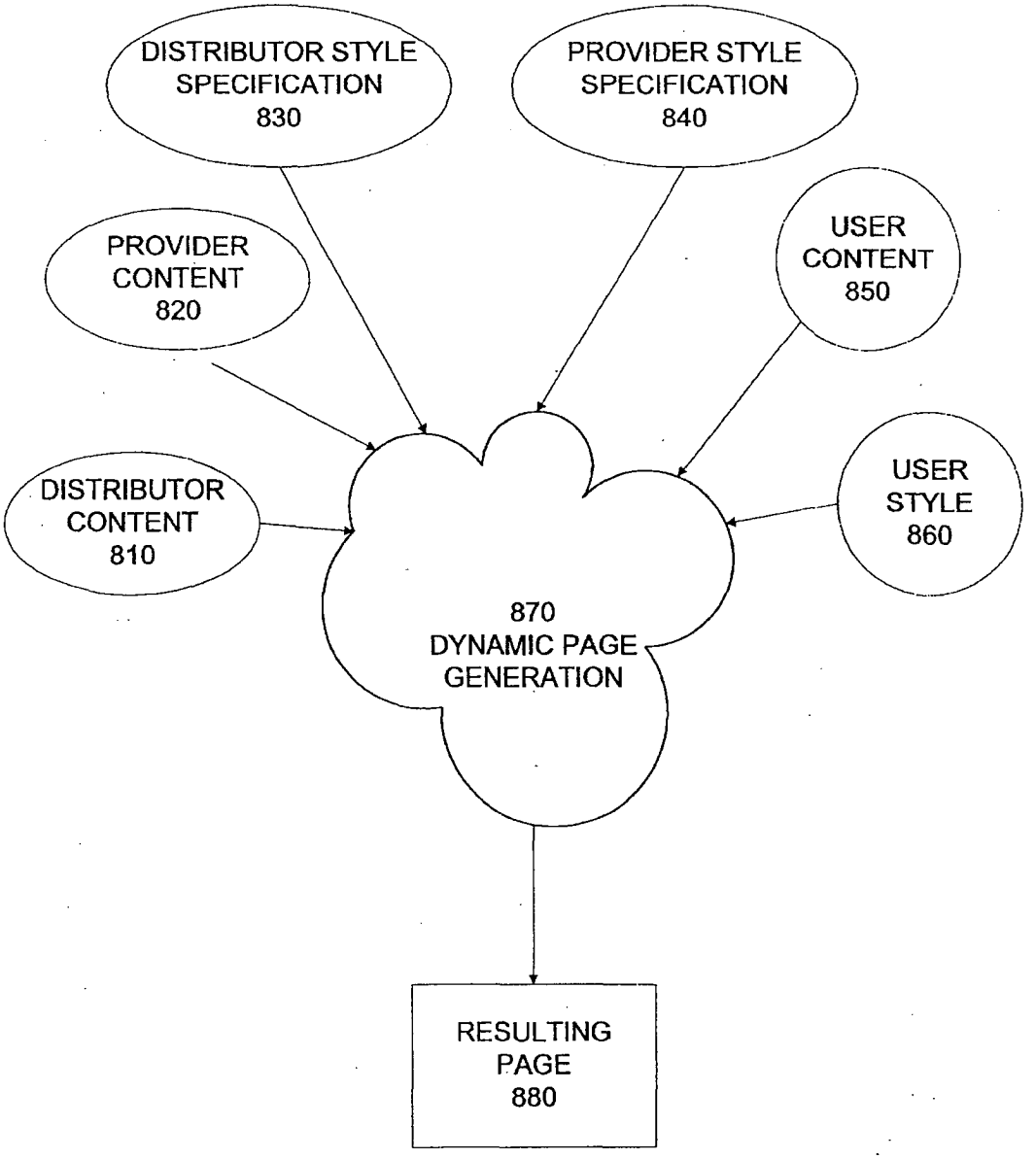

DISTRIBUTOR STYLE SPECIFICATION 830
PROVIDER STYLE SPECIFICATION 840
PROVIDER CONTENT 820
USER CONTENT 850
DISTRIBUTOR CONTENT 810
USER STYLE 860
870 DYNAMIC PAGE GENERATION
RESULTING PAGE 880

Figure 9

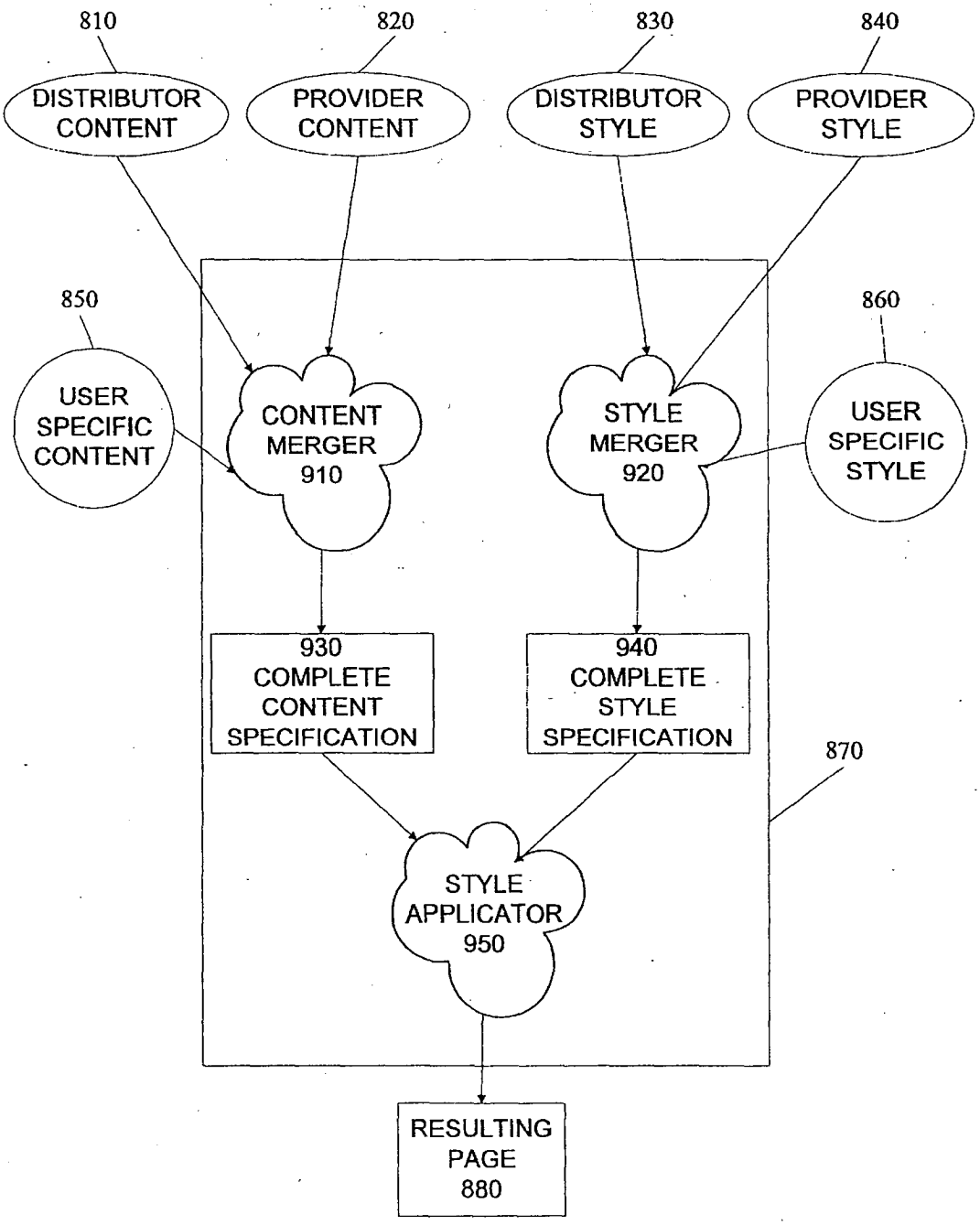

810
820
830
840
DISTRIBUTOR CONTENT
PROVIDER CONTENT
DISTRIBUTOR STYLE
PROVIDER STYLE
850
860
USER SPECIFIC CONTENT
CONTENT MERGER 910
STYLE MERGER 920
USER SPECIFIC STYLE
930 COMPLETE CONTENT SPECIFICATION
940 COMPLETE STYLE SPECIFICATION
870
STYLE APPLICATOR 950
RESULTING PAGE 880

Figure 10

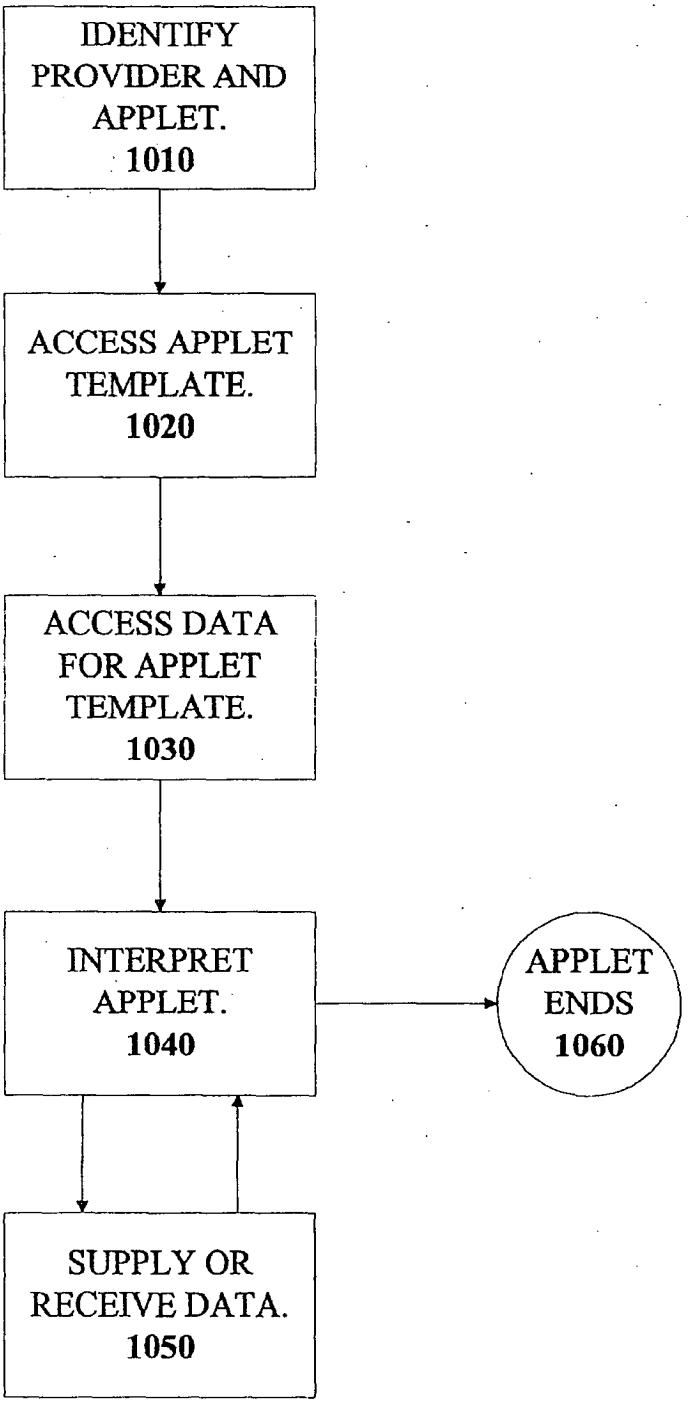
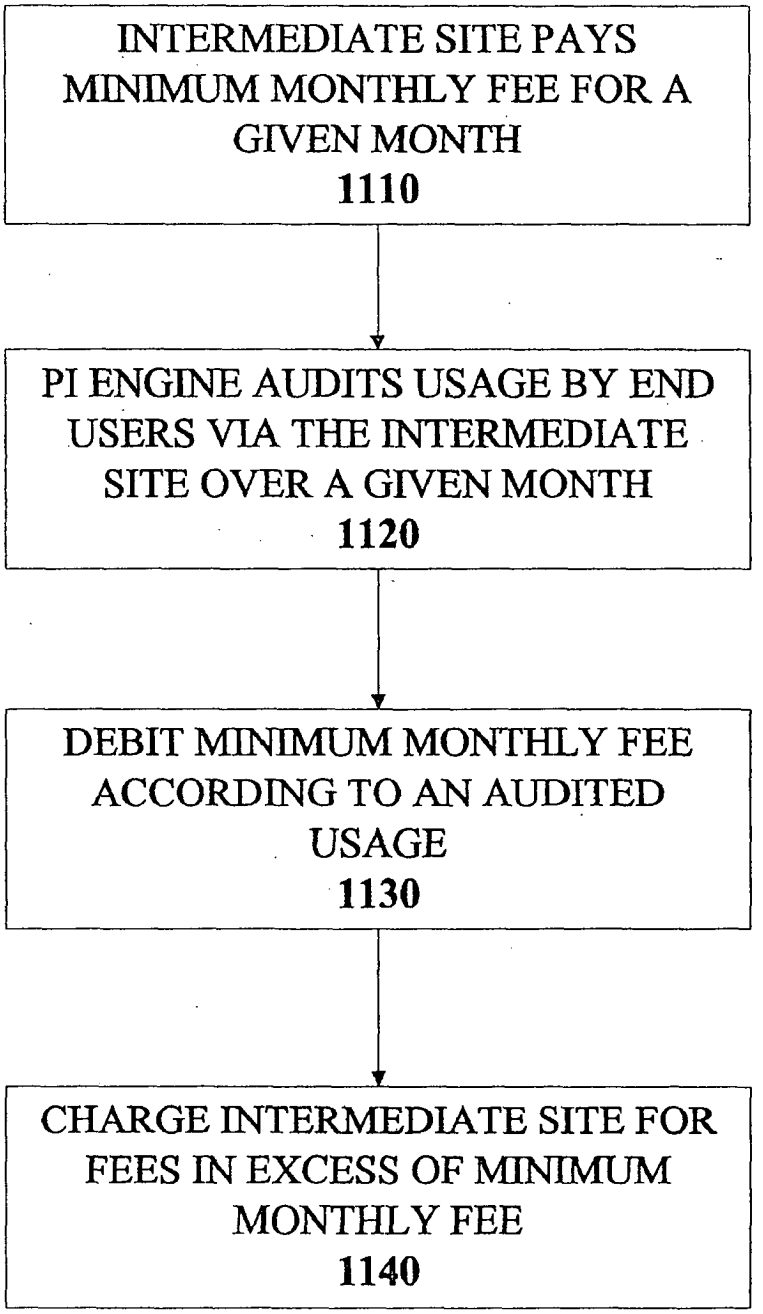

IDENTIFY PROVIDER AND APPLET. 1010
ACCESS APPLET TEMPLATE. 1020
ACCESS DATA FOR APPLET TEMPLATE. 1030
INTERPRET APPLET. 1040
APPLET ENDS 1060
SUPPLY OR RECEIVE DATA. 1050

Figure 11


INTERMEDIATE SITE PAYS MINIMUM MONTHLY FEE FOR A GIVEN MONTH
1110
PI ENGINE AUDITS USAGE BY END USERS VIA THE INTERMEDIATE SITE OVER A GIVEN MONTH
1120
DEBIT MINIMUM MONTHLY FEE ACCORDING TO AN AUDITED USAGE
1130
CHARGE INTERMEDIATE SITE FOR FEES IN EXCESS OF MINIMUM MONTHLY FEE
1140

APPARATUS AND METHODS FOR AUTOMATED AGGREGATION AND DELIVERY OF AND TRANSACTIONS INVOLVING ELECTRONIC PERSONAL INFORMATION OR DATA

CROSS-REFERENCE TO RELATED PATENT APPLICATION

This application claims the benefit, pursuant to 35 U.S.C. §119(e), of applicants' provisional U.S. Patent Application Ser. No. 60/105,917, filed Oct. 28, 1998, entitled "Apparatus and Method for Automated Aggregation and Delivery of and Transactions Involving Electronic Personal Information or Data" and of applicants' provisional U.S. Patent Application Ser. No. 60/134,395, filed May 17, 1999, entitled "Apparatus and Method for Automated Aggregation and Delivery of and Transactions Involving Electronic Personal Information or Data".

BACKGROUND OF INVENTION

1. Field of Invention

The invention relates to an apparatus and process for automated aggregation and delivery of electronic personal information or data (PI). The invention further relates to the automation of transactions involving electronic PI.

2. Description of Related Art

Looking back over the last five years, it is apparent that as the Internet gained momentum, consumers demanded applications or services that make their online experience simpler, easier to use, and more satisfying. The development of successful Internet Sites has corresponded with a number of themes which have developed over the last few years. When carefully analyzed this evolution is a logical development of the emerging digital economy.

Prior to 1994, the Internet was not a mass media, in part, because the existing technologies (FTP, Archie, Usenet, and Gopher) were not user friendly and required the end user to do all of the work (e.g., the end user had to learn of an existing data source, find the address, navigate to the destination, and download the information). As more consumers began accessing the Internet, Search Engines were created to solve this usability issue. With the advent of the commercial Search Engine, additional content could be easily added to the Internet and the end user had a means of finding and accessing this information. Consumers required better tools than Search Engines for organizing and accessing this wealth of generic content. Push technologies were explored, and eventually, the portal strategy was successfully adopted as an efficient way for consumers to easily access a variety of content sources in a single, easy to use format. As the volume of available online content continues to grow exponentially, portals are now confronted with the need to make different types of content available to different consumers based upon their particular preferences and tastes.

The phenomenal success of Internet portals and destination sites has demonstrated the importance of creatively and intelligently aggregating, organizing and presenting the mass of information available on the Web. Search engines, portals and destination sites have Internet strategies based on the frequency, duration and quality of end user visits to their sites. For this reason, destination sites and portals are constantly seeking content and/or technologies which drive quality traffic to their site and keep it there. Recent trends indicate that Internet users are up to 25 times more likely to

come back to a site when this information is organized according to personal preferences.

FIG. **1** displays the current process of acquiring online PI **100**. The end user first selects an information provider site in step **110**. The end user proceeds to step **120** by locating and entering the Internet address of the selected information provider. This step may be accomplished in several manners with varying levels of complexity. A simple means for accomplishing this step is the utilization of a bookmark or favorite whereas locating an information provider for the first time might involve significant time and effort performing online searches. In step **130**, the end users logs into the selected information provider's Web site utilizing the site's specific logon protocol. This protocol usually involves verifying the identity of the end user using a user name and password or other means of verification, acquiring the verification data from cookies residing on the end user's system or a combination of requested data and cookie data. The end user continues in step **140** by navigating through Web pages on the information provider's Web site until the desired information is located. During this process, the end user is often required to visit Web pages of little or no use to the end user whose goals is to simply acquire the particular PI residing on the Web site. Ultimately in step **150**, the end user is presented with the desired PI. The entire process **100** is repeated for each individual piece of PI desired by the end user. Under this PI access model, the end user must visit each separate information provider, track potentially different identity verification data for each, utilize a different user interface at each site and possibly wade through a significant number of filler Web pages.

FIG. **4** pictorial illustrates the architecture of this current access process. The end user **210** utilizes the client computer **220** to access each PI Web site **250** across the Internet **230**. This current model suffers from several significant deficiencies. The end user must login to each site separately. Each separate site has its own graphical user interface. Each site wants the end user to stay and return; each visited site wants to retain end user focus for as long as possible. No true aggregation of PI exists; multiple accesses simply allow sequential access to particular pieces of PI.

One partial solution to these problems has recently evolved in the form of portal sites. Generic portal sites aggregate resources into categories and provide links to sites covering topics within those categories. Yahoo and Excite are examples of generic portal sites. These sites facilitate horizontal aggregation of generic content; horizontal aggregation refers to aggregation of PI access within a particular information provider category such as banks or utility companies. Some portal site allows individual end users a limited capability to select and configure disparate generic PI. Generic PI refers to PI of interest to the particular end user that does not require specific identity verification to obtain. For example, an end user might be interested in the weather forecast for his local area. This information could be integrated into a portal page without requiring identity verification of the particular end user receiving this PI. The individualized portal page provides a significant benefit to users seeking to aggregate generic PI. However, current portal pages do not generally provide PI requiring identity verification such as an end user's stock portfolio or bank balance. Further, these pages do not facilitate transactions utilizing PI.

Under current technology, aggregating PI available over the Internet requires a significant burden in terms of time, effort and learning curve. An end user wishing to access his PI needs to individually visit a variety of information

provider sites each with its own requirements, graphical user interface and login protocol.

SUMMARY OF THE INVENTION

In the present invention, a networked computer is used to facilitate end user access of, manipulation of and transactions involving electronic PI associated with the particular end user such as stock portfolio, local weather, sports scores, bank account balances or other pertinent information or data. According to the present invention, the PI relevant to the particular end user is aggregated on the networked computer. This information or data is delivered to the end user in a unified manner by a variety of selectable delivery platforms such as facsimile, client computer, telephone, conventional mail, electronic mail, pager, other wireless device, Web page or channel or other delivery vehicle. The present invention further facilitates a variety of electronic transactions involving PI such as stock trading, retail purchases, bill payment, bank account fund transfers or other transactions.

A system for delivering personal information according to the present invention includes a user store including end user data, a provider store including information provider data, a personal information store including personal information and a processor that communicates with these data stores. The processor supports the aggregation of personal information. The processor selects an end user for personal information aggregation. Once the end user is selected, the processor connects with one or more information providers. The processor then proceeds to retrieve personal information for the selected end user from the connected information providers. This retrieval is based on end user data associated with the selected end user and provider data associated with the connected information providers. The retrieved personal information is stored in the personal information store.

The above and other objects and advantages of the present invention will become more readily apparent when reference is made to the following description, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a process diagram of the current process that end users perform to access Internet available PI.

FIG. **2** is a block diagram of the components that could be used to implement present invention.

FIG. **3** is a block diagram of the components of the PI engine.

FIG. **4** is a diagram of the current PI access architecture.

FIG. **5** is a diagram of an architecture supporting PI access utilizing an intermediary Web site.

FIG. **6** is a diagram of the cookie/client cache architecture.

FIG. **7** is a flowchart for accessing pages underlying particular PI via the traditional process of FIG. **1** and via springboard technology.

FIG. **8** depicts the integration model for the dynamic generation of HTML pages.

FIG. **9** displays the run-time process for dynamic generation of HTML page.

FIG. **10** illustrates a process for automated applet interaction utilizing a modified Java virtual machine.

FIG. **11** is a flowchart exemplifying an intermediary Web site transaction structure.

DETAILED DESCRIPTION OF THE INVENTION

A preferred embodiment of the invention is now described in detail. Referring to the drawings, like numbers indicate like parts throughout the views. As used in the description herein and throughout the claims that follow, the meaning of "a," "an," and "the" includes plural reference unless the context clearly dictates otherwise. Also, as used in the description herein and throughout the claims that follow, the meaning of "in" includes "in" and "on" unless the context clearly dictates otherwise.

In no time, end users will have to log into a large number of different Web Sites, each with separate passwords, security, rules, software and "look and feel"—just to get the information currently obtained by checking one place—the mailbox at the end of the driveway. The Internet will fundamentally change the way in which end users will access Personal Information (PI) and will make e-commerce as familiar as using an ATM. "Personal Information" is all of the data that companies, information providers, have that is specific or unique to each person such as monthly bills, bank account balances, investments information, health care benefits, email, voice and fax messages, **401(*k*)** holdings or potentially any other information pertinent to a particular end user.

The present invention alleviates several of the problems with the current PI acquisition methods by automatically aggregating PI, not only generic PI as aggregated by portals but also PI specific to the end user requiring identity verification for access. In one embodiment, the invention automates the PI acquisition and delivery process. FIG. **2** provides a block diagram of components that could be used to implement the present invention. The end user **210** accesses a client computer **220** running client software **270** which in a particular embodiment could be a general Web browser such as Navigator or Communicator (Netscape). The client computer **220** utilizes the Internet **230** to access a PI engine **240** running on a PI host **290**. The PI engine **240** examines stored PI **280** for freshness. Any stale PI items are refreshed by directly reacquiring the PI from the particular information provider's Web site **250** running on the provider's computer system **260** accessed across the Internet **230**. The PI engine **240** stores the fresh PI in its store **280** and delivers the PI to a selected destination, in this instance across the Internet **230** to the client computer **220** which displays the information to the end user **210** using the client software **270**. The PI engine **240** refreshes all stale PI in a like manner prior to forwarding the aggregated PI to both the store **280** and the delivery destination, the client computer **220** in this instance. The PI engine **240** may refresh the PI sequentially or in parallel. For example, the end user's checking account balance would be updated through his bank's Web site, his email from his particular email site, his portfolio information from his broker's site and his electricity bill from his electricity company's site.

FIG. **3** displays a block diagram of the components of the PI engine **240**. The PI engine **240** is composed of both storage and processing components. The three primary storage components are the PI store **280**, the PI Provider store **310** and the user store **360**. The first storage component of the PI engine **240** is the PI store **280**. The PI store **280** contains each individual's PI record **375**; the PI associated with a particular end user is segregated from the PI of all other end users. The PI engine also utilizes a provider store **310** that maintains general parameters associated with particular PI providers. The general parameters of a PI provider define the types of verification data necessary and the procedures to be followed to gain access to the particular PI provider. Each PI provider record also contains the types of PI provided by the PI provider and the types of transactions supported by the provider. Along with the type of PI or

transaction, the record also contains the additional types of data and procedures necessary to access the PI or execute the transaction. A user store **360** is also necessary to maintain configuration and verification information concerning particular end users. For each end user, the user selected PI providers, PI and transactions are registered along with the verification data necessary to acquire the PI or execute the transaction from the PI provider.

The PI store **280** may be implemented in a variety of ways. Referring to FIG. **2**, the PI store **280** may comprise a database residing on the PI Host **290**. Under this approach, the PI for each individual end user **210** is stored as a separate record or object **375** in the database. In yet another embodiment, the PI for each end user **210** could be stored in a separate file **375**, thus performing the task of segregating PI of different users at the file level.

In addition, or as an alternative, the PI associated with each end user **210** may reside on his/her client computer **220** using cookie technology as specified in D. Kristol and L. Montulli, "HTTP State Management Mechanism", Request For Comments (RFC) 2109, February, 1997 (available at http://www.ietf.org/rfc/rfc2109.txt), which is expressly incorporated herein in its entirety. The PI associate with the end user **210** would be stored as PI cookies **375**. This implementation mechanism provides inherent support for segregating PI associated with one end user **375** from PI associated with all other end users. Utilizing this method as a substitute for a centralized store provides a layer of security against unauthorized access. As a further measure, PI data stored in cookies could be stored in an encrypted format.

FIG. **6** provides a diagram of a typical implementation of the PI store **280** using cookie technology; references in the foregoing description are also made to FIG. **3** with respect to the internal workings of the PI engine **240**. When an attempt is made to access PI by an end user **210** directly, or through an intermediary Web server, the PI access/transact component **340** of the PI engine **240** would retrieve stored PI **375** from the PI store **280**. Under this approach, this stored PI **375** would be received directly from cookies sent by the client computer **220** of the end user **210**. The PI access/transact component **340** would perform any decryption if necessary. Any updates required would be obtained by direct access of PI providers **250**. The PI deliver component **350** would provide the mechanism for both updating the PI store **280** as well as transmitting the requested PI to the end user **210**, directly or through an intermediary Web site. The PI deliver component **350** would place the updated PI in the PI store **280** by replacing the outdated PI cookies **375** stored on the client computer **220**. The PI deliver component **350** would also handle any encryption if necessary. The PI deliver component **350** would also be responsible for transmitting requested PI. In a preferred embodiment, the PI store **280** would be implemented using this cookie-based architecture.

The user store **360** may be implemented in a variety of ways. Referring to FIG. **2**, the user store **360** may comprise a database residing on the PI Host **290**. Under this approach, the personal configuration data for each individual end user **210** is stored as a separate record or object in the database. In addition, or as an alternative, the end user data could be distributed in a manner similar to the cookie/cache architecture describe above with respect to the PI store **280**.

In a preferred embodiment, the user store **360** could be implemented through personal information configuration (PIC) files. PIC files store a personal profile such as name, address, and social security number in secure, encrypted fashion for each end user. PIC files facilitate automatic registration of end users with information Providers via the end user configuration component **330**. This component will read the PIC file and, using retrieved personal information, pre-populate registration templates for selected Providers. Then, it will prompt the user to enter required information that is missing from profile, if necessary. If the information is complete, the registration is automatically completed. Next, the end user configure component **330** completes any Provider registration forms, gets responses and updates the end user's PIC.

The four primary processing components access and manipulate the data in the three stores. The processing components may execute on a single processor, such as a file server computer system based on a Pentium class (MMX, PRO, II, III, etc.) central processing unit or an equivalent, or multiple processors. These four processing components are the Baseline configure component **320**, the end user configure component **330**, the PI access/transact component **340** and the PI delivery component **350** as seen in FIG. **3**. The Baseline configure component **320** provides the interface by which new user selectable PI providers are added to the system. This component **320** might be implemented in a variety of ways including trial and error followed by manual entry of configuration information, semi-automated trial and error (automated location of Hypertext Markup Language (HTML) <FORM> elements, Javascript functions and Java applets) followed by manual entry of configuration information or, preferably, configuration by example (executing the protocol in a simulated Web client where the simulated Web client automatically generates a list of required data and a list of steps in the access process). These processes would be utilized at two levels: the first level being the set of data and steps required for general access to the particular PI provider and the second level being the set of additional data and steps required for accessing each particular piece of PI on the PI provider's site. The baseline configuration component **320** may be triggered independently when a new PI provider is added to the system, or it might be triggered as a result of a failure of the PI access/transact component **340** potentially indicating a change in access requirements for the failed access. This latter warning would more likely result where the PI access/transact component **340** has made a comparison between requirements supplied by the Provider store **310**, both general to the PI provider and specific to the PI or transaction, and the end user data supplied by the user store **360** after seeking end user verification via a request of the end user to confirm the previously entered required access data via the end user configure component **330** and found an inconsistency. When an inconsistency is determined, updates to the Provider store **320** are made to bring the Provider data into conformance with current access/transaction requirements.

The end user configure component **330** allows an end user to select and configure PI and transactions of interest to the specific user. This configuration information is maintained in the user store **360**. When an end user initially subscribes to the system according to the present invention, the system allows the user to select the types and sources of PI and/or transactions desired. First, the system requests permission from the end user to act on his behalf to obtain any selected PI and to execute any authorized transactions. Next, the system provides the user with a list of known information suppliers and the types of PI supplied from and transactions supported by the particular PI provider from the Provider store **320**. The system requests the verification data neces-

sary for accessing each selected PI provider and the additional data required by the particular PIs and/or transactions desired from that PI provider. Assuming the end user is already a registered user with the selected PI provider or the particular PI provider does not require prior registration, the data supplied by the end user is placed in the user store **360**.

One method of obtaining any cookie data would be for the end user to access each previously accessed PI utilizing the PI engine **240** as a proxy server. The PI engine **240** would pass the cookie data to the PI provider site with the appropriate Web page requests to obtain the PI or execute the transaction and with the end user's permission retain a copy of the cookie data in the his record in the user store **360**. An alternate means of obtaining the cookie data would be a direct upload of the cookie information from the end user's computer. In a preferred embodiment, no cookie data is necessary where a user is already registered with a provider. All that is necessary is the verification data for login.

If the end user does not have the requisite information because he is not a registered user of a selected PI provider, the user configure component **330** prompts the user for the information necessary to register the end user with the PI provider and performs the registration procedure required by the PI provider. A simulated Web client could perform this process automatically supplying the access data as required and sending any necessary cookie data. The manner in which such a simulated client registers the end user depends significantly upon the interaction method used on the PI provider Web site. If the Web site uses HTML forms and common gateway interface (CGI) applications, the end user configure component **330** can formulate a uniform resource locator (URL) to replicate the effect of actual form usage and submit this URL to the simulated Web client. The use of a URL to mimic an HTML form is equivalent to manually entering the data into the Web <FORM> element. See Kerven, Foust, Zakour, *HTML* 3.2 *Plus How-To,* Waite Group Press, 1997, pp. 559–569. If the Web site uses a mixture of HTML forms and Javascript functions, a simulated Web client with a modified Javascript interpreter could effectively register the user by following the end user registration process for the particular PI provider. The registration process to follow would be obtained from the record of the particular PI provider in the Provider store **320**. The Javascript interpreter in the simulated Web client would follow this procedure and supply the data supplied by the end user. A similar process could be used if the registration process on the PI provider Web site utilizes a Java applet. A Web client with a modified Java bytecode interpreter could effectively register the user by following the end user registration process stored for the particular PI provider in the Provider store **320**. The bytecode interpreter would supply the data previously entered by the end user rather than requiring interactive input from the end user. If the PI provider Web site utilizes a combination of forms, scripts and applets, the individual procedures above could be used in combination to accomplish the desired registration.

With reference to FIG. **2** and FIG. **3**, a modification of the Java virtual machine (VM) could allow for automated interaction between the various functional components of the PI Engine **240** and Java applet available through provider Web servers **250**. Templates for interacting with particular applets could reside in the Provider store **310**. The specific input data utilized by such templates could be stored in the User store **360**. When a functional component such as the end user configure **330** or the access/transact **340** components requires automated communication with a Java applet on a provider Web server **250**, the modified Java VM would facilitate this interaction.

FIG. **10** illustrates one process utilizing such a modified Java VM to achieve such automated interaction. The functional component requiring interaction identifies the provider and the particular applet on that provider with which the component needs to interact in step **1010**. In step **1020**, the component accesses the necessary template for interacting with the applet from the Provider store **310**. Proceeding to step **1030**, the component accesses the User store **360** to obtain the data required by the template. The modified Java VM interprets the applet in step **1040** and, rather than requiring interactive input from a user as in a normal Java applet execution, awaits input from or output to the interacting functional component of the PI engine. In step **1050**, the functional component supplies input data to the modified Java VM according to the accessed template and retrieved data and receives output data according to the accessed template. Steps **1040** and **1050** repeat so long as additional input to or output from the applet continues. Upon termination of the applet, the functional component continues with its own processing in step **1060**.

A successful registration could result in displaying the registration information to the end user for future reference. Further, the end user configure component **330** stores the requisite access verification data for the PI provider and the additional data required to access the selected PI or transaction in the user store **360**.

In a preferred embodiment of such automated registration, any necessary cookie data would be accepted and stored as needed by the end user configure component **330**. In many cases, cookie data is session specific and, therefore, of little long term utility. Cookies generated during the registration process are used solely during the registration process then discarded once registration is complete.

A failed registration could result from several situations. First, the end user attempting to register with the PI provider does not qualify for registration; for example, an end user attempting to register with a bank with whom the end user does not maintain an account and where the bank only allows access to account holders. Next, the end user may have supplied improper or incorrect information. For example, a bank registration process might require a social security number, a password, a bank account number and the maiden name of the end user's mother; if the user entered an incorrect social security number, the registration process would fail. Finally, the PI provider may have altered the registration procedure for its Web site. In this situation, following the process supplied from the Provider store **320** would yield a failed registration. In the instance of any registration failure, the end user could be presented with the data initially supplied to the system for registration. The system could then ask the end user to double check the correctness of the information provided and to correct and resubmit the data if an error is found. A second failure resulting from the submission of identical requisite data might generate an error message presented to the end user stating that either the end user is ineligible to access the selected PI from the selected PI provider or that alteration by the PI provider may have caused an error in registration. This second failure could also trigger a warning suggesting the need to potentially reconfigure the record for the PI provider in the Provider store **320**.

Ultimately, the user store **360** would contain a record for each end user. This record as previous described could be a database entry, one or more cookies or a file such as a PIC file. Each record would identify the selected PI providers along with the general access verification data needed and also under each PI provider would be a list of PI supplied

and transactions supported by the particular PI provider of interest to the end user along with the additional data, if any, necessary to access that PI or execute that transaction. Specifically, duplicative information such as an end user's name would be centrally stored in the record once.

The end user configure component **330** also allows the end user to select one or more delivery destinations. One destination might be the end user's computer as exemplified by the client computer **220** running client software **270** in FIG. **2**; however, a computer is not the only destination contemplated by the present invention. The destination for PI delivery could include facsimile, electronic mail, telephone, conventional mail, pager, other wireless device such as a Palm Pilot (3 Corn), Web page or channel, Web browser or other delivery mechanism. The present invention also contemplates indirect access of PI by the end user utilizing a Web site as an intermediary; however, such indirect access would not require the end user to specify a delivery destination unless additional delivery options were desired.

Further, access to the end user configure component **330** may occur through direct access to the PI engine via the Internet as contemplated by the client computer **220** running client software **270** in FIG. **2**; however, alternative methods of access are equally feasible. For example, the user might indirectly access the PI engine through the use of an intermediary Web site. A telephone interface to allow access to the end user configure component is another alternative.

With reference to FIG. **3**, the PI access/transact component **340** supports the update, acquisition and transaction functionality of the PI engine **240**. The PI access/transact component **340** is responsible for accessing and storing user PI and executing transactions authorized by the end user. When access or update is needed for a selected end user, the PI access/transact component **340** combines information from the Provider store **320** and the user store **360** to update end user PI in the PI store **280**. For each piece of PI requiring access or update, the PI access/transact component **340** looks up the access procedure and information needed for the particular PI in the Provider store **320**. The verification and access data is found in the user store **360**. The PI access/transact component **340** utilizes this information to connect to the PI provider's Web site across the Internet and to access the PI. Where multiple pieces of PI require updating or access, the accesses may occur in series or parallel.

Requested transactions would be similarly supported. For each transaction, the PI access/transact component **340** combines information from the Provider store **320** and the user store **360** to perform the requested transaction. The PI access/transact component **340** looks up the transaction procedure and information needed for the particular transaction in the Provider store **320**. The verification and access data is found in the user store **360**. The PI access/transact component **340** utilizes this information to perform the transaction across the Internet from the PI provider's Web site

A simulated Web client could perform access or transaction processes automatically supplying access and verification data as necessary. The manner in which such a simulated client access PI or execute transactions depends significantly upon the interaction method used on the PI provider Web site. If the Web site uses HTML forms and common gateway interface (CGI) applications, the PI access/transact component **340** can formulate a uniform resource locator (URL) to replicate the effect of actual form usage and submit this URL to the simulated Web client. The use of a URL to mimic an HTML form is equivalent to manually entering the data into the Web <FORM> element. See Kerven, Foust, Zakour, *HTML* 3.2 *Plus How-To,* Waite Group Press, 1997, pp. 559–569. If the Web site uses a mixture of HTML forms and Javascript functions, a simulated Web client with a modified Javascript interpreter could effectively access the PI or perform the transaction by following the PI access/transact process for the particular PI or transaction respectively. The access or transaction process to follow would be obtained from the record of the particular PI or transaction in the Provider store **320**. The Javascript interpreter in the simulated Web client would follow this procedure and supply the data found in the user store **360**. A similar process could be used if the PI provider Web site utilizes a Java applet. A Web client with a modified Java bytecode interpreter could effectively access PI or perform transactions by following process stored for the particular PI or transaction in the Provider store **320**. The bytecode interpreter would supply the data from the user store **360** rather than requiring interactive input from the end user. If the PI provider Web site utilizes a combination of forms, scripts and applets, the individual procedures above could be used in combination to accomplish the desired access.

In a preferred embodiment of such automated accesses or transactions, any necessary cookie data would be accepted and stored as needed by the PI access/transact component **340**. In many cases, cookie data is session specific and, therefore, of little long term utility. Cookies generated are used solely during these functions then discarded once the mining or transaction operation is complete.

In order to provide personal information to an end-user quickly after login, it is necessary for the PI access/transact component **340** to select an end user for data harvesting prior to the login of the end user. One approach to this solution is to update all of an end user's PI whenever the end user, directly or through an intermediary Web site, requests access to his/her PI. Another approach would be to update all of an end user's PI supplied by a particular provider whenever PI from that supplier is requested. Thus, the act of logging into the system by an end user effectively selects that end user for immediate PI update. However, this approach may result in the inefficient use of the PI Engine **240** resources.

Given the large number of potential users and providers, and the goal of providing the freshest data possible, another embodiment includes an algorithm developed to optimize the schedule in which end users are selected for data harvesting from a provider. This algorithm factors in the provider's update policy, the user's login habits, and the user-provider account characteristics. The proper application of the algorithm should ensure that PI is harvested as infrequently as possible for a given user, thus minimizing system resource consumption.

If the next provider update time and the next expected user login can be accurately predicted, a model can be created that will allow for smarter harvesting. Rather than harvesting data for all users of a provider at once when the provider updates its site, the harvesting can be spread out over time based on expected login times of users and network activity profiles. For example, if Provider A updates its site on Friday night and a large number of users of that provider are not expected to login again until Monday morning, the harvesting load can be distributed across multiple days. This has the advantage of minimizing both the peak loading of the PI Engine **240** as well as consumption of the provider's bandwidth by the PI Engine **240**. To gain this optimization, the PI Engine **240** must maintain and

refine models of each provider and user. Such data can be maintained in the provider store **310** and the user store **360** respectively.

Each time a user utilizes the PI Engine **240**, the time and date may be captured. Once a sufficient number of login times are accumulated, they may be analyzed with respect to day of month, day of week, and time of day. These are used in a model to predict the next expected user login. The model is then tested and refined with subsequent logins until a measurable degree of confidence is established. Once high confidence is determined, the user model is incorporated into the adaptive harvesting scheduler. Until a high confidence level is reached for a particular end user one of the aforementioned harvesting approaches may be used.

Each provider updates its site based on policy driven by their unique resources and business model. For any adaptive scheduler to work, the policy for each provider must be modeled. In some cases, the policy is self-evident. In others, it must be determined empirically. A provider's policy will most likely fall into one of the following categories:

Type I. Updated periodically for all users

Type II. Updated periodically relative to each user

Type III. Updated in a pseudo-random manner

The following three approaches may be used based upon provider type.

Type I Provider Policy Scheduling Algorithm

1. Assume users with a "no confidence" model have an immediate login time.
2. Order the users chronologically based on their predicted login time.
3. Shift the expected login time for all users back one hour.
4. Perform a density curve fit along temporal boundaries to get a polynomial function that can be used to determine the number of user accounts to harvest for a given epoch.
5. Perform an integral matching algorithm with the inverse of the network activity curve for the time period in question to adjust the distribution curve.
6. If possible, re-distribute peak harvesting time toward time zero to flatten the distribution curve.
7. Assign harvesting times to the sorted users according to the distribution curve.
8. Monitor time and harvest the user account when appropriate.

Type II Provider Policy Scheduling Algorithm

For each provider that falls into this category, an attribute of the user must be identified that determines when the personal information is updated. In some cases, the user may need to be queried for the information. In others, it can be determined from the harvested information. If the attribute cannot be established for a user via either of these means, the provider site may be monitored daily for changes in personal information until a pattern is established.

Since there is a natural, even distribution of accounts updated by a provider for a given day, a user's account can be harvested an hour before his expected login time. As in the Type I algorithm, users with a "no confidence" model should be immediately harvested.

Type III Provider Policy Scheduling Algorithm

This type of policy is the most difficult of all. Since the provider updates a user's account in a non-deterministic manner, a decision must be made for each provider as to the criticality of the information relative to the user. For those highly critical providers, each user account should be harvested daily, perhaps even more frequently. For those less critical providers, user accounts should be harvested less frequently and possible when overall system activity is low.

The PI deliver component **350** is responsible for formatting and delivering the PI to the end user. Usually delivery will only occur subsequent to updating all stale PI. The PI will be delivered to one or more destinations (e.g. facsimile, telephone, pager, Web browser, e-mail, etc.) as specified in the user store **360** except where the PI is accessed via an intermediary Web site. Where the destination is not an intermediary Web site, the PI deliver component **350** performs all formatting necessary to deliver the PI to the appropriate destinations. For example, where the destination is a Web browser, the PI would be formatted as an HTML document, or where the destination is a telephone, the PI would be submitted for voice synthesis and transmission.

In the case of an intermediary Web site, the PI is delivered in a format configurable by the intermediary Web site. FIG. **5** pictorial illustrates a possible embodiment of the current invention utilizing an intermediary Web site. An end user **210** utilizes a client computer **220** to access an intermediary Web site **510** across the Internet **230**. The end user **210** logs into the intermediary Web site **510**. The intermediary Web site **510** contacts the PI engine **240** across the Internet **230** and directly receives the end user's PI updated as required from the PI provider Web sites **250**. The intermediary Web site **510** receives the PI, incorporates it into pages according to its particular formatting style and graphical user interface and delivers these pages to the end user **210**. The use of the PI engine **240** is transparent to the end user **210**. Further, an intermediary Web site **510** serving aggregate PI to an end user **210** may, and most likely will, simultaneously serve as a PI provider.

In another embodiment, this formatting occurs via a dynamic HTML generation system combining stylistic and layout information from a variety of sources. The PI deliver component **350** generates custom HTML pages dynamically. These pages are customized based on a number of stylistic factors (such as background color, foreground color, font size, color and style, page layout, etc) from a variety of sources and content from a variety of sources. Information providers, distributors, the end user, the PI deliver component **350** or any combination of these sources, or other relevant sources, may provide customization factors used in the page generation. Finally, each HTML page must be filled in with data. The data used in such pages may originate from such sources as information providers, distributors, the end user, the PI deliver component **350** or any combination of these sources, or other relevant sources. The required solution is a system representing a generic algorithm for performing such HTML generation at run-time. The style and content may be provided in any suitable format such as the Extensible Stylesheet Language (XSL), as specified by W3C in http://www.w3.org/TR/WD-xsl/, which is expressly incorporated herein by reference in its entirety, and/or the Extensible Markup Language (XML) as specified by W3C in http://www.w3.org/TR/REC-xml, which is expressly incorporated herein by reference in its entirety, or other suitable formatting standard. The key requirements for such a system are complete encapsulation of the problem domain and run-time efficiency.

In preferred embodiments, the solution is based on the following basic model as depicted in FIG. **8**:

1. Six sets of customization factors are identified: distributor content **810**, provider content **820**, distributor style specification **830**, provider style specification **840**, user-specific content **850** and user-specific style **860**.
2. Each set of customization factors **810–860** is considered a separate, independent and required input to the run-time system **870** that performs dynamic page generation.
3. Each input **810–860** will be in form of an XML stream.

4. Output **880** will be in form of an HTML stream.
5. The dynamic page generation system **870** will produce valid output **880** for each set of six valid inputs **810–860**.

FIG. **9** illustrates an actual run-time sequence of input processing by such a system **870**:

1. Distributor content **810** is combined with provider content **820** and with user-specific content **850** to produce a complete content specification **930** by the content merger unit **910**.
2. Distributor style **830** is combined with provider style **840** and with user-specific style **860** to produce a complete style specification **940** by the style merger unit **920**.
3. The style specification **940** is applied by the style applicator **950** to content specification **930** in order to produce the resulting page **880**.

In order to completely encapsulate the problem domain, the following requirements must be placed on the system **870**:

1. Each XML input **810–860** is a valid XML stream.
2. All content specifications **810, 820** and **850** are valid with respect to the same Document Type Definition.
3. All style specifications **830, 840** and **860** are valid with respect to the same Document Type Definition (such as the XSL DTD standard).
4. The merging units **910** and **920** whose task is to take two or more XML streams and produce a combined XML output must be able to produce such output for any set of valid XML inputs.

Another method of performing this task would be to format PI as HTML elements with predefined CLASS attributes. The intermediary Web site receiving these elements could dynamically include them in page forwarded to the end user of the PI. The pages incorporating such elements could include different style information associated with the predefined CLASS set. Level 1 cascading style sheet convention could be used to implement such configurability. See Kerven, Foust, Zakour, *HTML* 3.2 *Plus How-To,* Waite Group Press, 1997, pp. 651–693; Walsh, "An Introduction to Cascading Style Sheets," *World Wide Web Journal,* Winter 1997, pp. 147–156. This option requires minimal programmatic support by the intermediary Web site but restricts to some degree the intermediary Web sites flexibility in presenting the PI to the end user.

Alternatively, an intermediary Web site could develop an application utilizing a standardized application programming interface (API) to directly access the PI data. In this instance, the PI deliver component **350** could either be bypassed or potentially used as the component responsible for servicing API requests for data. Under this model, the intermediary Web site would be responsible for all formatting decisions with respect to the raw PI data. This implementation option requires additional programmatic support by the intermediary Web site but allows for greater flexibility in the use of the raw PI.

The ability to utilize an intermediate Web site to deliver PI is of significant utility. This capability allows an end user already familiar with an existing PI provider to access not only the PI associated with the particular PI provider but also all PI from other PI providers in the comfort of a familiar user interface, namely the existing PI provider Web site. In this situation, the request for PI would directly originate with the intermediary PI provider Web site and indirectly from the end user. Security measures would restrict access to authorized intermediate Web site access. These measure might include verification of the end user and the intermediate Web site. Further, verification of the association between the end user and the particular intermediate Web site might also be required for additional security.

In addition, the use of an intermediary Web site also supports a novel transaction model. In this transaction model, the intermediary site subsidizes, or fully compensates, the PI engine administrator for services provided to the end user. These transactions are facilitated via the auditing and tracking capabilities of the PI engine. These capabilities allow the calculation of per user fees, per transaction fees, per access fees or some combination thereof to be assessed. The assessed values could be directly charged to the intermediary Web site. Alternatively, such values could be debited from a minimum monthly fee charged to the intermediary Web site with any fees beyond the minimum charged directly to the intermediary Web site.

FIG. **11** depicts a flowchart of a typical process according to the described model. The intermediary Web site pays a minimum monthly fee in step **1110**. In step **1120**, the PI engine audits and tracks end user usage via the intermediary Web site. The audited usage is used to assess a fee on a per user, per access, per transaction or combination basis. In step **1130**, this audited amount is debited from the fee paid in step **1110**. In step **1140**, the intermediary Web site is charged for any fees in excess of the minimum fee paid.

Often an end user may require access to the underlying Web page generated by the provider of a particular piece of PI. The delivery component may deliver not only the PI but also an access point directly to the provider's page supplying that PI. The access point may take the form of a link, a form button or some other interactive access mechanism.

Such an access point significantly improves the efficiency of accessing the underlying page by the end user as exhibited by FIG. **7**. In the traditional process **100** for accessing PI, the end user must proceed through numerous intermediary pages requiring a variety of often tedious interactions before reaching the desired page.

The end user must first identify the Provider **110**. Next, the end user must locate the Provider's Web address **120**. Then, the user the requests the Provider's login page **130**. If the end user does not remember the requisite information, this information must be found, or the desired information will remain inaccessible via the Web. The end user then navigates the Provider's Web site **140**. This often entails visiting the Provider's main page **710** followed by viewing a variety of intermediate pages on the Provider's site **720**. The end user may have to backtrack several times to the main page **710** or accidentally leave the system entirely forcing a second login **140** before finally locating the desired information **150**.

Utilizing springboard technology, the entire process **750** is streamlined into the single click of an access point. The delivery component of the PI Engine delivers an access point to the Provider's underlying page along with the PI. As a consequence, the end user need only perform a single interaction with the PI presentation page **760**. This interaction immediately performs the requisite interactions with the Provider's Web site to bring the user to the desired underlying Web page **150**.

In one embodiment, this springboard technology could be implemented utilizing a Java applet. With respect to FIG. **2**, the applet would be downloaded from the PI Host **290** by the end user's client software **270**, usually a Web browser, and executed locally by the end user's computer **220**. The applet would drive the client software **270** to the desired page. Such an applet could retrieve procedures and data for driving the client software from the Provider store **310** and the User store**360**.

In a further embodiment, the PI engine **240** could act as a proxy server directly accessing the Provider store **310** and the User store **360** as required. When the PI engine **240** receives the request to jump to the source of a particular piece of PI, the engine performs the necessary actions to navigate to the desire page and forwards the desired page to the end user's computer **220**. Further interactions with the page might require additional proxying by the PI engine **240** as accumulated cookie data may reside on the PI Host **290**. This embodiment is limited to use in handling standard HTTP traffic rather than secure HTTP traffic.

In a preferred embodiment, the springboard provides the end user with automated login into the PI Provider site **250** and allows the end user **210** to navigate via the client software **270**. This automated login could be accomplished through the utilization of a hypertext transfer protocol (HTTP) redirect. Upon receiving the a springboard access request from the end user **210** via the client software **270**, the PI Host **290** requests the login page from the PI Provider site **250** targeted by the springboard access. The PI engine **240** running on the PI Host **290** receives this login page and constructs a login request by accessing the proper data in the Provider store **310** and the User store **360**. The login request is embedded in the HTTP redirect which is forward to the client software **270**. The client software **270** is redirected to the targeted PI Provider site **250**, and the end user **210** is automatically logged into this site.

Alternatively, this functionality could be implemented via a Java applet as described above. In addition, the PI engine **240** could generate a Javascript page containing the pertinent login request rather than an HTTP redirect. The Javascript page could be returned to the client software **270**. This page would then be executed by the client software **270** to accomplish the automated login.

The PI engine **240** of FIG. **3** may also include a site monitor **370** processing component. This component would systematically monitor supported PI provider Web sites for changes. This component enhances the ability of the system to identify alterations in PI provider Web site procedures, data requirements and cookies requirements. This component increases system efficiency by supplementing or supplanting alteration identification via feedback from the PI access/transact component **340**.

A further embodiment of the present invention might support the localize manipulation of PI. This could be accomplished where the client software **270** running on the client computer **220** in FIG. **2** is a specialized Web client rather than a general Web client such as Netscape. This specialized client might utilize Web channel technology to automate the local PI download and update processes. Where the PI store is implemented via the aforementioned cookie architecture, this specialized client may provide direct local access to stored PI.

In another embodiment, the PI engine **240** of FIG. **3** might support both system supported PI providers as well as PI providers specific to particular end users. In this embodiment, an end user is not limited to PI available from PI providers present in the Provider store **310**. For an end user to add PI provided by a non-supported PI provider, the end user would access the Baseline configure component **320** and create a configuration for the non-supported PI provider. The PI provider and PI configuration along with the verification and access data would be stored along with the user's record in the user store **360**.

A further embodiment of the present invention supports the inclusion of PI transaction procedures and access requirements in the Provider store **310** of FIG. **3**. The end user specific information necessary to realize such a transaction would reside with the user record in the user store **360**. The functionality of the PI access/transact component **340** would expand to support the performance of transactions. This additional functionality could be supported in a manner similar to the procedure described above with respect to performance of access utilizing a simulated Web client. A further feature of this embodiment would include automated or semi-automated account management by providing trigger events to automatically initiate a transaction.

For instance, with reference to FIG. **2** an end user **210** would be able to maintain his/her accounts online through the PI Engine **240**. If an information provider has the capability of receiving payments online, the PI Engine **240** could support complete or partial automation of such transactions. If there is a billing due date for a certain information provider, PI Engine **240** could flag that information and send email to the end user **210** notifying him/her of the bill due. Thus, the user will not have to check each of his/her providers individually for due date information. The PI Engine **240** could also automated payments on a limited range of billing amount for providers who allow payments over their Web servers **260**, then send an email to the user with the notification of payment.

Due date acquisition could be accomplished utilizing the PI access/transact component **340** seen in FIG. **3**. The due date information would be available to the end user via any delivery means supported by the PI deliver component **350**. The PI access/transact component **340** would use standard e-commerce bill-paying methods to pay the user's bill/s to the provider if he/she chooses. Once the bill is paid, then an email notification will be sent to the user with the provider information and payment information. The user can specify the range of amount stored in the user store **360** that will be paid automatically. If the bill exceeds the amount specified by the user, then PI engine will simply send out an email notification to the user instead of paying the bill automatically.

The embodiments described above are given as illustrative examples only. It will be readily appreciated that many deviations may be made from the specific embodiment disclosed in this specification without departing from the invention. Accordingly, the scope of the invention is to be determined by the claims below rather than being limited to the specifically described embodiments above.

What is claimed is:

1. A method for delivering non-public personal information relating to an end user via a wide-area computer network to an end user from at least one of a plurality of information providers securely storing the personal information under control of a processor located remotely from the information providers and the end user, the method comprising the steps of:

(a) the processor connecting with at least one information provider;

(b) for a selected end user, the processor retrieving personal information for the selected end user from the connected at least one information provider based on end user data associated with the selected end user and information provider data associated with the connected one or more information providers, the end user data including information identifying the plurality of information providers securely storing the personal information relating to the end user, the provider data including a protocol for instructing the processor how to access the securely stored personal information via the network, the information accessible to the processor

using the protocol also being accessible by the end user via the network independently of the system for delivering personal information; and

(c) the processor storing the retrieved personal information in a personal information store for access by the selected end user.

2. The method of claim 1, further comprising the step of monitoring information providers for changes.

3. The method of claim 1, further comprising the step of updating the provider store to conform with requirements of the information provider.

4. The method of claim 1, further comprising the step of executing a transaction for the selected end user with a selected information provider based on the accessed end user and the accessed information provider data associated with the selected information provider.

5. The method of claim 4, wherein the execution step is triggered according to the accessed end user data.

6. The method of claim 1, further comprising the step of outputting the personal information associated with the selected end user from the personal information store.

7. The method of claim 6, wherein the outputting step outputs the personal information to a delivery platform specified in the accessed end user data.

8. The method of claim 7, wherein the specified delivery platform is selected from the group consisting of electronic mail, facsimile, pager, telephone, wireless device, ftp server, Web server, gopher server and Web client.

9. The method of claim 6, wherein the outputting step outputs the personal information via a world wide web site.

10. The method of claim 9, wherein the outputting step outputs personal information as a formatted Web page to the world wide web site.

11. The method of claim 9, wherein the outputting step outputs personal information as formatted Web elements to the world wide web site.

12. The method of claim 9, wherein the outputting step outputs personal information data to the world wide web site.

13. The method of claim 1, wherein the connecting step comprises the substeps of:

(i) accessing the end user data associated with the selected end user;

(ii) identifying information providers specified in the accessed end user data; and

(iii) establishing a communication link with each of the identified information providers.

14. The method of claim 1, further comprising the step of outputting the retrieved personal infonmation to an intermediary web site, wherein the intermediary web site has an associated user interface format.

15. The method of claim 14, wherein the retrieved personal information is output to the intermediary web site in a format other than the format associated with the intermediary web site.

16. The method of claim 14, wherein the intermediary web site outputs the retrieved personal information to a web client, and the web client displays the retrieved personal infonmation.

17. The method of claim 16, wherein the web client displays the retrieved personal information in the format associated with the intermediary web site.

18. A computer-readable, digital storage device storing executable instructions which cause a processor to deliver non-public personal information relating to an end user from at least one of a plurality of information providers securely storing the personal information to the end user via a wide-area computer network by performing the steps comprising of:

(a) connecting with at least one information provider;

(b) for a selected end user, retrieving personal information for the selected end user from the connected at least one information provider based on end user data associated with the selected end user and information provider data associated with the connected one or more information providers, the end user data including information identifying the plurality of information providers securely storing the personal information relating to the end user, the provider data including a protocol for instructing the processor how to access the securely stored personal information via the network, the information accessible to the processor using the protocol also being accessible by the end user via the network independently of the system for delivering personal information; and

(c) storing the retrieved personal information in a personal information store.

19. The storage device of claim 18, further storing executable instructions to perform the connecting step by performing substeps comprising of:

(i) accessing the end user data associated with the selected end user;

(ii) identifying information providers specified in the accessed end user data; and

(iii) establishing a communication link with each of the identified information providers.

20. A system for delivering non-public personal information relating to an end user via a network from at least one of a plurality of information providers, the information providers securely storing the personal information, the system comprising:

(a) a user store for storing end user data associated with each end user, the user store including information identifying the plurality of information providers securely storing the personal information relating to the end user;

(b) a provider store for storing information provider data associated with each information provider, the provider data including a protocol for instructing the processor how to access the securely stored personal information via the network, the information accessible to the processor using the protocol also being accessible by the end user via the network independently of the system for delivering personal information;

(c) a personal information store for storing personal information associated with each end user retrieved from the information providers;

(d) a processor in communication with the user store, the provider store and the personal information store, for performing the steps of:

(i) connecting with at least one information provider;

(ii) for a selected end user, retrieving personal information for the selected end user from the connected at least one information provider based on end user data associated with the selected end user and information provider data associated with the connected one or more information providers; and

(iii) storing the retrieved personal information in the personal information store for accessible to the selected end user.

21. The system of claim 20, wherein the processor performs the additional step of monitoring information providers for changes.

22. The system of claim 20, wherein the processor performs the additional step of updating the provider store to conform with requirements of the information provider.

23. The system of claim 20, wherein the processor performs the additional step of executing a transaction for the selected end user with a selected information provider based on the end user data associated with the selected end user and the information provider data associated with the selected information provider.

24. The system of claim 23, wherein the processor automatically performs the transaction execution step according to end user data in the user store.

25. The system of claim 20, wherein the processor performs the additional step of outputting the personal information associated with the selected end user from the personal information store.

26. The system of claim 25, wherein the outputting step performed by the processor outputs the personal information to a delivery platform specified in the end user data associated with the selected end user.

27. The system of claim 26, wherein the specified delivery platform is selected from the group consisting of electronic mail, facsimile, pager, telephone, wireless device, ftp server, Web server, gopher server and Web client.

28. The system of claim 25, wherein the outputting step of the processor outputs the personal information via a world wide web site.

29. The system of claim 28, wherein the outputting step of the processor outputs personal information as a formatted Web page to the world wide web site.

30. The system of claim 28, wherein the outputting step of the processor outputs personal information as formatted Web elements to the world wide web site.

31. The system of claim 28, wherein the outputting step outputs personal information data to the world wide web site.

32. The system of claim 20, wherein the connecting step of the processor performs the following substeps:

(A) accessing the end user data associated with the selected end user;

(B) identifying information providers specified in the accessed end user data; and

(C) establishing a communication link with each of the identified information providers.

33. The system of claim 20, further including an intermediary web site having an associated user interface format, wherein the processor performs the additional step of outputting the retrieved personal information to the intermediary web site.

34. The system of claim 33, wherein the retrieved personal information is output by the processor to the intermediary web site in a format other than the format associated with the intermediary web site.

35. The system of claim 33, further including a web client, wherein the intermediary web site outputs the retrieved personal information to the web client, and the web client displays the retrieved personal information.

36. The system of claim 35, wherein the web client displays the retrieved personal information in the format associated with the intermediary web site.

* * * * *

Exhibit C

US006510451B2

(12) **United States Patent**
Wu et al.

(10) **Patent No.: US 6,510,451 B2**
(45) **Date of Patent: Jan. 21, 2003**

(54) **SYSTEM FOR COMPLETING A MULTI-COMPONENT TASK INITIATED BY A CLIENT INVOLVING WEB SITES WITHOUT REQUIRING INTERACTION FROM THE CLIENT**

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(73) Assignee: **Yodlee.com, Inc.**, Redwood Shores, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/419,708**

(22) Filed: **Oct. 14, 1999**

(65) **Prior Publication Data**

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(51) **Int. Cl.**[7] **G06F 15/16**
(52) **U.S. Cl.** **709/203**; 209/219
(58) **Field of Search** 709/201, 203, 709/205, 216, 219; 705/5, 26; 701/201

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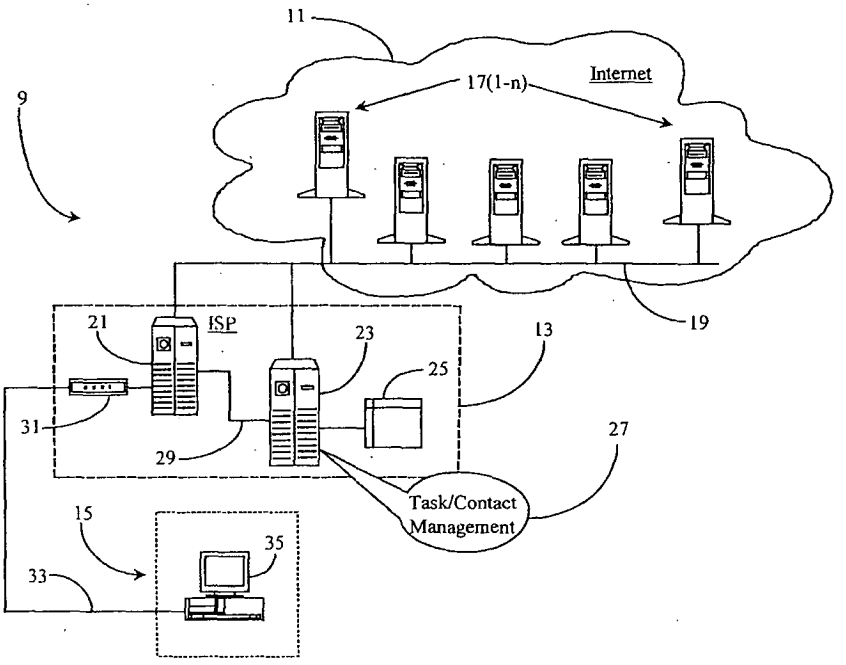
Primary Examiner—Le Hien Luu
(74) *Attorney, Agent, or Firm*—Donald R. Boys; Central Coast Patent Agency, Inc.

(57) **ABSTRACT**

An Internet portal system for accomplishing a multi-component task involving interaction with one or more Internet Web sites includes an Internet-connected server having access to client-related data, an internet-capable client station usable by a client, and software executing on the server for managing individual component tasks in execution of the multi-component task. The software, in response to initiation of a multi-component task specified by the client, defines the component tasks, identifies Internet Web sources for completion of the tasks, manages interaction with the identified Web sites gathering results of the interactions, integrates the gathered results, and communicates final results to the client at the client station. Tasks may be such as trip planning and may include payment for services rendered at Web sites, such as airline reservations, car rentals and the like. A similar system is provided for broadcasting messages to multiple Internet destinations, and further for gathering answers to such messages and communicating the answers to the client.

14 Claims, 5 Drawing Sheets



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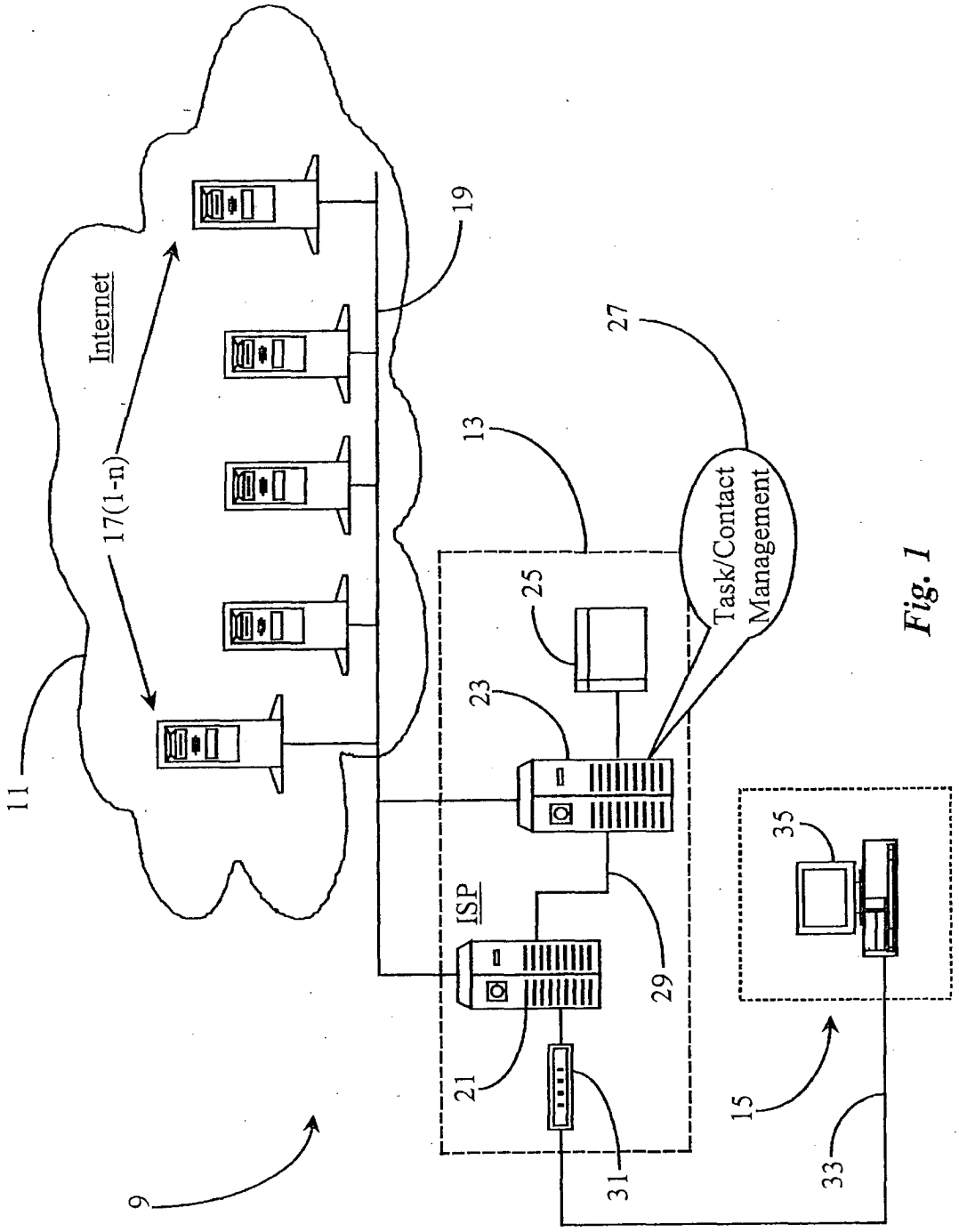

Fig. 1

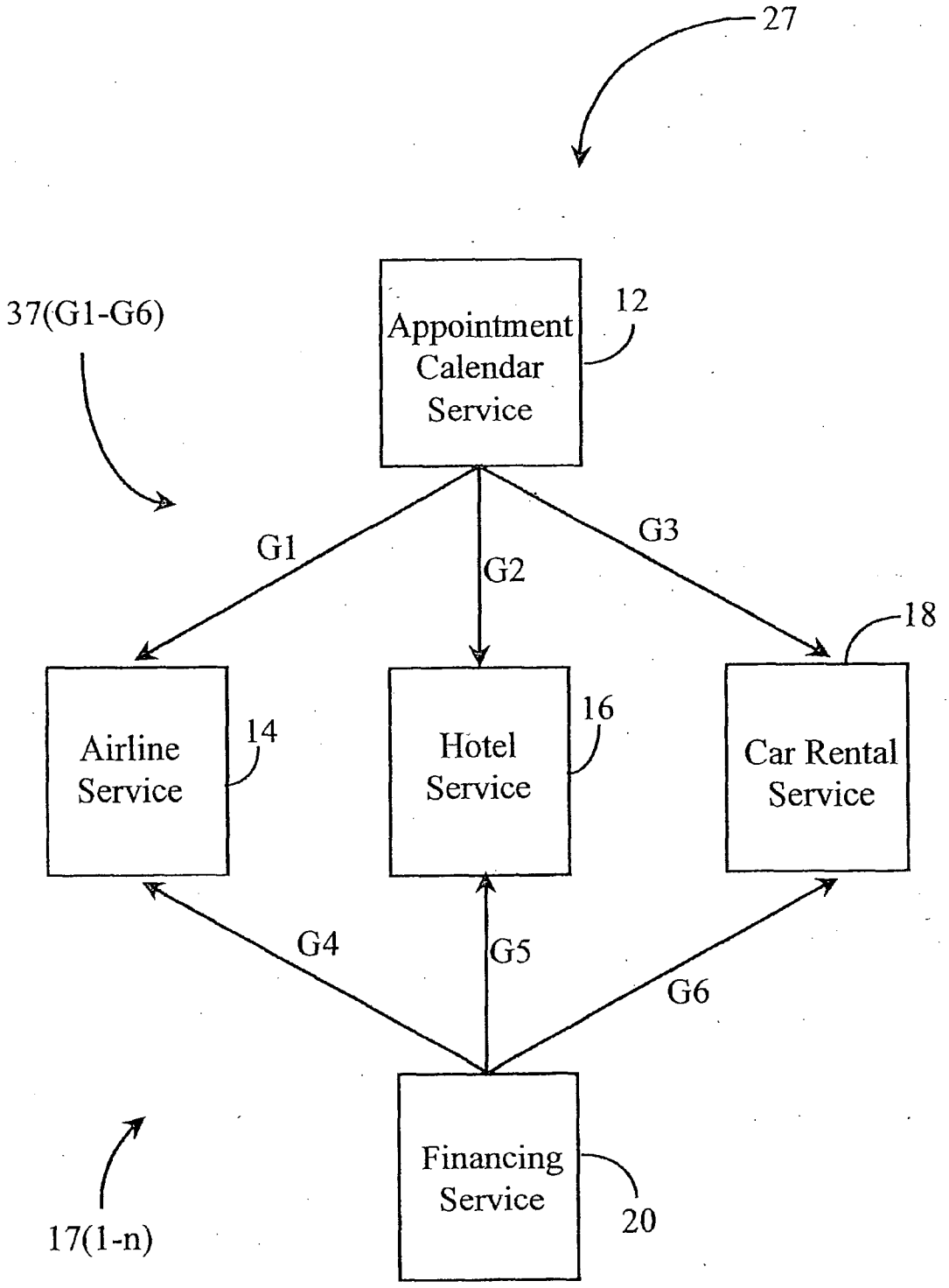
27
37(G1-G6)
Appointment Calendar Service
12
G1
G2
G3
18
Airline Service
14
Hotel Service
16
Car Rental Service
G4
G5
G6
Financing Service
20
17(1-n)

Fig. 2

Ex. 1002 Page 72

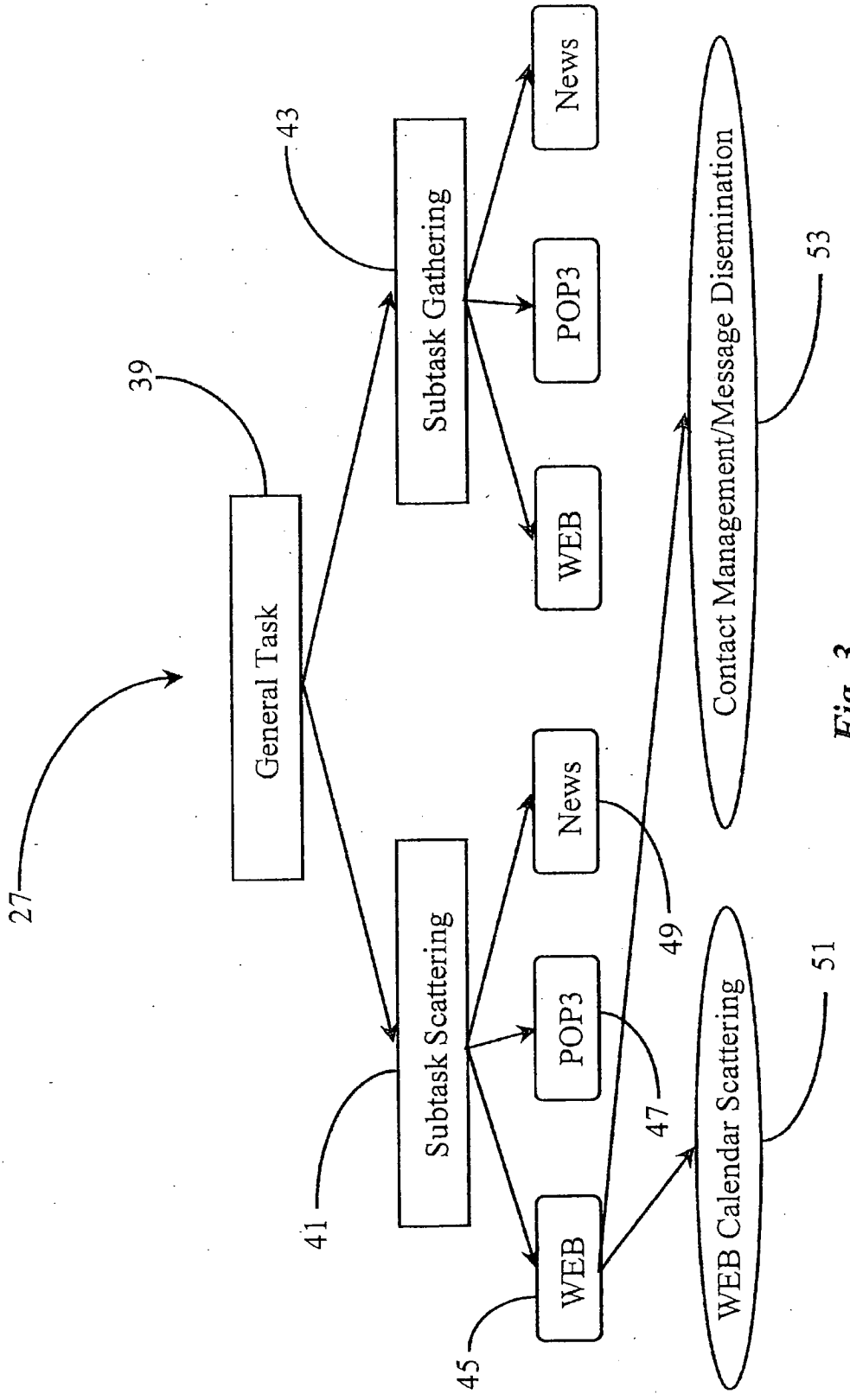

Fig. 3

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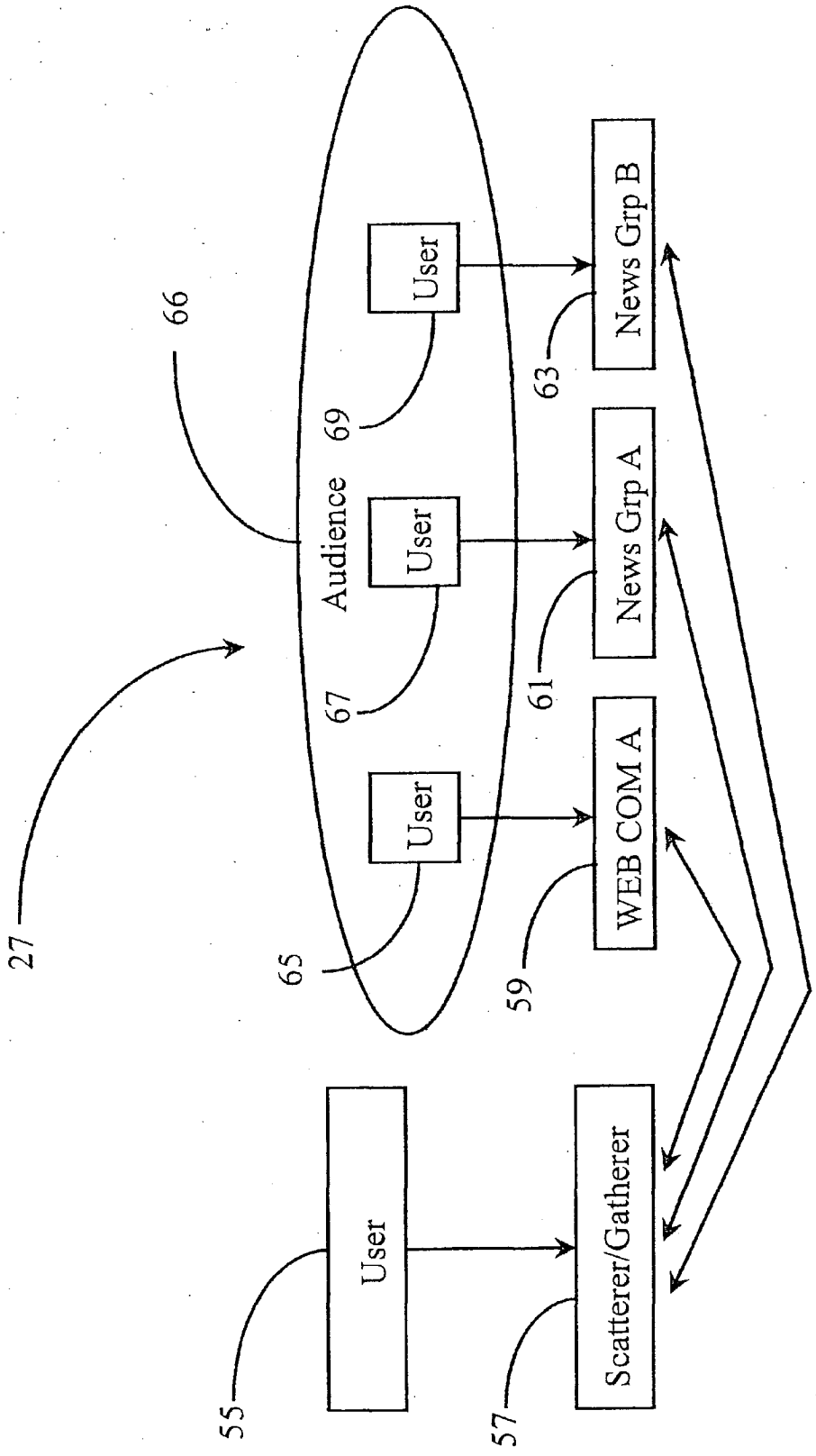

Fig. 4

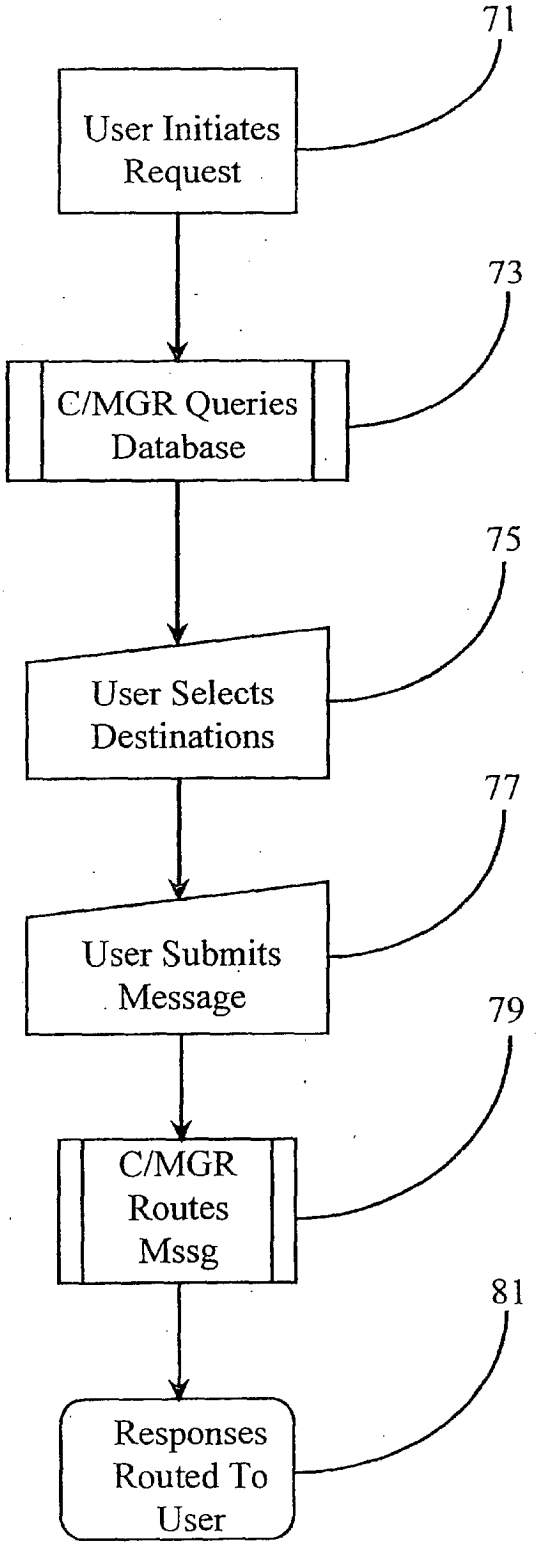
71
User Initiates Request
73
C/MGR Queries Database
75
User Selects Destinations
77
User Submits Message
79
C/MGR Routes Mssg
81
Responses Routed To User

Fig. 5

SYSTEM FOR COMPLETING A MULTI-COMPONENT TASK INITIATED BY A CLIENT INVOLVING WEB SITES WITHOUT REQUIRING INTERACTION FROM THE CLIENT

FIELD OF THE INVENTION

The present invention is in the field of Information propagation and gathering applied to network-based services, and pertains particularly to methods and apparatus including software for dividing a main user task into a plurality of subtasks to be performed by user-selected WEB-based services.

BACKGROUND OF THE INVENTION

The World Wide Web (WWW) as a subset of the well-known Internet network is arguably the largest source for public-access information in the world. For example, anyone with a personal computer, the appropriate software, and a modem can access sites on the Web and obtain information on virtually any subject. As public access and use of the Internet has increased, so too have a variety of WEB-based services catering to many subscribers. Examples of tasks performed by WEB services include airline reservations, hotel reservations, car rental reservations, appointments, memo calendar services and so on. In particular, financial services based on the Internet are becoming widely used due to their ubiquity and ease of access.

Many companies, through innovative applications, have made it progressively easier to use their individual Web services. However, performing a main task that requires the sequential or parallel completion of many sub-tasks is seriously hampered by the fractured nature of the diverse Web services. A user would still be required to visit several WEB services and manually configure such sub-tasks in order to ultimately accomplish the main goal. For example, a generic task needs to be manually decomposed into serviceable subtasks, and each of the subtasks needs to be manually delegated to each of the performing Web services. The results of the subtasks would then have to be manually combined to obtain the resultant task.

What is clearly needed is a method and apparatus that allows a user to accomplish a main task including completion of sub-tasks performed by diverse WEB services without requiring that the user manually visit each WEB service associated with a sub-task and, in some cases, without a user being required to specifically identify a subtask.

SUMMARY OF THE INVENTION

In a preferred embodiment of the present invention an Internet portal system for accomplishing a multi-component task involving interaction with one or more Internet Web sites is provided, comprising an Internet-connected server having access to client-related data; an internet-capable client station usable by a client; and software executing on the server for managing individual component tasks in execution of the multi-component task. The software, in response to initiation of a multi-component task specified by the client, defines the component tasks, identifies Internet Web sources for completion of the tasks, manages interaction with the identified Web sites gathering results of the interactions, integrates the gathered results, and communicates final results to the client at the client station.

In the system in some embodiments individual ones of the component tasks involve payment for services rendered in the interaction with the one or more Internet Web sites, and wherein one of the component tasks is transfer of funds from a client account in payment for the service rendered. Also in preferred embodiments the software provides an input interface for the client to define a task. The input interface may enable the client to participate in defining component tasks and in selecting the Web sites for completion of component tasks.

In some embodiments of the invention the multi-component task involves arranging services for a trip, including one or more of airline reservations, lodging reservations, or reservation of a rental vehicle. In a similar system, also in an embodiment of the invention, the component tasks comprise messages to be sent to individual ones of multiple Web servers.

In these embodiments the messages sent may require answers, and the component tasks further comprise gathering the answers and communicating the answers to the client.

In another aspect of the invention a method for accomplishing a multi-component task involving interaction with one or more Internet Web sites is provided, comprising steps of (a) initiation of a multi-component task by a client via an internet-connected client station to an Internet-connected subscription server having access to client-related data; (b) definition of component tasks by software executing on the Internet-connected subscription server; (c) identification of Web servers for completion of the component tasks; (d) managing of execution of the component tasks by the software, including interaction with the Web servers identified; and (e) gathering and integrating results of the component tasks and communicating final results tot he client at the client station.

In the method individual ones of the component tasks may involve payment for services rendered in the interaction with the one or more Internet Web sites, and one of the component tasks is then transfer of funds from a client account in payment for the service rendered. The software in preferred embodiments provides an input interface for the client to define a task, and the input interface may enable the client to participate in defining component tasks and in selecting the Web sites for completion of component tasks. An example of such a system is one in n the multi-component task involves arranging services for a trip, including one or more of airline reservations, lodging reservations, or reservation of a rental vehicle.

In another embodiment a method according to the invention has tasks comprising sending messages to individual ones of multiple Web servers. In this method the messages sent in some embodiments may require answers, and the component tasks then further comprise gathering the answers and communicating the answers to the client.

In another aspect of the invention an Internet messaging system for broadcasting messages to multiple Internet-connected servers is provided, comprising an Internet-connected server having access to client-related data; an internet-capable client station usable by a client; and software executing on the server for managing the Internet messaging system. The software, in response to initiation by the client from the client station, including specifying a message, identifies Web destinations for broadcast, and broadcasts the message to the identified Web destinations.

In some messaging systems in embodiments of the invention the message requests an answer, and the software gathers the answers and communicates the answers to the client.

In yet another aspect a method for message broadcast on the Internet is provided, comprising steps of (a) specifying a message by a client at an Internet-connected client station; (b) communicating the message to an Internet-connected message server enabled by software; (c) initiating the broadcast by the client from the client station; (d) identifying Web destinations for receipt of the broadcast message; and (e) broadcasting the message by the message server to the identified destinations. In some embodiments the message requests an answer, and there are then further steps for gathering answers to the message and communicating the answers to the client.

In embodiments of the invention described in enabling detail below, for the first time clients of an Internet portal service are enabled to initiate multi-component tasks at a single entry point, and systems operating according to the invention manage completion of the tasks and furnish results to the client.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. **1** is an overview of a communication network practicing WEB-service processes according to an embodiment of the present invention.

FIG. **2** is a block diagram illustrating task decomposition and delegation of subtasks to various WEB services by virtue of software executing on platforms of FIG. **1** according to an embodiment of the present invention.

FIG. **3** is a block diagram illustrating subtask gathering and scattering functions and contact management capabilities of software executed in the architecture of FIG. **1** according to an embodiment of the present invention.

FIG. **4** is a block diagram illustrating contact management message dissemination, propagation, and response gathering capabilities of the software according to an embodiment of the present invention.

FIG. **5** is a process flow chart illustrating logical steps practicing message dissemination, propagation and response gathering functions of the software according to an embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. **1** is an overview of a communication network **9** practicing WEB-service manifolding according to an embodiment of the present invention. Network **9** comprises a data-packet network **11**, an Internet service provider (ISP) **13**, and an exemplary user premise **15**. Network **11** is, in this embodiment, the well-known Internet network and will hereinafter be termed Internet **11**. In other embodiments Internet **11** may instead be a private or corporate wide area network (WAN). The inventor chooses to illustrate Internet **11** as an example in a preferred embodiment because of its large public accessibility.

Within Internet **11** there are illustrated a plurality of WEB servers **17** (1–n) that are connected to an Internet backbone **19**. Backbone **19** represents the many connection points and services interconnecting Web sites making up Internet **11**. It will be appreciated that the portion of Internet **11** represented herein may take on the scope of a local, regional, or even global network.

WEB servers **17** (1–n) represent any data serving machines (Web sites) that are individually hosted by a like number of separate WEB services. For example, one of WEB servers **17**(1–n) may be a hotel reservation server while another may be a car rental server, and so on. For the purpose of the present invention, it is not important to what each server **17** (1–n) is dedicated. It is only important to note that each server **17** (1–n), in this example is responsible for a delegated portion of a general task initiated by a user. It is through the cooperation of all servers **17** (1–n) that a main task may be accomplished.

ISP **13** is configured as a normal ISP according to conventions well-known in the art of Internet access. A main connection server **21** is provided within ISP **13** and adapted to handle Internet connections by virtue of a modem bank represented herein by a modem icon **31**. Connection server **21** manages Internet connection by subscribers by virtue of connection to Internet backbone **19**. A special server **23** is provided herein and adapted to manage practice of the present invention. Server **23** can, in some embodiments, be described as a portal server responsible for managing WEB-services on behalf of subscribing users. In this regard, it is a WEB server having it's own continuous Internet connection to backbone **19**. Server **23** is connected in some embodiments to connection server **21** by a communication link **29**, wherein the ISP provides services according to the present invention. In other embodiments server is a portal server in the Web, and not a part of ISP **13**.

Server **23** has a data repository **25** connected thereto by a data-link as is known in the art. Repository **25** stores data about users and on behalf of users that subscribe to the management service of the present invention. In addition to specific user data such as identification, account information, and the like, additional profiling data consisting of any data associated with a user profile regarding WEB services that a user may subscribe to may be stored in repository **25** and accessed by server **23** on a user's behalf. Repository **25** may be an optical data-storage system, or any other archival system capable of mass warehousing of data. Repository **25** may be held off line, or on-line and may utilize database software as required for the purpose of organizing, sorting, and managing data.

User premise **15** comprises a personal computer (PC) **35** having Internet access capability by any of a variety of means known in the art. In this example user access to Internet **11** from PC **35** is by virtue of a telephone connection line **33**, typically through a Public Switched Telephony Network (PSTN). Other means that may be used to connect PC **35** to Internet **11** include cable connection, integrated services digital network (ISDN) connection, satellite connection, etc. Moreover, Internet-capable devices other than PC **35** may be used to practice the present invention such as a notebook computer, a WEB TV, hand-held devices, and any other known device having a display means and suitable memory for supporting Internet navigation, or navigating through a proxy.

Server **23** has a software application **27** installed therein and configured to facilitate WEB-service manifolding on behalf of a user subscriber base. The term manifolding is used by the inventor to describe a seamless cooperation in the data transfer and dissemination between WEB servers from a single-point interface, which is facilitated by software **27**. Software **27** manages task decomposition and delegation as well as contact management in association with WEB servers **17** (1–n) on behalf of a subscribing user. A user operating PC **35** can utilize server **23** and software **27** to delegate several subtasks to appropriate WEB servers such as WEB servers **17** (1–n) from a single interface such that the subtasks are performed by servers **17** (1–n) in order to facilitate a main task for a user. In addition to the ability of decomposing a main task into subtasks and delegating the

subtasks to be performed, software 27 also allows a user to multicast various types of messaging to a plurality of WEB servers and to have responses routed back to the user's single point interface.

It will be apparent to one with skill in the art that server 23 is adapted as a user-interfacing WEB server, and as such could logically be held within the premise of ISP 13 as is shown in this embodiment. However, server 23 may be anywhere within Internet 11 without departing from the spirit and scope of the present invention.

FIG. 2 is a block diagram illustrating task decomposition and delegation of subtasks to various WEB services by virtue of the software of FIG. 1 according to an embodiment of the present invention. Software 27 provides a single point interface (browser interface) for a user to delegate a task. For example, if a task defines traveling to a scheduled business meeting that is out of the local area of the user, then subtasks would include such as making travel arrangements, making hotel reservations, acquiring a car rental, and so on.

In this example of methodology, a user enters a main task (appointment for meeting) in a subscribed-to appointment calendar service 12. The appointment calendar service 12, which may represent a service hosted by WEB server 23, or one of WEB servers 17 (1–n) of FIG. 1, may in some embodiments, be the only WEB service a user must interface with to from his or her single-point interface in order to accomplish the task. This is because the abstract definition and entered parameters of the appointment include time, date, location, and whom the appointment is with. Such parameters become rules that effect all of the sub-parameters that must be met in order to enable the user to accomplish the scheduled meeting (main task). Software 27 acts to research what parameters will be necessary to allow the user to make the scheduled appointment according to appointment parameters or rules. This research is accomplished by accessing appropriate databases stored in such as repository 25 of FIG. 1, which contain user profile data regarding subscribed-to WEB services.

Software 27 utilizes helper applications 37 (G1–G6). These helper applications are termed guards by the inventor. In this example there are 6 guards 37 (G1–G6), however there may be more or fewer without departing from the spirit and scope of the present invention. Guards 37 (G1–G6) verify parameters associated with facts known about the appointment and the user-data generic to the user's subscribed-to WEB services. For example, if the appointment is in Chicago and the user is in Maine, then an airline reservation is required. G1 in this case would be set to true. Information about the location of the user may be stored in a database such that if a user proceeds to another location it is known. In other cases a user may simply set the guard manually to true (need reservation).

If G1 is true, then G2 (need hotel accommodations) will likely be true unless a user has made plans to stay with a friend instead of using a hotel. G3 (need a rental car) will also be true provided that a user is not being received in such as a company car once he arrives at the meeting locality. In most cases, a user may set guards to true or false from within the single-point interface. In other instances, guards may be automatically set by default based on known data about a user.

If guards G1–G3 are true, then subtasks representing each part of a main task are propagated to the appropriate WEB services represented by three center blocks labeled Airline Service 14, Hotel Service 16, and Car Rental Service 18. These services represent selected user services. That is to say that if a user, for example, typically patronizes more than one airline, then he or she may select the one service to which a subtask will be delegated. Generally speaking, the service blocks illustrated in this example represent such as WEB servers 17 (1–n) of FIG. 1 as is indicated in the example. In other embodiments, a user may select more than one source for completion of a subtask, and configure criteria such that the sources compete. For example, a user entering an overall task for which an airline reservation is one subtask, may configure for more than one airline reservation server to complete the subtask, and accept as a solution that option that produces (a) lowest fare, (b) fewest connecting flights, (c) certain departure and arrival windows, (d) first class only, or a combination of such criteria.

Returning to the present example, if guards G1–G3 are true, then the services must be compensated (paid) for accomplishing the subtasks. An accounting/financing service 20, subscribed to by the user, arranges transfer of funds from a user account such as an expense account to various WEB services accomplishing subtasks. G4–G6, the payment paths, then would be true because G1–G3 were determined to be true in this example. The subtask delegated to and accomplished by an accounting service is delegated the subtask of paying for the other provided services.

Software 27 in a preferred embodiment is implemented with transaction protocol as known in the art, so that historical data is saved for each transaction and step in a transaction. This feature allows rollback and rollforward actions in case a step fails. There is an example in this disclosure of performance of subtasks in making and paying for an airline reservation. If, in that process, the ticketing subtask fails right before a subscriber is to pay for the reservation, having the transaction mechanism in place allows for error recovery so that no data is lost, and the process can be restarted and successfully completed.

The methodology described above allows a user to simply enter a main task at a single-point interface, and then go about his or her business while subtasks such as acquiring a hotel reservation and booking and paying for a flight are performed by the service in the background. In a preferred embodiment, a single-point interface takes the form of a user's browser interface communicating with software 27 running on a server such as server 23, executing the unique software 27 of the present invention. In another embodiment, a single-point interface may take the form of an interactive WEB page maintained on any Internet-connected server.

All that is required to practice the present invention is a browser interface operated by a user such that the interface may communicate with at least one management server on-line and running software 27. Such a server or servers must have access to such as repository 25 for data access and the capability of multicasting determined subtasks to the appropriate user-selected servers for completion, and receiving and organizing the results. More detail about decomposing a main task into subtasks is presented below.

FIG. 3 is a block diagram illustrating subtask gathering and scattering functions and contact management capabilities of software 27 of FIG. 1 according to an embodiment of the present invention. Software 27 manages the decomposition of a general task by utilizing scripted scattering and gathering agents. For example, a main task entered as task 39 is first researched against updated database information in order to define the subtasks. Once defined and verified by guard functions as described in FIG. 2, a scattering agent 41

disperses the subtasks to the selected WEB services according to the data type required by those services. For example, WEB communication **45** accomplished via browsing technique would use HTML or other suitable languages. POP3 communication **47** would cover e-mail. News communication **49** would cover such as instant messaging and posting.

A means for WEB calendar scattering **51** provides an update function to the user's calendar service. For example, if for some reason a flight cannot be obtained, then a notification may be routed back to a user's WEB calendar service alarming him of a need to reschedule. A means for contact management and message dissemination is also provided for multicasting a message and disseminating responses according to various formats used at various WEB services.

Once subtasks are performed or verifiably assured, a gathering agent represented by element **43** collects and disseminates all of the required data from various WEB services and presents the data to the user. Such data may include additional calendar entries at a user's calendar service such as scheduled time of flight arrival, scheduled availability of hotel room, and so on. Moreover, if a user coordinates with a mapping service, detailed maps may be provided illustrating directions to meetings, hotels, and so on.

Application Layer Multicast Architecture (ALMA)

In another aspect of the present invention, a user is enabled to unify WEB messaging and posting to a plurality of WEB servers from a single-point interface. The inventor defines ALMA as a contact management and dissemination service integrated as a feature of software **27** of FIG. **1**. Such means was briefly described in FIG. **3** and is represented by element number **53**. ALMA may be configured by a user to operate as either a unidirectional implementation (no responses required) or as a bi-directional implementation (responses gathered).

FIG. **4** is a block diagram illustrating contact management message dissemination, propagation, and response gathering capabilities of the software of FIG. **1** according to an embodiment of the present invention.

In typical contact management, a user must visit numerous WEB sites in order to post messages and gather responses from such as news groups, message boards, job services, and so on. This task can be quite time consuming depending on the nature of the message and number of sites hosting the message. However, in this example of ALMA, a user may operate from a single-point interface without physically visiting such sites as is described below.

A user **55** decides to post a request for knowledge about a certain topic to a plurality of sites illustrated in this example as WEB community **59**, news group A (**61**), and news group B (**63**). An audience **66** comprises users **65**, **67**, and **69**, which are communicating with their respective services as illustrated by the directional arrows emanating from users **65–69** and propagating toward services **59–63**. Services **59–63** are subscribed to by user **55** as well, and have required parameters entered into such as repository **25** of FIG. **1**. In this way, a user may select services that are topically appropriate to his or her request.

ALMA uses scattering/gathering agents **57** in much the same manner as the task scattering and gathering described in FIG. **3** using a same single-point interface. Scatterer **57** multicasts a single request to selected posting services **59–63**. Message dissemination scripts are used to format the request of user **55** into acceptable formats generic to services **59–63**, and to reformat back to user **55** (bi-directional mode). As users **65–69** respond to the posted request, gatherer **57** collects the responses and routes them back to the interface of user **55**. The bi-directional nature of scattering and then gathering is illustrated herein by the bi-directional arrows connecting means **57** to services **59–63** respectively. By using this method, a user does not have to visit several WEB sites to post messages and gather responses.

As described above, ALMA may also be used in a unidirectional fashion. For example, if user **55** is posting a job resume, and services **59–63** are WEB-based job centers, then unidirectional implementation is appropriate. Users **65–69** representing employers may choose to respond by conventional means such as e-mail or by telephone.

It will be apparent to one with skill in the art that ALMA may function as an integrated feature of software **27** without departing from the spirit and scope of the present invention. ALMA may share the same user interface and data repository as the previously described method of decomposing tasks and delegating subtasks to various WEB services. In another embodiment, ALMA may be provided as a stand-alone implementation.

As described above, Java scripting is used in some embodiments to implement scatterer/gatherer functions as well as for any automated log-in and password requirements for gaining access to protected sites. Such scripts are understood in the art and known to the inventor. Knowledge workers may prepare, store, and update scripts on behalf of subscribed users. Individual scripts are designed to be generic in basic function allowing for easy and, in some cases, automated modification or tailoring for specific user implementations. In many cases, advanced users may create and tailor their own scripts using a provided tool-kit. There are many possibilities.

As described above, a user may practice ALMA from a single-point interface such as from within a WEB browser application. A basic process exhibiting bi-directional ALMA is detailed below.

FIG. **5** is a process flow chart illustrating logical steps for practicing the ALMA feature of the software of FIG. **1** according to an embodiment of the present invention. At step **71**, a user operating from a single-point interface initiates a request. Such a request may be to get response from applicants for a posted rental property or the like.

At step **73**, contact management software queries a database such as one held in repository **25** of FIG. **1** and looks for listed sites that would logically accommodate the user request. For example, if the rental property is near a college, then on-line university message boards and the like may be utilized. Similarly, property rental services allowing private rental postings may be utilized. Such services may already be listed in a user's database if the nature of the request is one that is repeatedly implemented such as might be the case of a landlord owning and renting many properties.

In one embodiment, a search function may be used to locate applicable WEB services prior to initiating a request. In another embodiment, the service may maintain a separate database containing a variety of recommended sites. There is theoretically no limit to the number of separate sites that a user may post a same message to.

At step **75**, a user selects site destinations to which his or her message will be sent and posted. If applicable or allowed by a site, a user may also configure how long the message should be posted, etc. Such data parameters may be incorporated into scripting if known ahead of time.

At step 77, a user submits a message for posting. At step 79, the contact manager using ALMA disseminates the message for various destinations, and multicasts the message to the various site servers contained in the script. Additional requirements such as any passwords or log-in names to gain access to subscribed-to sites are included in the script logic. At step 81, responses to the user's message are routed back to the user. This may be a periodic process wherein the sites are re-accessed automatically by the gathering agent to check for responses. In some cases, a user may configure a gatherer agent as to when and how often to check for responses to an original posting.

Gathered responses may appear in a user's browser interface as an interactive list of hyperlinks indicating the date, time, and origination (URL) of the site that a particular response was gathered from. By clicking on the body portion of the response, a user may read the response off-line without navigating to the site to view the response. In this case, the responses are completely parsed and downloaded to such as repository 25 of FIG. 1 or, in some cases, the user's own storage system.

In another embodiment, a gathering agent may simply notify a user of the existence of responses, perhaps listing the date, time, URL, and number of responses. In this case, the user would navigate to desired URL's to view the responses. In still another embodiment representing unidirectional ALMA, a user may direct that all responses be sent by e-mail from responders. There are many possibilities.

It will be apparent to one with skill in the art that the method and apparatus of the present invention may be practiced over a variety of architectures comprising data-packet network equipment and appropriate user operated devices without departing from the spirit and scope of the present invention. For example, a user may practice the present invention from a corporate local area network (LAN), from a private residence over a PSTN network, from a mobile position using a wireless device, and so on.

In one embodiment, the service of the present invention may be scaled up by using a powerful processor and many connected WEB services such that logistics or the like may be evaluated for complicated tasks such as simulated civilian evacuation models or flood preparedness drills.

The method and apparatus of the present invention should be afforded the broadest possible scope in view of the many possible embodiments described herein and known to the inventor. The spirit and scope of the present invention should be limited only by the claims that follow.

What is claimed is:

1. An Internet portal system for accomplishing a multi-component task involving interaction with one or more Internet Web sites, comprising:

an Internet-connected server having access to client-related data;

an internet-capable client station usable by a client; and

software executing on the server for managing individual component tasks in execution of the multi-component task;

wherein the software, in response to initiation of a multi-component task specified by the client, transparently to the client, and without interaction from the client defines the component tasks based on pre-programmed client-related data, identifies third-part Internet Web sources needed for completion of the tasks, performs and manages interaction with the identified Web sites, gathering results of the interactions, integrates the gathered results, and communicates final results to the client at the client station.

2. The system of claim 1 wherein individual ones of the component tasks involve payment for services rendered in the interaction with the one or more Internet Web sites, and wherein one of the component tasks is transfer of funds from a client account in payment for the service rendered.

3. The system of claim 1 wherein the software provides an input interface for the client to define a task.

4. The system of claim 3 wherein the input interface enables the client to participate in defining component tasks and in selecting the Web sites for completion of component tasks.

5. The system of claim 1 wherein the multi-component task involves arranging services for a trip, including one or more of airline reservations, lodging reservations, or reservation of a rental vehicle.

6. The system of claim 1 wherein the component tasks comprise messages to be sent to individual ones of multiple Web servers.

7. The system of claim 6 wherein the messages sent require answers, and the component tasks further comprise gathering the answers and communicating the answers to the client.

8. A method for accomplishing, after initiation by a client and completely transparent to a client and without interaction from the client following the initiation, a multi-component task involving interaction with one or more Internet Web sites, comprising steps of:

(a) defining component tasks based on pre-programmed client-related data by software executing on the Internet-connected subscription server;

(b) identifying third-party Web servers for completion of the component tasks;

(c) managing execution of the component tasks by the software, including interaction with the Web servers identified, and

(d) gathering and integrating results of the component tasks and communicating final results to the client at the client station.

9. The method of claim 8 wherein individual ones of the component tasks involve payment for services rendered in the interaction with the one or more Internet Web sites, and wherein one of the component tasks is transfer of funds from a client account in payment for the service rendered.

10. The method of claim 8 wherein the software provides an input interface for the client to define a task.

11. The method of claim 10 wherein the input interface enables the client to participate in defining component tasks and in selecting the Web sites for completion of component tasks.

12. The method of claim 8 wherein the multi-component task involves arranging services for a trip, including one or more of airline reservations, lodging reservations, or reservation of a rental vehicle.

13. The method of claim 8 wherein the component tasks comprise messages to be sent to individual ones of multiple Web servers.

14. The method of claim 13 wherein the messages sent require answers, and the component tasks further comprise gathering the answers and communicating the answers to the client.

* * * * *

Exhibit D

US007263548B2

(12) **United States Patent**
Daswani et al.

(10) **Patent No.: US 7,263,548 B2**
(45) **Date of Patent: Aug. 28, 2007**

(54) **METHOD AND APPARATUS FOR RESTRUCTURING OF PERSONALIZED DATA FOR TRANSMISSION FROM A DATA NETWORK TO CONNECTED AND PORTABLE NETWORK APPLIANCES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 862 days.

(21) Appl. No.: **10/287,911**

(22) Filed: **Nov. 4, 2002**

(65) **Prior Publication Data**

US 2003/0061307 A1 Mar. 27, 2003

Related U.S. Application Data

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(51) **Int. Cl.**
G06F 15/16 (2006.01)

(52) **U.S. Cl.** **709/217**; 709/250; 709/246

(58) **Field of Classification Search** 709/246, 709/250, 217
See application file for complete search history.

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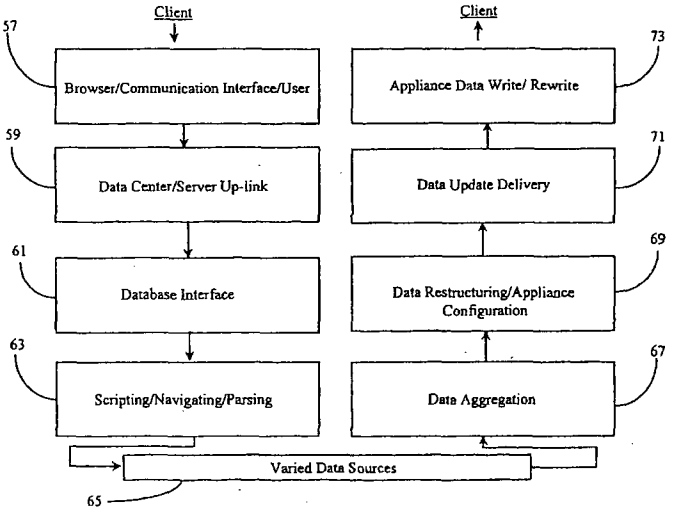
(74) *Attorney, Agent, or Firm*—Donald R. Boys; Central Coast Patent Agency, Inc.

(57) **ABSTRACT**

A system for retrieving and disseminating information records from Internet sources includes a client device and an intermediary server system, including software, between the client device and the Internet. The system collects a record specific to a client from an individual one of said Internet sources in a first form in which the record is recorded at the Internet source, transforms the record from the first form to a second form specific to an application other than an Internet browser application, the application executable by the client device, and transmits the transformed record to the client device for display in the application other than an Internet browser application executable by the client device. In some cases the client device connects by a data link that is not Internet-compatible link. Data mining on the Internet specific to clients and client devices is taught, with aggregation services and synchronization for keeping a client up-to-date efficiently for changing data content.

38 Claims, 3 Drawing Sheets



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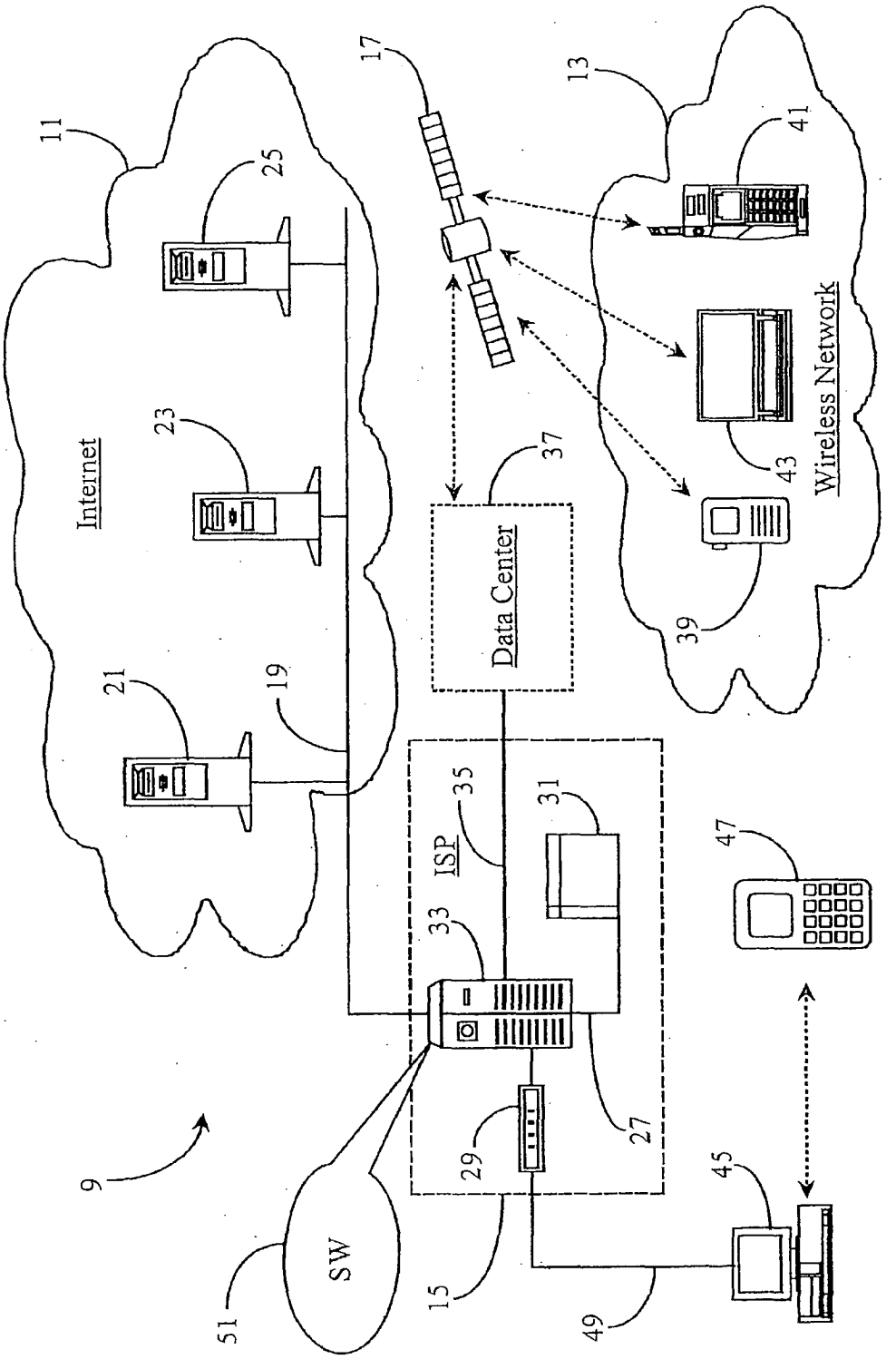

Fig. 1

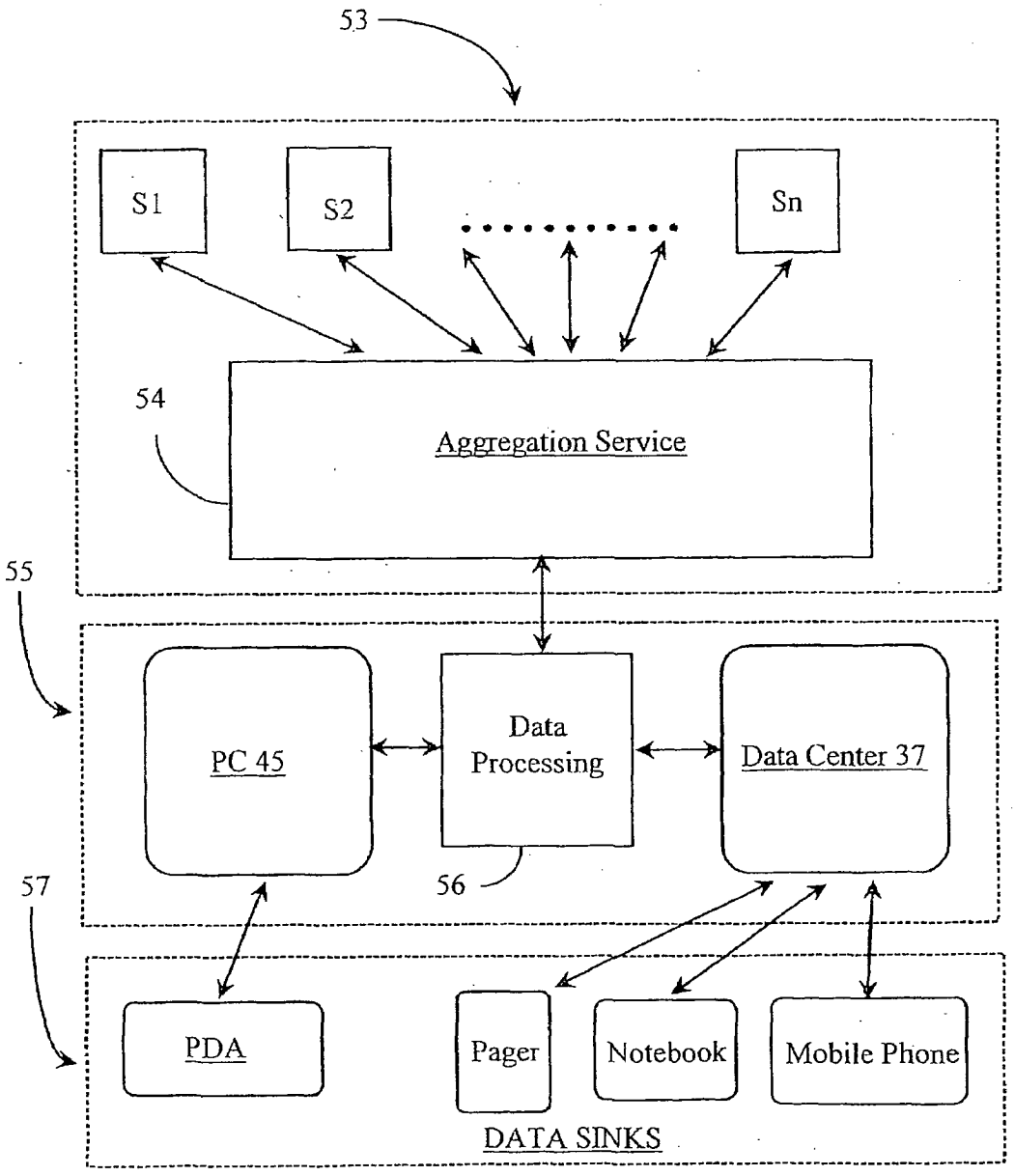
53
S1
S2
Sn
54
Aggregation Service
55
PC 45
Data Processing
Data Center 37
56
57
PDA
Pager
Notebook
Mobile Phone
DATA SINKS

Fig. 2

Ex. 1002 Page 84

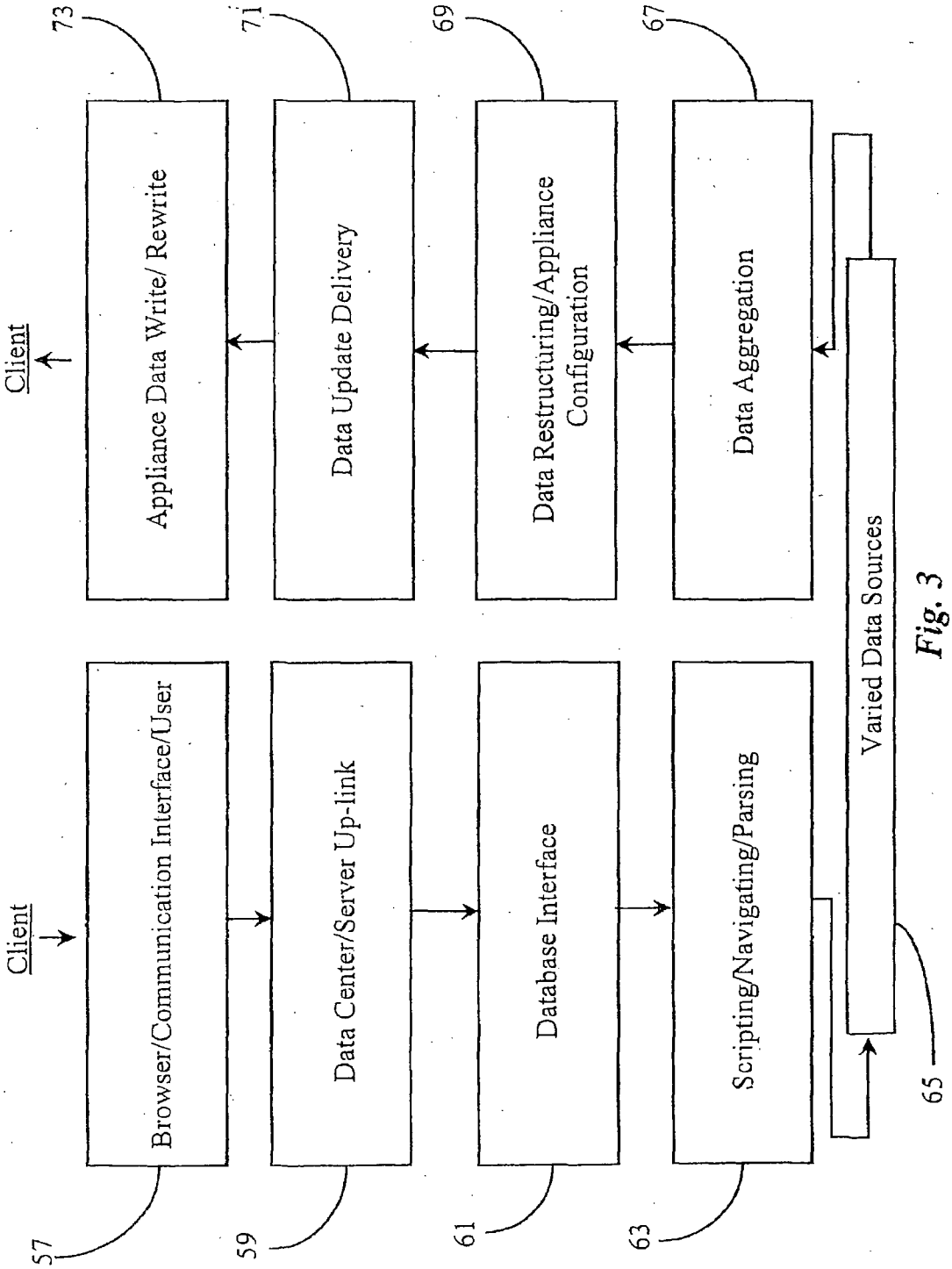

Fig. 3

METHOD AND APPARATUS FOR RESTRUCTURING OF PERSONALIZED DATA FOR TRANSMISSION FROM A DATA NETWORK TO CONNECTED AND PORTABLE NETWORK APPLIANCES

CROSS-REFERENCE TO RELATED DOCUMENTS

The present application is related in part to U.S. patent application Ser. No. 09/323,598 filed on Jun. 1, 1999 now U.S. Pat. No. 6,477,565 and entitled "Method and Apparatus for Obtaining and Presenting WEB Summaries to Users", the content of which is incorporated in its entirety by reference.

FIELD OF THE INVENTION

The present invention is in the field of network information services including data gathering and transmission over wired and wireless network connections and pertains more particularly to restructuring of personal data and, in some cases, general data for the purpose of enabling receipt of such data by a variety of connected and portable network appliances without requiring added hardware or software.

BACKGROUND OF THE INVENTION

The information system known in the art as the Internet, and the Internet subset known as the World Wide Web (WWW), represents the largest publicly available source of information in the world. Anyone with an Internet-capable appliance and an Internet connection can navigate the Internet for the purpose of accessing virtually any type of data that may be held in any one of millions of network-connected servers adapted for the purpose.

The most traditional network appliance used for navigating the Internet and downloading data therefrom is the personal computer (PC). More recently however, a host of other electronic communication devices have been adapted for network connection and navigation on the Internet. Some of these better known devices include cellular telephones, personal digital assistants (PDA's), pagers, and notebook and laptop computers. Some types of these appliances access the Internet via wireless connection. In other cases, data from the Internet is transmitted to such devices through a gateway to a network generic to the device. An example would be that of a cellular phone or pager capable of accessing e-mail and other Internet accounts information.

The Internet operates under a shared bandwidth protocol wherein data packets are transmitted whereby each transmission competes with all other current transmissions for available bandwidth resources. The total amount of bandwidth resource available to network appliances accessing the Internet is a function of network traffic, reliability and capability of lines, power of appliance processor, nature of intermediary network, and a host of other variables. It is not always possible to maintain an Internet connection for any reliable length of time considering all of these variables. Sometimes, there are periods when a device simply cannot gain access at all. In other cases physical connection is only possible on a periodic basis, and an appliance is therefore only intermittently connected.

Even with the more powerful and traditional PC's or notebook computers there may be times when available bandwidth suddenly drops resulting in a disconnect or "moof" as it is often termed. If a moof occurs when

attempting to download data, another attempt must be made to re-access the network, re-navigate to the data source, and attempt a retry of the data download. This can be frustrating for users operating such devices as cell phones, pagers or PDA's which are already operating on high latency and/or low bandwidth connections.

Administrators of network equipment and connection architecture as well as companies that host such as WEB-based information services and the like are improving aspects of communication with various portable network devices by upgrading lines and equipment, developing better data compression and bandwidth reservation techniques and lobbying for more bandwidth for wireless intermediary networks. However, one area that has been largely overlooked is the very format and structures of data that is transmitted. For example, HTML or XML-scripted content is largely unsuitable for transmission under low bandwidth conditions to small portable devices. As a result, such devices having lower memory and operating under lower bandwidth resources are limited to certain types of data such as only e-mail or voice mail.

A system known to the inventor and listed under the cross-reference to related documents section provides a capability of automated login and navigation to Internet or other network-held sources written in HTML, XML, or other languages for the purpose of retrieving and presenting WEB summaries to subscribers according to client/enterprise directives. This service uses scripted templates prepared by knowledge workers using known site logic to enable navigation, not just to the site, but to specific content posted on the site. A parsing method is then used to identify appropriate data based on the provided script directives.

The data obtained by the above-described method is held in a server for user access (via PC), or pushed to a user (PC or alternate appliance) according to enterprise rules. The data is typically presented in the form of a WEB page made accessible to a user having suitable equipment for retrieving and viewing such pages. However, in another embodiment, the data is re-formatted when possible for transmission to a user specified Internet appliance such as a cell phone, laptop, PDA, etc. The user must first access the service using a device that supports a browser interface. Data is forwarded to alternate devices only on user request and assuming the user has configured his or her alternate device to the service. In order to receive some types of data, special software and/or hardware implementations must be made to the alternate appliances.

The above service does not support independent device access to the Internet (except for devices already capable of browser navigation), nor can it deliver certain content held in a format that is not readily convertible to a format generic to the software running on such alternate devices. Moreover much content that would be convertible may still overload the memory of certain alternate devices such as pagers or cell phones if additional data restructuring and synchronization steps are not taken.

It will be appreciated that there is a growing variety of existing and new portable-type devices that are being adapted for Internet access. Most of these devices communicate according to device-generic protocol and are unable to receive and disseminate certain other types of data under normal circumstance. Furthermore, low bandwidth connection states and limited memory provisions preclude many of these devices from broad Internet navigation capabilities and limit download capability in terms of time and type of data content that may be received.

What is clearly needed is a method and apparatus for intelligent restructuring of personalized data and, in some cases, generalized data from the Internet into model/device-specific data formats such that it may be easily made available for transmission to and presentation by a variety of known communication devices having either direct or indirect Internet connection capability. Such a method and apparatus would broaden the scope of Internet-sourced data types that a communication device could independently access and receive without requiring hardware or software modifications to such devices.

SUMMARY OF THE INVENTION

In a preferred embodiment of the present invention a system for retrieving and disseminating information records from Internet sources is provided, comprising a client device; and an intermediary server system including software between the client device and the Internet. The system collects a record specific to a client from an individual one of said Internet sources in a first form in which the record is recorded at the Internet source, transforms the record from the first form to a second form specific to an application other than an Internet browser application, the application executable by the client device, and transmits the transformed record to the client device for display in the application other than an Internet browser application executable by the client device.

In some embodiments the intermediary server system is connected to the Internet by an Internet-compatible link and the client device is connected to the intermediary server system by other than an Internet-compatible link. The other-than-Internet-compatible link may be an Internet Protocol Telephony link, a conventional telephony link operating by a conventional telephony protocol, a wireless cellular telephony link, or a wireless satellite-enhanced link.

In some embodiments there may be a personal computer (PC) connected to the intermediary server system by a conventional Internet-compatible link, and the client device connects to the PC by an other than Internet-compatible link, and wherein the system transmits the transformed record first to the PC which then transmits the transformed record to the client device.

Also in some embodiments the intermediary server system is a subscription system, and maintains client profiles for subscribers to the system, the client profiles including data relative to information destinations on the Internet for a specific client, data records to be retrieved from the destinations, and data forms for transformation of specific records.

In these and other embodiments the intermediary server system may maintain input and output templates for individual clients, the input templates having slots mapping records by type as received from Internet sources, and the output templates having slots mapping data records by type to be transmitted to the client, there being specific correlation between input template slots and output template slots for an individual client. Data forms for transformation to transmit to client devices may include one or more of conventional telephone protocol, Internet protocol telephony Protocol (IPNT), voice mail, e-mail, pager message, and records for applications common to personal digital assistants (PDAs), including one or more of appointment-book data records, memo-pad records, alarm records, and things-to-do records.

In some cases airline reservations retrieved for a client from the Internet are converted into multiple appointment-book entries displayable by an appointment-book application on a PDA, one appointment book entry for each individual flight in a reservation. In these cases there may be an alarm generated for each flight at a time preceding flight time for each flight. A different alarm interval may be used for domestic flights than for International flights.

In some cases billing schedules retrieved for a client may be converted into two or more records, one being a memo pad record detailing the details of the bill, and another being a things-to-do record to remind the client of the time the bill is due. In these cases an alarm record may be entered to generate an alarm prior to the time the bill is due, to remind the client that the bill is due.

There are a number of ways the system architecture might be arranged. In one alternative the intermediary server system is implemented in association with an Internet Service provider site. The intermediate server system may include an aggregation service for aggregating client-specific records prior to transmission to client devices. There may also be a synchronization service for keeping data on client devices synchronized with data from sources on the Internet and from the aggregation service. In one case the synchronization service uses an algorithm enabled to adaptively minimize round trip messages between the intermediary server system and the client device according to whether the client device is more limited by latency or bandwidth. The algorithm in some cases computes Cyclic Redundancy Check (CRC) codes for input and output records, and computes intersections between CRCs on records on the client device and at the aggregation service, the output of the algorithm being exactly the records that need to be sent to the client device and exactly the list of records that need to be deleted form the client device to keep the data sets in synchronization.

In another aspect of the invention a method for retrieving and disseminating information records from Internet sources is provided, comprising steps of (a) collecting a record in a first data form from an Internet source by an intermediary server system connected to the Internet; (b) transforming the record into a second data form specific to an application other than an Internet browser application, the application executable by a client device connectable to the intermediary server system; and (c) transmitting the transformed record to the client device for display with the client device connected by a data link to the intermediary server system. The method or a variation according to embodiments of the invention may be practiced with and within all of the apparatus and function variations described above.

In various embodiments of the present invention for the first time a server system is provided for retrieving and disseminating Internet-based data specific to individual clients, wherein clients may use devices that do not have or need an Internet connection capability or an Internet browser, but may still very clearly relate to the client all of the mined data, and wherein also the system can keep all data fresh and up-to-date for the client.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. **1** is an overview of a communication network wherein a data aggregation and tunneling service is hosted and operated according to an embodiment of the present invention.

FIG. **2** is a block diagram illustrating an exemplary hierarchy existing between various components of the data aggregation and tunneling service of FIG. **1**.

FIG. 3 is a block diagram illustrating an exemplary client request/result loop progressing through the various process phases attributed to a service of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to a preferred embodiment of the present invention, a method and apparatus is provided that allows virtually any Internet-based data to be accessed, restructured, and then transmitted to a wide variety of network-capable appliances without requiring special software or hardware additions to the receiving devices, and in a form that the receiving device may display the data using an existing application on the device typically used for an entirely different purpose and function. Such method and apparatus is described in enabling detail below.

FIG. **1** is a basic overview of a communication network **9** wherein a data aggregation and tunneling service is hosted and operated according to an embodiment of the present invention. Communication network **9** comprises a data packet network **11**, which is the well known Internet in this example, an Internet Service Provider (ISP) **15**, and at least one exemplary wireless data network **13**.

Network **11** may be another type of data packet network instead of the Internet such as perhaps a private or corporate wide area network (WAN) as long as Transfer Control Protocol/Internet protocol (TCP/IP) or other suitable network protocols are supported. Network **11**, hereinafter referred to as Internet **11** for example purposes, is exemplified herein as a preferred embodiment because of the large public accessibility to the network. Such public accessibility lends to a preferred embodiment for hosting a large data-information service such as the service described in the cross-referenced application Ser. No. 09/323,598.

Internet **11** may comprise any geographical portion of the global network including such as data sub-networks connected thereto. Internet **11** has an Internet backbone **19** distributed throughout, which represents the many lines and connections making up the wired Internet. Three data servers **21**, **23**, and **25** are illustrated within Internet **11** and connected to backbone **19**.

Servers **21-25** are, in this embodiment, file servers known in the art for serving data in such as hypertext markup language (HTML), XML, or other suitable languages associated with electronic information pages known as WEB pages in the art. It should be noted here that servers **21-25** are not limited to only serving WEB pages. In some embodiments, other data such as E-commerce data associated with on-line forms, digital authorization certificates, secure digital signature forms and the like, may also be held in such servers. Moreover, any one of servers **21-25** may be adapted as an E-mail server or may be subject to any other adaptation for serving data.

ISP **15** is adapted, in this example, for providing Internet connection services as known in the art. Illustrated within ISP **15** are a main connection server **33**, a mass data-repository **31**, and a modem bank **29**. Main server **33** is directly connected to Internet **11** as shown. Main sever **33** is adapted to perform normal Internet service routines as known in the art, and is additionally enhanced via a unique software instance **51** for enabling practice of the present invention.

In one embodiment, an additional server may be provided for executing software **51** and enabling practice of the present invention in conjunction with main server **33**. In another embodiment, more than one such server may be provided and adapted to execute individual instances of software **51**. The inventor illustrates just one server **33** and SW **51** for the purpose of simplifying illustration and deems it sufficient for the purpose of explaining the present invention.

Main server **33** is connected to a data center **37** by a data link **35**. Data center **37**, among other tasks, provides an ISP (Internet) interface to server **33** for various wireless data networks represented by network **13**. Network **13** is further characterized by the illustration of a communication satellite **17**, which provides satellite rebroadcast of uplinked data streams from data center **37** and a backlink to data center **37** as illustrated by a dotted double arrow. As previously described, network **13** may be plural in the sense that plural wireless data networks common to certain communication devices may accomplish an interface to ISP **15** (server **33**) through such as satellite **17** or another type of wireless transceiver/receiver and data center **37**.

Within network **13** a variety of Internet capable appliances are illustrated. As examples there are a pager **39**, a notebook computer **41**, and a cellular telephone **43**. In this example, appliances **39-43** broadcast data, which is picked up by satellite **17** and relayed to data center **37**. Similarly, data arriving to satellite **17** from data center **37** is broadcast to and received by appliances **39**, **43**, and **41** as illustrated herein with dotted double arrows representing respective two-way communication links. In the case of appliances **39** and **43**, network **13** might be a cellular network typically implemented for those devices. In the case of notebook **41**, network **13** may be a wireless Internet service using cellular or other suitable wireless technologies.

As previously described, main server **33** is also connected to modem bank **29** as is known in the art of land-line Internet access through an ISP. A personal computer (PC) **45** operated by a user/subscriber to the service of the present invention is illustrated as connected to modem bank **29** by an Internet connection line **49**. Line **49** may be a conventional telephone line, an integrated digital services network (ISDN) connection line, or any other suitable wired connection such as ADSL. A PDA **47** is illustrated by a dotted double arrow as having a wireless communication link to PC **45** as is common in the art of computer peripherals.

In the example of a subscriber service, data repository **31** would contain data about individual subscribers to the service of the present invention (user profiles and other user-specific records). Repository **31** may be an optical storage facility or any other convenient facility that is adapted for storing large amounts of data. Repository **31** is illustrated as connected to main server **33** by a data connection **27**. In this example, repository **31** is considered an off-line storage facility that is accessible to server **33**. In another embodiment repository **31** may be a part of server **33**, or in any other network-connected location such as on-line, or on a connected local area network (LAN). In addition to holding data specific to individual subscribers such as account information, address parameters, user ID and authorization data, repository **31** may also hold data gathered from such as Internet **11** before being delivered to or being accessed by users.

SW **51** executing on server **33** is provided for the purpose of enabling a unique data-gathering and tunneling service that allows users operating such as appliances **39-43**, and **47** to have structured access to data such as may be sourced in one of servers **21-25**; and, to have the data re-structured in an intelligent fashion for delivery to a specific Internet appliance that may not be normally adapted for receiving and displaying the data.

Software **51** provides, in this case, a unique subscriber service hosted by ISP **15** in which the service may be accessed and utilized by using any Internet-capable appliance. For the purpose of discussion, an Internet-capable appliance shall include any electronic communication device capable of a direct or indirect (through a connected network) connection to a data packet network such as Internet **11**. Such devices may also include devices that may only receive data from such as Internet **11** as long as a separate device is used to access the service and upload a data request.

In practice of the present invention, a user operating such as cellular telephone **41**, for example, accesses ISP **15** from anywhere in network **13** through a wireless path, exemplified herein by satellite **17** to data center **37**, and registers a request for data. The data request in some cases may be manually initiated by a user, and in other cases automatically initiated on a periodic basis while the device is connected to the Internet. In some cases a request will he automatically initiated when the device connects to the Internet.

The nature of a request may vary under a broad set of rules set-up by a hosting enterprise (ISP **15**) for types of requests. For example, one request may be for a data result of a site-specific search according to defined parameters such as was described in the characterization of a WEB summary disclosed in application Ser. No. 09/323,598. Another type of request may be for information about departure/arrival parameters and gate instructions associated with purchased airline tickets. Still another type of request may include a desire to access only the existing incoming mail from a certain individual or individuals. There are many possibilities. In a preferred embodiment a script for data requests may be a part of a user profile, and a single generic request from a user may trigger a variety of data searches and retrievals from Internet **11** on behalf of the user.

Data center **37** processes requests from network **13** and forwards them to main server **33** where they implemented. Various technological enhancements may be implemented in data center **37** to facilitate communication and interface capability with various portable appliances such as appliances **39-43**. One example would be to provide an interactive voice response (IVR) unit (not shown) that may take a vocal or touch-tone initiated request originating from such as cell phone **43**. Such an IVR may be included in data center **37** as a client interface.

The nature and content of a request from cell phone **43**, for example, is analyzed and restructured into an equivalent Internet Protocol (IP) request that can be uploaded into main server **33** over data link **35**. This process is, in a preferred embodiment, performed in data center **37** with the data center having access to a portion of software **51** dedicated to the specific function. In another embodiment, a specific portion of software **51** may be provided to be executable on a connected machine at data center **37** for the purpose of analyzing requests of varied protocol and restructuring them into requests that can be understood on server **33**.

Once a request from cell phone **43** is registered in main server **33** as an IP data request, data about the user is accessed from repository **31** for verification and authorization purposes. A scripted template supplied by a knowledge worker (not shown) is provided for accessing site logic during navigation and parsing as initiated by SW **51**. Such knowledge workers may be stationed at data center **37**, ISP **15**, or any other centralized location that is connected to the service by network connection. The scripting, navigating, and parsing technology is fully explained and detailed in the co-related application Ser. No. 09/323,598. However, further innovation is required in order to accomplish the goal of the present invention, which is the intelligent restructuring of data coming into and leaving from the service of the present invention.

In the present example a ready request is queued for execution by SW **51** according to on-demand or in a scheduled fashion. Server **33**, upon executing the request, navigates to one or more of servers **21-25** (for example, as representative of plural servers in the Internet) holding the requested data. The location of the data is then identified according to site logic provided in the scripted template. Located data is then parsed for specified content to be returned. The resulting data is aggregated in repository **31** if the request has a scheduled delivery or user-access time. If the return data follows an on-demand criteria, then it is immediately processed and delivered over data link **35** to data center **37** for further processing before being broadcast over network **13** to a user operating such as cell phone **43**.

In another aspect of the present invention, requests and return data may be registered and received by a user operating a PDA such as PDA **47**, which is a peripheral to PC **45** illustrated as wired to Internet **11**. In this embodiment, a user operating PDA **47** registers a request to PC **45**. The request is analyzed and uploaded to server **33** under control from PDA **47**. Additional processing concerning obtaining and returning information is the same as with previously described embodiment except that instead of using data center **37** as an interface, PC **45** acts as the interfacing machine. If requested data arrives to PC **45** in a format that is not discernable to PDA **47**, then data restructuring may be performed in PC **45** by a provided instance of SW **51** that is dedicated to the purpose. PDA **47** would require no modification in either hardware or software. In yet another embodiment the client machine may be PC **45**.

The method and apparatus of the present invention provides a unique capability of restructuring data in an intelligent way. That is, instead of simply converting one format of data into another, a first data set is analyzed and understood so that an alternate data set in a format specific to applications executable on a receiving device may be created that reflects the desired content and function of the first data set. More detail about how this is accomplished is provided below.

FIG. **2** is a block diagram illustrating an exemplary hierarchy and data transformation and flow existing between various components of the data aggregation and tunneling service of FIG. **1**. The service of the present invention in a preferred embodiment comprises three basic component layers. These component layers are illustrated herein as layer **53**, layer **55** and layer **57**. Layer **53** is best described as a source-data interface layer. This portion of the service is dedicated to navigating to and obtaining data from Internet-connected data sources. Data sources (S)1-n are analogous to servers **21-25** of FIG. **1**. It will be appreciated that the number of data sources that are available on a network such as Internet **11** (FIG. **1**) is vast. Data collected from S1-Sn is continually aggregated into such as repository **31** (FIG. **1**) as indicated by the bi-directional arrows linking each S1-Sn to aggregation service **54**. Aggregated data is tagged according to requesting user and target receiving device.

Layer **53** includes all of the means and processes required for locating and parsing user-requested data according to site-specific scripting techniques and funneling the collected data back to aggregation for storage under a user-specific ID parameters. Most, if not all of the data retrieved in layer **53** will be in the form of HTML, XML, or a similar protocol. Other than XML types of data may include various multi-

media types associated with audio and video data, animated graphic data, or still graphic data. All data requested by any one user is aggregated under that user's ID parameters.

Data stored in aggregation is forwarded to layer **55** according to a pre-assigned schedule for processing. Layer **55** provides an internal process comprising data restructuring and primary interface capabilities. Data processing is the first phase of layer **55** as illustrated by process **56**. It is in the main the data processing phase that is unique and distinguishes the present invention from that disclosed in the copending and referenced application Ser. No. 09/323,598.

Instead of simply converting data from one language or format into another in an attempt to render it usable to a specific Internet appliance, the present invention seeks to rewrite original data in an alternate format or language that accurately represents the data presented in the original format in terms of content and function. Data expressed in this alternate format (standardized) is then restructured into the appropriate device-specific format for transmission.

To accomplish the above-described task, it is required that data obtained in layer **53** be at least machine-legible in its given language or format and understood by software **51**. SW **51** must also know parameters encompassing the formats and data presentation schemes of various software routines used in various Internet-capable appliances. For example, an HTML description of a flight reservation and gate instruction as presented on an information page (WEB page) would not be expressed as a text block in such as an electronic calendar, or a PDA. Rather, the same information would have to be restructured and expressed as a series of entries expressing time and date functions associated with the particular flight schedule.

In a preferred embodiment, an algorithm is employed as part of software **51** that can take information from provided input data-templates and restructure the information to fit pre-designed and associated output data-templates. For example, an input template is created for one or more records of network-based data. The input template renders the original data into a proprietary language similar to HTML and XML. The proprietary language or code expresses the original data in a standard format that may then be manipulated by algorithm. The input template holds the rendered data according to mapped slots.

An output template is created that is generic to the parameters and presentation scheme associated with a specific Internet-capable appliance that will receive the data record or records. The output template holds the specific slots wherein data will be rendered by the algorithm. The algorithm uses provided data-restructuring rules to identify data contained in an input data template and re-map it by matching the data to appropriate data-slots presented in an output data template. As a result, one or more input records (parsed and rendered data) will produce one or more output records (data remapped by algorithm).

Data templates as described above, are not analogous to logic templates described in the co-related application Ser No. 09/323,598. Data templates work in conjunction with scripted logic-templates used to find and parse the requested data. Input templates are request-generic while output templates are device-generic. For example, there are many variations of data formats and languages that can be used when presenting data on a WEB page. Therefore, an input template should be modeled to facilitate the specific data fields, language, and format in which requested data is expected to be found. In some cases, an input template may be enhanced to support a variety of differing formats and or languages, and be made to hold more slots for data not necessarily requested. The output template is device generic and contains only usable data-slots that may be presented on its associated device.

In one embodiment of the present invention, a knowledge base (not shown) could be provided as part of SW **51** and used to equate data parameters associated with frequently requested data types from a network to data parameters that are generic to various network appliances. In this method, categories and titles describing oft-requested data records such as flight reservations, account balance information, order status information, and the like are created, coded and stored in the knowledge base. Device-specific equivalents described as rules for presenting the type data to each specific model device are also stored in the knowledge base and equated.

When a data request comes in, a runtime engine (software application) takes the input data and finds the category and subtitle that matches it. Then the data presentation rules concerning the specific receiving device are matched from the knowledge base. In this way, appropriate output records may be created that are specific to the type and model of device that is targeted to receive the data.

In one embodiment, the knowledge base method is used in conjunction with the template/algorithm method. As use of the service progresses, the knowledge base is updated with new categories and subtitles associated with repetitive requests. The knowledge base may also be updated to reflect parameters associated with new types and models of network capable devices. There are many such possibilities.

Component layer **55** includes an interfacing data center such as data center **37** represented in FIG. **1** and a desktop PC such as PC **45** of FIG. **1**. Output templates contain device specific data that is ready for transmission to target devices such as devices **39-47** of FIG. **1**. As output templates are completed, they may be held for requesting users at a storage facility (not shown) held in a data center, or pushed to requesting users based on the original request. Similarly, output records destined for such as Internet-connected PCs may be held therein for remote access, or pushed to requesting users operating peripherals such as PDA **47** of FIG. **1**.

Component layer **57** represents various network capable appliances as described above and their associated transmission networks. Illustrated within layer **57** is a PDA with a remote (wireless) link to PC in layer **55** as shown by double-arrow connecting line. Also illustrated within layer **57** is a pager, a notebook, and a mobile phone, all having remote (wireless) connections to the data center represented in layer **55** as shown by the double-arrow connecting lines. The PC illustrated in layer **55** may be a desktop PC operated by one or more users. In another embodiment, it may be a powerful workstation shared by many users. The represented data center has all of the interface means required to bridge the appliances of layer **57** to the service.

It will be apparent to one with skill in the art that knowledge workers associated with creating input and output templates may perform their services from anywhere in a connected network without departing from the spirit and scope of the present invention. In one embodiment, input templates are supplied by knowledge workers associated with the service, while output templates are created by knowledge workers that are associated with various network hosting entities.

In another embodiment, the service of the present invention may be provided as a turnkey package wherein companies may set-up their own specific information services using the implements of the present invention.

It will also be apparent to one with skill in the art that an intermediary language derived in part from HTML and XML languages may be proprietary in nature and used as an intermediary data-conversion language between such as pure HTML and device specific protocol without departing from the spirit and scope of the present invention. Codes specific to such an intermediate language may be licensed to entities wishing to recreate the service for their own purposes.

FIG. **3** is a block diagram illustrating client request/result loop progressing through the various process phases of the service of the present invention in a preferred embodiment. In step **57** a client (user/subscriber) initiates a request for data. Such a request may be initiated from a network capable appliance like appliances **39-43** of FIG. **1**. A client may also initiate a request from a standard PC such as PC **45** of FIG. **1**, or a PDA such as PDA **47** of FIG. **1**. Browser software of any sort is not required for a device to access the service. In this way, a low bandwidth device may be used to practice the present invention without depending on a parent or associated machine. For example, devices not having IP capability or navigational software would interface with such as data center **37** of FIG. **1** in order to gain access. Appropriate equipment and means for bridging networks is made available in data center **37**. An Internet-capable appliance having a browser function and Internet connection capability may, of course, gain access through normal wired or wireless channels.

In step **59**, a request from a client is registered to the service. If the request is initiated from a device using a wireless network wherein a data center such as center **37** is the interface, then the request data may be converted from the protocol used by the requesting device to a suitable IP protocol for registering at a server such as server **33** in ISP **15** (FIG. **1**). If an Internet-connected PC or workstation is the interface, and a requesting device is a remote peripheral such as PDA **47**, then the original request will arrive already in suitable IP format.

In step **61**, the client request is compared against a database for additional information about the initiator of the request and, perhaps to finish the package by associating the appropriate templates to the request. The templates may be stored under specific user ID for repeat requests, and created new for cases where no template is available. This includes the scripting templates of Ser. No. 09/323,598 as well as input/output templates of the present invention. Once all information and planned routines are incorporated into a request, it may be queued for execution.

In step **63**, the service navigates to a data source or sources specified in the request on behalf of the client. Site-logic scripting provided by template, along with a data-parsing convention is used to locate and identify data associated with the client's request. Data sources will typically be information pages written in such as HTML or XML. However, this is not to be construed as a limitation. Other types of data as well as some multimedia content may be located and parsed according to site logic.

In step **67**, all data obtained in step **63** is aggregated and tagged according to a user-specific and device specific manner. In some cases the data found during navigation is simply stored in one location for a client with the stored data retaining it's original format. In another case, data is rendered to an intermediate form of it's original language for the purpose of providing a standard format from whence further re-structuring may occur.

In step **69**, aggregated data is restructured from its original format (if applicable) to it's final format (device specific) in preparation for transmission. In other cases, the data is stored for client access at his or her convenience. In a preferred embodiment, the above-described template method with algorithm is used. In an alternative method, a knowledge base technique is used. In still another embodiment, the two methods may be combined. It is assumed that by the time data restructuring occurs, an input and an output template containing the appropriate data fields pertaining to a target device have been provided. A software module (not shown) termed a data renderer converts the original data in aggregation into a suitable intermediary language that is understood to be standard to the system and compatible, in terms of further slot-mapping, according to any supported protocols specific to various network appliances interacting with the service. The intermediate language may be of a proprietary nature and licensed to other entities for use. In an embodiment wherein a knowledge base system is used, an intermediate language would not specifically be required.

The input template contains the rendered data in specific field-slots that are understood by the software algorithm. The algorithm also understands the field-slots associated with the output template. This is accomplished by creating specific rules for the algorithm to follow in operation. The algorithm re-maps the data from the input template into the field-slots in the output template according to the applicable rules. During this operation a second data renderer inserts and in some instances writes new data for insertion to specific field slots chosen by the algorithm.

In one embodiment, output templates may be provided with additional functional routines (based on the content of inserted data) that may be caused to activate a notification system or the like that is generic to a particular receiving device. For example, a round trip flight description may be rendered as a series of appointment book entries in such as a PDA. The additional notification routine in the output template may, according to the data, set an alarm or other audible alert to activate at a convenient time before the scheduled departure, as a reminder to the user.

In step **71** output records are delivered to specified devices through their respective interfaces and connected networks. In step **73**, a receiving appliance incorporates the data in usual fashion. Steps **71** and **73** may also be construed as steps for delivering and incorporating only updates to existing information. For example, the client send/return loop represented by steps **57** through **73** can be initiated for one or more requests and then be reactivated to receive periodic updates to already received data. For example, input and output records already sent to a client may be stored at the service for reference and tagged with client ID, time, date, etc. If an update request comes in from a client it can be noted in a new output template designed to carry only the new information. During the process at step **69**, the input template containing the previous data is compared to the input template containing the current data. The discrepant data in the new input template is remapped to appropriate field-slots in a new output template. In this way, the record only reflects the new data. In step **73** then, the new data overwrites the old data. Data obtained through the service may be routinely and periodically updated in a push or pull fashion.

In another embodiment, synchronization (updating) may be performed in step **63**. For example, a new update request may arrive wherein the previous input record is obtained and used to partially direct the function of parsing during the navigation process. The rule would in effect direct the parser to designate only data that is different from the old input template for collection. In this case, the algorithm may be

employed in reverse fashion so that the intermediate language in an input template may be converted back to original language as seen by a parser.

In still another embodiment, the parsing engine may be equipped to read both languages. The parsing process may also include the algorithm function for re-mapping the data.

It will be apparent to one with skill in the art that the method and apparatus of the present invention may be applied to the method and apparatus disclosed in the co-related application Ser. No. 09/323,598 to provide a new and unique service without departing from the spirit and scope of the present invention. It will also be apparent that the method and apparatus of the present invention may stand alone from Ser. No. 09/323,598 as long as a suitable method for site navigation and parsing is included in the new service.

The service of the present invention may be adapted to serve specific wireless networks and client/devices connected to them. It may also be broadened to include many wired communication networks, including the Internet and PSTN networks. Conventions may be provided to such as SW 51 for the location, parsing and restructuring of virtually any type of data that may be held on a digital network. Even conventions such as video may be played and interpreted by the service for data mapping to provided output templates for creating records that reflect the content or at least a summary of content contained in the video.

Specific Examples

The present invention in certain embodiments is to be first brought to the public after the filing of the present patent application by a new Internet company named Yodlee.com in Sunnyvale, Calif. In the first implementations the service practicing the present invention is called Yodlee2Go. Specific features of the Yodlee2Go service are included here as further examples of the present invention. In these examples restructured information is provided to onto the Palm™, but this information could be inserted onto any other mobile device as well. Many cell phones, for example, have calendar and address book applications built in, so the restructured information could be inserted onto those devices as well, and into many others.

1. Travel Reservations.

If you book your travel reservations through an online travel agency such as BizTravel.Com or Travelocity.Com and you have added the travel site to your Yodlee home page, then your travel reservation information is synchronized onto your Palm, for example, into several places. For each travel reservation that you have:

a. One record is entered into your Date Book for each "leg" of the flight. The description of the record contains the airline name on which you will by flying, your flight number, and the departure and arrival airport codes.

b. In addition, an alarm is automatically set to go off one hour before your flight time. You may change the alarm time for a particular flight by clicking on the "Details" button in your Date Book. (You may also change the default alarm time to be different than one hour by changing your Yodlee2Go preferences. This is described in Section x of this user manual.)

c. If you click on the "Note" button in the Details dialog box, you can view your confirmation number, the price that you paid for the ticket, the flight mileage, and the name of the travel agency with which you booked the flight.

d. Since Yodlee2Go knows which travel agency you booked the flight with, it synchronizes the contact information for that travel agency into your address book. This way, you will have the phone number of the travel agency with you if you run into problems at the airport. (Also, don't forget that you have your confirmation number in the note attached to the date book record!)

e. Finally, since Yodlee2Go inserts a memo into your Memo Pad application containing the entire itinerary for each of your flights.

2. Frequent Flyer Miles.

If you have added any airline sites in the frequent flyer miles category onto your Yodlee home page, then all of your frequent flyer information is copied into a single memo in your Memo Pad application on your Palm. The memo is titled "Frequent Flyer Miles" and can be accessed by clicking on the Memo Pad application on your Palm.

3. Bank Statements.

If you do your online banking on the web, and you have added your bank's site to your Yodlee home page, then a summarized version of your bank statements will by synchronized into the Memo Pad application on your Palm. One memo will be created for each of your online bank accounts. Each memo will contain the balances in each of your accounts, and a total balance across all your accounts at that bank.<

4. Credit Card, Telephone Statements, and other Billing Information.

If you have added any credit card or billing sites to your Yodlee home page, then this information will be synchronized onto your Palm to help you remember to pay your bills on time. For each bill, Yodlee2Go will insert one entry in your list of things to do in your To Do List application on your Palm device. The entry will contain the name of the company from which you received the bill, the due date, and the amount due by the due date. If you click on the "Details" button, and then click on the "Note" button to view more information about the bill.

5. Stock Portfolio Information.

If you have added your online stock broker (such as E*trade) onto your Yodlee home page, then your stock portfolio information will be synchronized onto your Palm device by Yodlee2Go. Yodlee2Go will create one memo pad entry in your Memo Pad application that contains a consolidated statement of all of your stocks across all online brokerages that you have added to your Yodlee home page. The memo is titled "Stock Quotes," and also contains a summary of the total worth of all of your stock portfolios.

The methods and apparatus of the present invention have many broad applications and therefore should be afforded the broadest of scope. The methods and apparatus of the present invention are limited only by the claims that follow.

What is claimed is:

1. A subscription system for providing information from an Internet source for a client device, comprising:

client profiles for subscribers to the system including data relative to information destinations on the Internet for a specific client and a record of a client device and an application other than a Browser application executable by the client device;

a software function for translation and transmission;

wherein the client profiles also include data records to be retrieved from the destinations, and data forms for transformation of specific records and the system

accesses information from the Internet source in a first format, translates the information into a format compatible with the application executable on the client device, and transmits the information for the client device for presentation according to the client profiles.

2. The system of claim 1 implemented on an intermediary server system connected to the Internet by an Internet-compatible link, and the information is transmitted for the client device over a link other than an Internet-compatible link.

3. The system of claim 2 wherein the other-than-Internet-compatible link is an Internet Protocol Telephony link.

4. The system of claim 2 wherein the other-than-Internet-compatible link is a conventional telephony link operating by a conventional telephony protocol.

5. The system of claim 2 wherein the other-than-Internet-compatible link is a wireless cellular telephony link.

6. The system of claim 2 wherein the other-than-Internet-compatible link is a wireless satellite-enhanced link.

7. The system of claim 2 further comprising a personal computer (PC) coupled to the intermediary server over a conventional Internet-compatible link, wherein the system transmits the information to the PC, which then re-transmits the information for a client device over an other-than-Internet-compatible link.

8. The system of claim 1 wherein the system maintains input and output templates for individual clients, the input templates having slots mapping records by type as received from Internet sources, and the output templates having slots mapping data records by type to be transmitted to the client, there being specific correlation between input template slots and output template slots for an individual client.

9. The system of claim 1 wherein data forms for transformation to transmit to client devices include one or more of conventional telephone protocol, Internet protocol telephony Protocol (IPNT), voice mail, e-mail, pager message, and records for applications common to personal digital assistants (PDAs), including one or more of appointment-book data records, memo-pad records, alarm records, and things-to-do records.

10. The system of claim 9 wherein airline reservations retrieved for a client from the Internet are converted into multiple appointment-book entries displayable by an appointment-book application on a PDA, one appointment book entry for each individual flight in a reservation.

11. The system of claim 9 wherein an alarm is generated for each flight at a time preceding flight time for each flight.

12. The system of claim 11 wherein a different alarm interval is used for domestic flights than for International flights.

13. The system of claim 9 wherein billing schedules retrieved for a client are converted into two or more records, one being a memo pad record detailing the details of the bill, and another being a things-to-do record to remind the client of the time the bill is due.

14. The system of claim 13 wherein an alarm record is entered to generate an alarm prior to the time the bill is due, to remind the client that the bill is due.

15. The system of claim 2 wherein the intermediary server is implemented in local association with an Internet Service provider site.

16. The system of claim 2 wherein the intermediary server includes an aggregation service for aggregating client-specific records prior to transmission to client devices.

17. The system of claim 16 further comprising a synchronization service for keeping data on client devices synchronized with data from sources on the Internet and from the aggregation service.

18. The system of claim 17 wherein the synchronization service uses an algorithm enabled to adaptively minimize round trip messages between the intermediary server system and the client device according to whether the client device is more limited by latency or bandwidth.

19. The system of claim 18 wherein the algorithm computes Cyclic Redundancy Check (CRC) codes for input and output records, and computes intersections between CRCs on records on the client device and at the aggregation service, the output of the algorithm being exactly the records that need to be sent to the client device and exactly the list of records that need to be deleted form the client device to keep the data sets in synchronization.

20. A method for providing information from an Internet source for a client device, comprising:

(a) maintaining client profiles for subscribers, the client profiles including data relative to information destinations on the Internet for a specific client, data records to be retrieved from the destinations, and data forms for transformation of specific records;

(b) accessing information from the Internet destinations in a first format;

(c) translating the information into a format compatible with an application, other than an Internet browser application, executable on the client device; and

(d) transmitting the information for the client device for presentation in the format compatible with the other than a format for an Internet browser application according to the client profiles.

21. The method of claim 20 implemented on an intermediary server system connected to the Internet by an Internet-compatible link, wherein the information is transmitted for the client device over a link other than an Internet-compatible link.

22. The method of claim 21 wherein the other-than-Internet-compatible link is an Internet Protocol Telephony link.

23. The method of claim 21 wherein the other-than-Internet-compatible link is a conventional telephony link operating by a conventional telephony protocol.

24. The method of claim 21 wherein the other-than-Internet-compatible link is a wireless cellular telephony link.

25. The method of claim 21 wherein the other-than-Internet-compatible link is a wireless satellite-enhanced link.

26. The method of claim 21 further comprising a personal computer (PC) coupled to the intermediary server over a conventional Internet-compatible link, wherein the system transmits the information to the PC, which then re-transmits the information for a client device over an other-than-Internet-compatible link.

27. The method of claim 20 wherein the system maintains input and output templates for individual clients, the input templates having slots mapping records by type as received from Internet sources, and the output templates having slots mapping data records by type to be transmitted to the client, there being specific correlation between input template slots and output template slots for an individual client.

28. The method of claim 20 wherein data forms for transformation to transmit to client devices include one or more of conventional telephone protocol, Internet protocol telephony Protocol (IPNT), voice mail, e-mail, pager message, and records for applications common to personal

digital assistants (PDAs), including one or more of appointment-book data records, memo-pad records, alarm records, and things-to-do records.

29. The method of claim 28 wherein airline reservations retrieved for a client from the Internet are converted into multiple appointment-book entries displayable by an appointment-book application on a PDA, one appointment book entry for each individual flight in a reservation.

30. The method of claim 28 wherein an alarm is generated for each flight at a time preceding flight time for each flight.

31. The method of claim 30 wherein a different alarm interval is used for domestic flights than for International flights.

32. The method of claim 28 wherein billing schedules retrieved for a client are converted into two or more records, one being a memo pad record detailing the details of the bill, and another being a things-to-do record to remind the client of the time the bill is due.

33. The method of claim 32 wherein an alarm record is entered to generate an alarm prior to the time the bill is due, to remind the client that the bill is due.

34. The method of claim 21 wherein the intermediary server is implemented in local association with an Internet Service provider site.

35. The method of claim 20 wherein the intermediary server includes an aggregation service for aggregating client-specific records prior to transmission to client devices.

36. The method of claim 35 further comprising a synchronization service for keeping data on client devices synchronized with data from sources on the Internet and from the aggregation service.

37. The method of claim 36 wherein the synchronization service uses an algorithm enabled to adaptively minimize round trip messages between the intermediary server system and the client device according to whether the client device is more limited by latency or bandwidth.

38. The method of claim 37 wherein the algorithm computes Cyclic Redundancy Check (CRC) codes for input and output records, and computes intersections between CRCs on records on the client device and at the aggregation service, the output of the algorithm being exactly the records that need to be sent to the client device and exactly the list of records that need to be deleted form the client device to keep the data sets in synchronization.

* * * * *

Exhibit E

US007424520B2

(12) **United States Patent**
Daswani et al.

(10) **Patent No.: US 7,424,520 B2**
(45) **Date of Patent: *Sep. 9, 2008**

(54) **METHOD AND APPARATUS FOR RESTRUCTURING OF PERSONALIZED DATA FOR TRANSMISSION FROM A DATA NETWORK TO CONNECTED AND PORTABLE NETWORK APPLIANCES**

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(73) Assignee: **Yodlee.com**, Redwood City, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **11/846,029**

(22) Filed: **Aug. 28, 2007**

(65) **Prior Publication Data**

US 2007/0294343 A1 Dec. 20, 2007

Related U.S. Application Data

(63) Continuation of application No. 10/287,911, filed on Nov. 4, 2002, now Pat. No. 7,263,548, which is a continuation of application No. 09/398,320, filed on Sep. 16, 1999, now Pat. No. 6,477,565.

(51) **Int. Cl.**
G06F 15/16 (2006.01)

(52) **U.S. Cl.** 709/217; 709/250; 709/246

(58) **Field of Classification Search** 709/217, 709/246, 250
See application file for complete search history.

(56) **References Cited**

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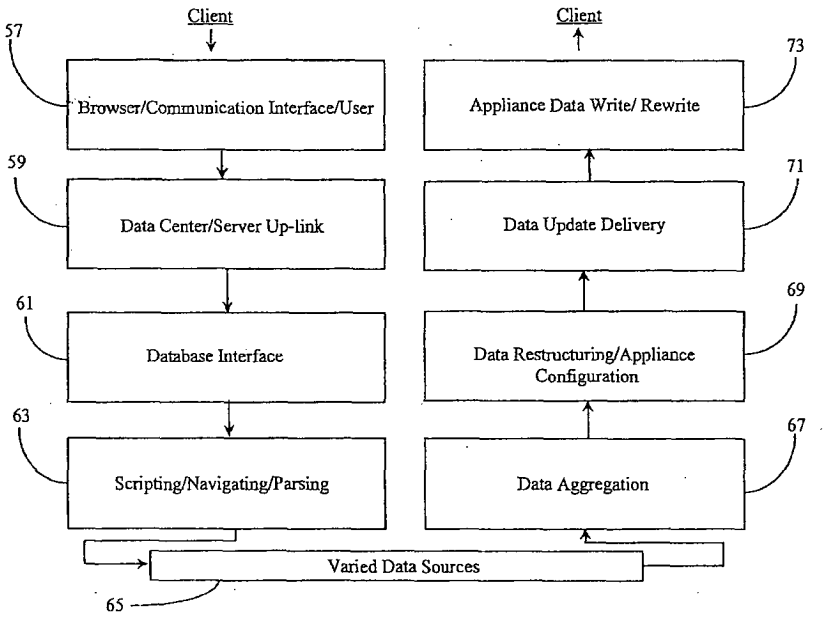
Primary Examiner—Larry D Donaghue
(74) *Attorney, Agent, or Firm*—Central Coast Patent Agency, Inc.

(57) **ABSTRACT**

A system for retrieving and disseminating information records from Internet sources includes a client device and an intermediary server , including software, between the client device and the Internet. The collects a record specific to a client from an individual one of said Internet sources in a first form in which the record is recorded at the Internet source, transforms the record from the first form to a second form specific to an application other than an Internet browser application, the application executable by the client device, and transmits the transformed record to the client device for display in the application other than an Internet browser application executable by the client device. In some cases the client device connects by a data link that is not Internet-compatible link. Data mining on the Internet specific to clients and client devices is taught, with aggregation services and synchronization for keeping a client up-to-date efficiently for changing data content.

40 Claims, 3 Drawing Sheets



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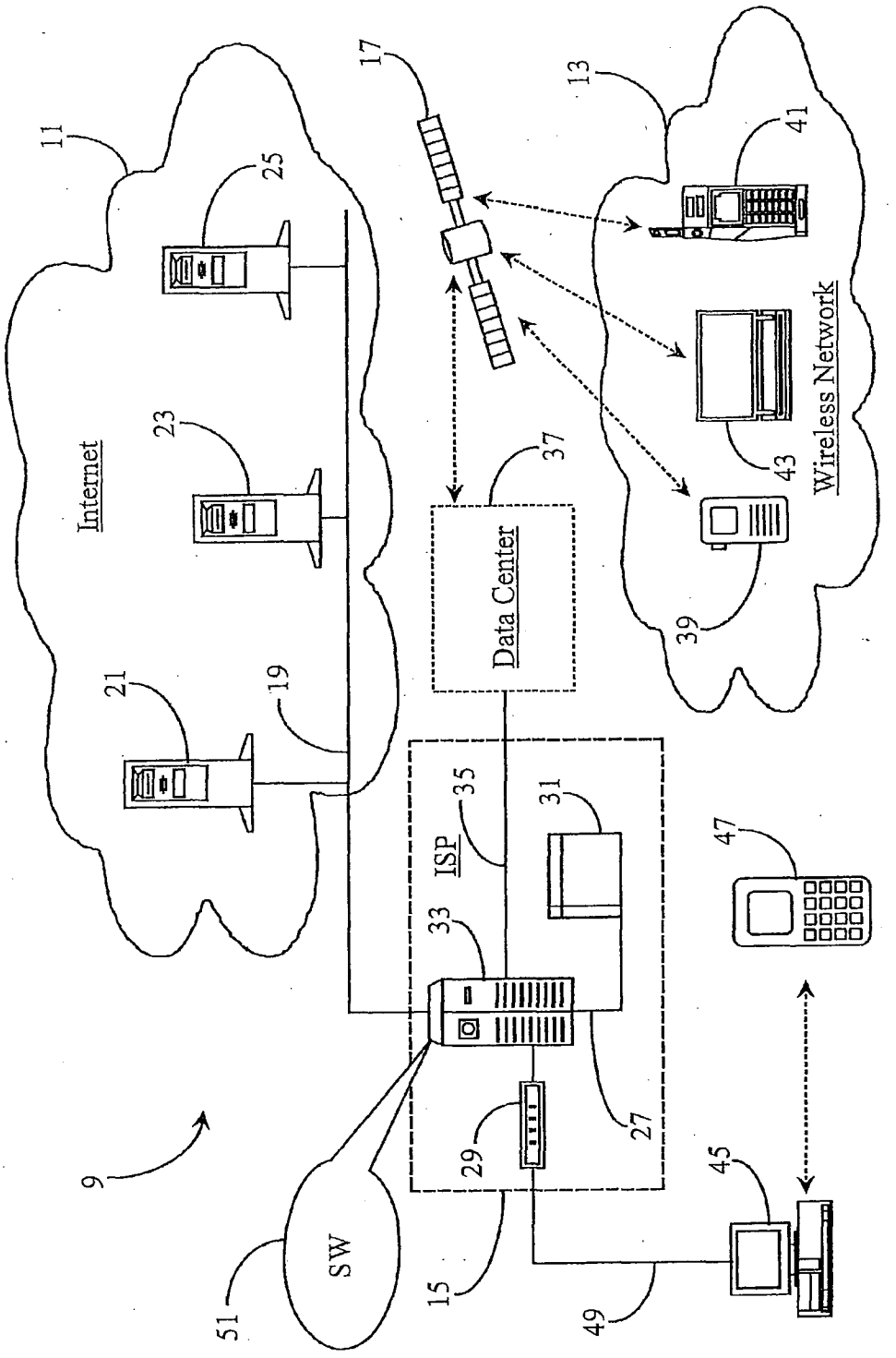

Fig. 1

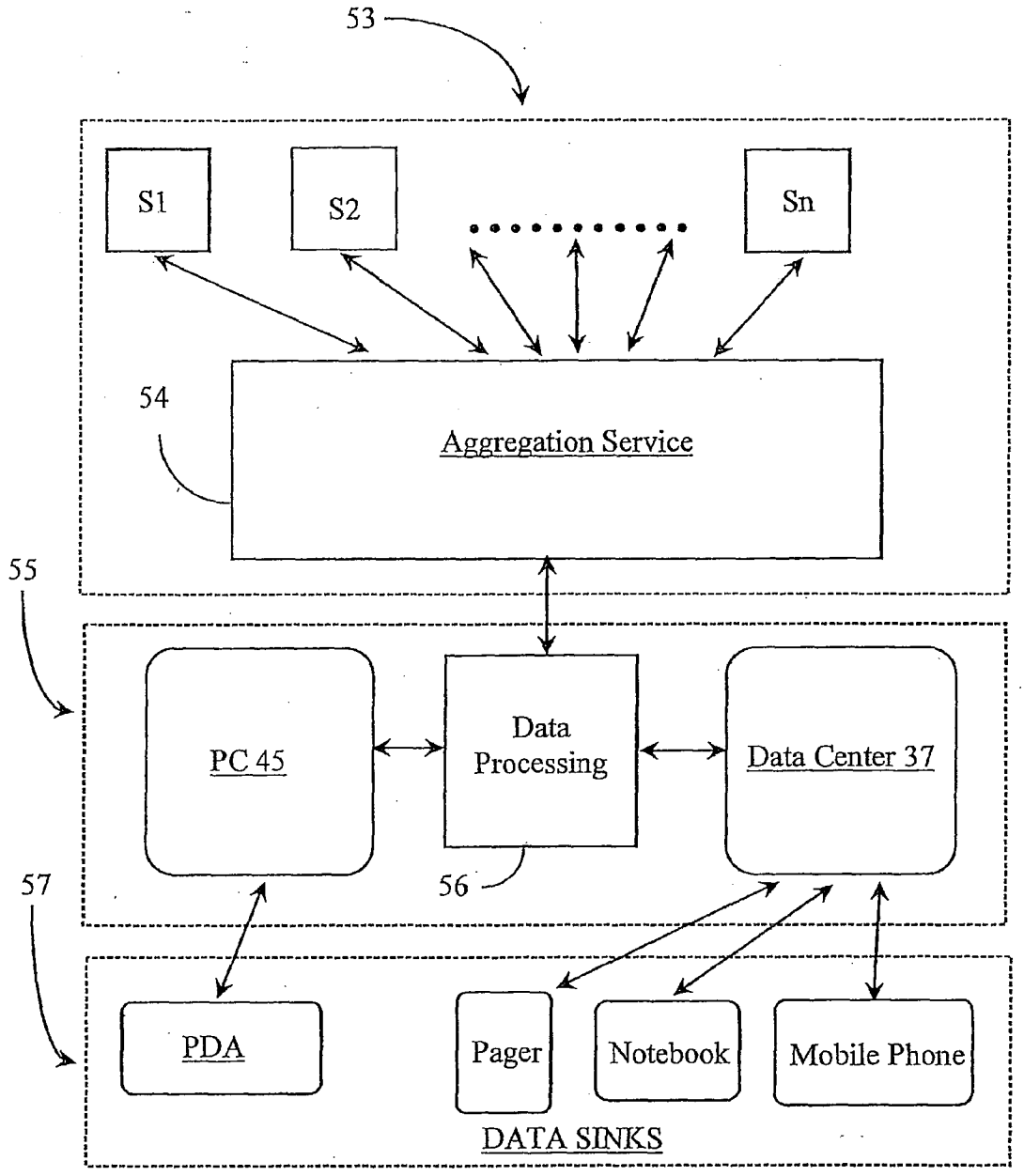
53
S1
S2
Sn
54
Aggregation Service
55
PC 45
Data Processing
Data Center 37
56
57
PDA
Pager
Notebook
Mobile Phone
DATA SINKS

Fig. 2

Ex. 1002 Page 98

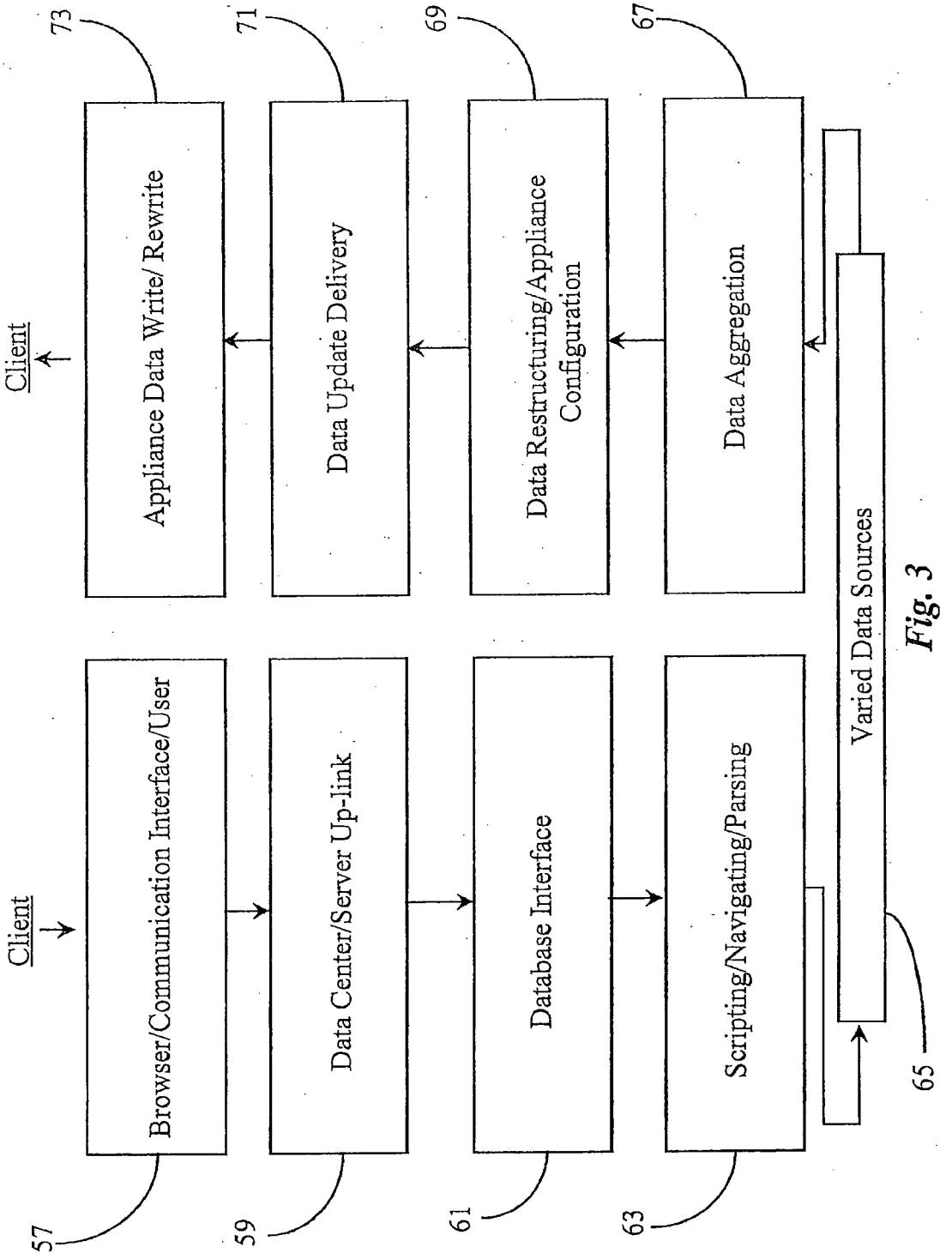

Fig. 3

METHOD AND APPARATUS FOR RESTRUCTURING OF PERSONALIZED DATA FOR TRANSMISSION FROM A DATA NETWORK TO CONNECTED AND PORTABLE NETWORK APPLIANCES

CROSS-REFERENCE TO RELATED DOCUMENTS

The present application is U.S. patent application Ser. No. 10/287,911, filed on Nov. 4, 2002, which is a continuation of U.S. patent application Ser. No. 09/398,320, filed on Sep. 16, 1999 and issued as U.S. Pat. No. 6,477,565 on Nov. 5, 2002, and is related in part to U.S. patent application Ser. No. 09/323,598, filed on Jun. 1, 1999 and issued as U.S. Pat. No. 6,199,077 on Mar. 26, 2001. All the disclosures of the prior applications are incorporated herein in their entirety at least by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is in the field of network information services including data gathering and transmission over wired and wireless network connections and pertains more particularly to restructuring of personal data and, in some cases, general data for the purpose of enabling receipt of such data by a variety of connected and portable network appliances without requiring added hardware or software.

2. Discussion of the State of the Art

The information system known in the art as the Internet, and the Internet subset known as the World Wide Web (WWW), represents the largest publicly available source of information in the world. Anyone with an Internet-capable appliance and an Internet connection can navigate the Internet for the purpose of accessing virtually any type of data that may be held in any one of millions of network-connected servers adapted for the purpose.

The most traditional network appliance used for navigating the Internet and downloading data therefrom is the personal computer (PC). More recently however, a host of other electronic communication devices have been adapted for network connection and navigation on the Internet. Some of these better known devices include cellular telephones, personal digital assistants (PDA's), pagers, and notebook and laptop computers. Some types of these appliances access the Internet via wireless connection. In other cases, data from the Internet is transmitted to such devices through a gateway to a network generic to the device. An example would be that of a cellular phone or pager capable of accessing e-mail and other Internet accounts information.

The Internet operates under a shared bandwidth protocol wherein data packets are transmitted whereby each transmission competes with all other current transmissions for available bandwidth resources. The total amount of bandwidth resource available to network appliances accessing the Internet is a function of network traffic, reliability and capability of lines, power of appliance processor, nature of intermediary network, and a host of other variables. It is not always possible to maintain an Internet connection for any reliable length of time considering all of these variables. Sometimes, there are periods when a device simply cannot gain access at all. In other cases physical connection is only possible on a periodic basis, and an appliance is therefore only intermittently connected.

Even with the more powerful and traditional PC's or notebook computers there may be times when available bandwidth suddenly drops resulting in a disconnect or "moof" as it is often termed. If a moof occurs when attempting to download data, another attempt must be made to re-access the network, re-navigate to the data source, and attempt a retry of the data download. This can be frustrating for users operating such devices as cell phones, pagers or PDA's which are already operating on high latency and/or low bandwidth connections.

Administrators of network equipment and connection architecture as well as companies that host such as WEB-based information services and the like are improving aspects of communication with various portable network devices by upgrading lines and equipment, developing better data compression and bandwidth reservation techniques and lobbying for more bandwidth for wireless intermediary networks. However, one area that has been largely overlooked is the very format and structures of data that is transmitted. For example, HTML or XML-scripted content is largely unsuitable for transmission under low bandwidth conditions to small portable devices. As a result, such devices having lower memory and operating under lower bandwidth resources are limited to certain types of data such as only e-mail or voice mail.

A system known to the inventor and listed under the cross-reference to related documents section provides a capability of automated login and navigation to Internet or other network-held sources written in HTML, XML, or other languages for the purpose of retrieving and presenting WEB summaries to subscribers according to client/enterprise directives. This service uses scripted templates prepared by knowledge workers using known site logic to enable navigation, not just to the site, but to specific content posted on the site. A parsing method is then used to identify appropriate data based on the provided script directives.

The data obtained by the above-described method is held in a server for user access (via PC), or pushed to a user (PC or alternate appliance) according to enterprise rules. The data is typically presented in the form of a WEB page made accessible to a user having suitable equipment for retrieving and viewing such pages. However, in another embodiment, the data is re-formatted when possible for transmission to a user specified Internet appliance such as a cell phone, laptop, PDA, etc. The user must first access the service using a device that supports a browser interface. Data is forwarded to alternate devices only on user request and assuming the user has configured his or her alternate device to the service. In order to receive some types of data, special software and/or hardware implementations must be made to the alternate appliances.

The above service does not support independent device access to the Internet (except for devices already capable of browser navigation), nor can it deliver certain content held in a format that is not readily convertible to a format generic to the software running on such alternate devices. Moreover much content that would be convertible may still overload the memory of certain alternate devices such as pagers or cell phones if additional data restructuring and synchronization steps are not taken.

It will be appreciated that there is a growing variety of existing and new portable-type devices that are being adapted for Internet access. Most of these devices communicate according to device-generic protocol and are unable to receive and disseminate certain other types of data under normal circumstance. Furthermore, low bandwidth connection states and limited memory provisions preclude many of

these devices from broad Internet navigation capabilities and limit download capability in terms of time and type of data content that may be received.

What is clearly needed is a method and apparatus for intelligent restructuring of personalized data and, in some cases, generalized data from the Internet into model/device-specific data formats such that it may be easily made available for transmission to and presentation by a variety of known communication devices having either direct or indirect Internet connection capability. Such a method and apparatus would broaden the scope of Internet-sourced data types that a communication device could independently access and receive without requiring hardware or software modifications to such devices.

SUMMARY OF THE INVENTION

In a preferred embodiment of the present invention a system for retrieving and disseminating information records from Internet sources is provided, comprising a client device; and an intermediary server system including software between the client device and the Internet. The system collects a record specific to a client from an individual one of said Internet sources in a first form in which the record is recorded at the Internet source, transforms the record from the first form to a second form specific to an application other than an Internet browser application, the application executable by the client device, and transmits the transformed record to the client device for display in the application other than an Internet browser application executable by the client device.

In some embodiments the intermediary server system is connected to the Internet by an Internet-compatible link and the client device is connected to the intermediary server system by other than an Internet-compatible link. The other-than-Internet-compatible link may be an Internet Protocol Telephony link, a conventional telephony link operating by a conventional telephony protocol, a wireless cellular telephony link, or a wireless satellite-enhanced link.

In some embodiments there may be a personal computer (PC) connected to the intermediary server system by a conventional Internet-compatible link, and the client device connects to the PC by an other than Internet-compatible link, and wherein the system transmits the transformed record first to the PC which then transmits the transformed record to the client device.

Also in some embodiments the intermediary server system is a subscription system, and maintains client profiles for subscribers to the system, the client profiles including data relative to information destinations on the Internet for a specific client, data records to be retrieved from the destinations, and data forms for transformation of specific records.

In these and other embodiments the intermediary server system may maintain input and output templates for individual clients, the input templates having slots mapping records by type as received from Internet sources, and the output templates having slots mapping data records by type to be transmitted to the client, there being specific correlation between input template slots and output template slots for an individual client. Data forms for transformation to transmit to client devices may include one or more of conventional telephone protocol, Internet protocol telephony Protocol (IPNT), voice mail, e-mail, pager message, and records for applications common to personal digital assistants (PDAs), including one or more of appointment-book data records, memo-pad records, alarm records, and things-to-do records.

In some cases airline reservations retrieved for a client from the Internet are converted into multiple appointment-book entries displayable by an appointment-book application on a PDA, one appointment book entry for each individual flight in a reservation. In these cases there may be an alarm generated for each flight at a time preceding flight time for each flight. A different alarm interval may be used for domestic flights than for International flights.

In some cases billing schedules retrieved for a client may be converted into two or more records, one being a memo pad record detailing the details of the bill, and another being a things-to-do record to remind the client of the time the bill is due. In these cases an alarm record may be entered to generate an alarm prior to the time the bill is due, to remind the client that the bill is due.

There are a number of ways the system architecture might be arranged. In one alternative the intermediary server system is implemented in association with an Internet Service provider site. The intermediate server system may include an aggregation service for aggregating client-specific records prior to transmission to client devices. There may also be a synchronization service for keeping data on client devices synchronized with data from sources on the Internet and from the aggregation service. In one case the synchronization service uses an algorithm enabled to adaptively minimize round trip messages between the intermediary server system and the client device according to whether the client device is more limited by latency or bandwidth. The algorithm in some cases computes Cyclic Redundancy Check (CRC) codes for input and output records, and computes intersections between CRCs on records on the client device and at the aggregation service, the output of the algorithm being exactly the records that need to be sent to the client device and exactly the list of records that need to be deleted form the client device to keep the data sets in synchronization.

In another aspect of the invention a method for retrieving and disseminating information records from Internet sources is provided, comprising steps of (a) collecting a record in a first data form from an Internet source by an intermediary server system connected to the Internet; (b) transforming the record into a second data form specific to an application other than an Internet browser application, the application executable by a client device connectable to the intermediary server system; and (c) transmitting the transformed record to the client device for display with the client device connected by a data link to the intermediary server system. The method or a variation according to embodiments of the invention may be practiced with and within all of the apparatus and function variations described above.

In various embodiments of the present invention for the first time a server system is provided for retrieving and disseminating Internet-based data specific to individual clients, wherein clients may use devices that do not have or need an Internet connection capability or an Internet browser, but may still very clearly relate to the client all of the mined data, and wherein also the system can keep all data fresh and up-to-date for the client.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. 1 is an overview of a communication network wherein a data aggregation and tunneling service is hosted and operated according to an embodiment of the present invention.

FIG. 2 is a block diagram illustrating an exemplary hierarchy existing between various components of the data aggregation and tunneling service of FIG. 1.

FIG. 3 is a block diagram illustrating an exemplary client request/result loop progressing through the various process phases attributed to a service of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to a preferred embodiment of the present invention, a method and apparatus is provided that allows virtually any Internet-based data to be accessed, restructured, and then transmitted to a wide variety of network-capable appliances without requiring special software or hardware additions to the receiving devices, and in a form that the receiving device may display the data using an existing application on the device typically used for an entirely different purpose and function. Such method and apparatus is described in enabling detail below.

FIG. **1** is a basic overview of a communication network **9** wherein a data aggregation and tunneling service is hosted and operated according to an embodiment of the present invention. Communication network **9** comprises a data packet network **11**, which is the well known Internet in this example, an Internet Service Provider (ISP) **15**, and at least one exemplary wireless data network **13**.

Network **11** may be another type of data packet network instead of the Internet such as perhaps a private or corporate wide area network (WAN) as long as Transfer Control Protocol/Internet protocol (TCP/IP) or other suitable network protocols are supported. Network **11**, hereinafter referred to as Internet **11** for example purposes, is exemplified herein as a preferred embodiment because of the large public accessibility to the network. Such public accessibility lends to a preferred embodiment for hosting a large data-information service such as the service described in the cross-referenced application Ser. No. 09/323,598.

Internet **11** may comprise any geographical portion of the global network including such as data sub-networks connected thereto. Internet **11** has an Internet backbone **19** distributed throughout, which represents the many lines and connections making up the wired Internet. Three data servers **21**, **23**, and **25** are illustrated within Internet **11** and connected to backbone **19**.

Servers **21-25** are, in this embodiment, file servers known in the art for serving data in such as hypertext markup language (HTML), XML, or other suitable languages associated with electronic information pages known as WEB pages in the art. It should be noted here that servers **21-25** are not limited to only serving WEB pages. In some embodiments, other data such as E-commerce data associated with on-line forms, digital authorization certificates, secure digital signature forms and the like, may also be held in such servers. Moreover, any one of servers **21-25** may be adapted as an E-mail server or may be subject to any other adaptation for serving data.

ISP **15** is adapted, in this example, for providing Internet connection services as known in the art. Illustrated within ISP **15** are a main connection server **33**, a mass data-repository **31**, and a modem bank **29**. Main server **33** is directly connected to Internet **11** as shown. Main sever **33** is adapted to perform normal Internet service routines as known in the art, and is additionally enhanced via a unique software instance **51** for enabling practice of the present invention.

In one embodiment, an additional server may be provided for executing software **51** and enabling practice of the present invention in conjunction with main server **33**. In another embodiment, more than one such server may be provided and adapted to execute individual instances of software **51**. The inventor illustrates just one server **33** and SW **51** for the purpose of simplifying illustration and deems it sufficient for the purpose of explaining the present invention.

Main server **33** is connected to a data center **37** by a data link **35**. Data center **37**, among other tasks, provides an ISP (Internet) interface to server **33** for various wireless data networks represented by network **13**. Network **13** is further characterized by the illustration of a communication satellite **17**, which provides satellite rebroadcast of uplinked data streams from data center **37** and a backlink to data center **37** as illustrated by a dotted double arrow. As previously described, network **13** may be plural in the sense that plural wireless data networks common to certain communication devices may accomplish an interface to ISP **15** (server **33**) through such as satellite **17** or another type of wireless transceiver/receiver and data center **37**.

Within network **13** a variety of Internet capable appliances are illustrated. As examples there are a pager **39**, a notebook computer **41**, and a cellular telephone **43**. In this example, appliances **39-43** broadcast data, which is picked up by satellite **17** and relayed to data center **37**. Similarly, data arriving to satellite **17** from data center **37** is broadcast to and received by appliances **39**, **43**, and **41** as illustrated herein with dotted double arrows representing respective two-way communication links. In the case of appliances **39** and **43**, network **13** might be a cellular network typically implemented for those devices. In the case of notebook **41**, network **13** may be a wireless Internet service using cellular or other suitable wireless technologies.

As previously described, main server **33** is also connected to modem bank **29** as is known in the art of land-line Internet access through an ISP. A personal computer (PC) **45** operated by a user/subscriber to the service of the present invention is illustrated as connected to modem bank **29** by an Internet connection line **49**. Line **49** may be a conventional telephone line, an integrated digital services network (ISDN) connection line, or any other suitable wired connection such as ADSL. A PDA **47** is illustrated by a dotted double arrow as having a wireless communication link to PC **45** as is common in the art of computer peripherals.

In the example of a subscriber service, data repository **31** would contain data about individual subscribers to the service of the present invention (user profiles and other user-specific records). Repository **31** may be an optical storage facility or any other convenient facility that is adapted for storing large amounts of data. Repository **31** is illustrated as connected to main server **33** by a data connection **27**. In this example, repository **31** is considered an off-line storage facility that is accessible to server **33**. In another embodiment repository **31** may be a part of server **33**, or in any other network-connected location such as on-line, or on a connected local area network (LAN). In addition to holding data specific to individual subscribers such as account information, address parameters, user ID and authorization data, repository **31** may also hold data gathered from such as Internet **11** before being delivered to or being accessed by users.

SW **51** executing on server **33** is provided for the purpose of enabling a unique data-gathering and tunneling service that allows users operating such as appliances **39-43**, and **47** to have structured access to data such as may be sourced in one of servers **21-25**; and, to have the data re-structured in an intelligent fashion for delivery to a specific Internet appliance that may not be normally adapted for receiving and displaying the data.

Software **51** provides, in this case, a unique subscriber service hosted by ISP **15** in which the service may be accessed and utilized by using any Internet-capable appliance. For the

purpose of discussion, an Internet-capable appliance shall include any electronic communication device capable of a direct or indirect (through a connected network) connection to a data packet network such as Internet **11**. Such devices may also include devices that may only receive data from such as Internet **11** as long as a separate device is used to access the service and upload a data request.

In practice of the present invention, a user operating such as cellular telephone **41**, for example, accesses ISP **15** from anywhere in network **13** through a wireless path, exemplified herein by satellite **17** to data center **37**, and registers a request for data. The data request in some cases may be manually initiated by a user, and in other cases automatically initiated on a periodic basis while the device is connected to the Internet. In some cases a request will be automatically initiated when the device connects to the Internet.

The nature of a request may vary under a broad set of rules set-up by a hosting enterprise (ISP **15**) for types of requests. For example, one request may be for a data result of a site-specific search according to defined parameters such as was described in the characterization of a WEB summary disclosed in application Ser. No. 09/323,598. Another type of request may be for information about departure/arrival parameters and gate instructions associated with purchased airline tickets. Still another type of request may include a desire to access only the existing incoming mail from a certain individual or individuals. There are many possibilities. In a preferred embodiment a script for data requests may be a part of a user profile, and a single generic request from a user may trigger a variety of data searches and retrievals from Internet **11** on behalf of the user.

Data center **37** processes requests from network **13** and forwards them to main server **33** where they implemented. Various technological enhancements may be implemented in data center **37** to facilitate communication and interface capability with various portable appliances such as appliances **39-43**. One example would be to provide an interactive voice response (IVR) unit (not shown) that may take a vocal or touch-tone initiated request originating from such as cell phone **43**. Such an IVR may be included in data center **37** as a client interface.

The nature and content of a request from cell phone **43**, for example, is analyzed and restructured into an equivalent Internet Protocol (IP) request that can be uploaded into main server **33** over data link **35**. This process is, in a preferred embodiment, performed in data center **37** with the data center having access to a portion of software **51** dedicated to the specific function. In another embodiment, a specific portion of software **51** may be provided to be executable on a connected machine at data center **37** for the purpose of analyzing requests of varied protocol and restructuring them into requests that can be understood on server **33**.

Once a request from cell phone **43** is registered in main server **33** as an IP data request, data about the user is accessed from repository **31** for verification and authorization purposes. A scripted template supplied by a knowledge worker (not shown) is provided for accessing site logic during navigation and parsing as initiated by SW **51**. Such knowledge workers may be stationed at data center **37**, ISP **15**, or any other centralized location that is connected to the service by network connection. The scripting, navigating, and parsing technology is fully explained and detailed in the co-related application Ser. No. 09/323,598. However, further innovation is required in order to accomplish the goal of the present invention, which is the intelligent restructuring of data coming into and leaving from the service of the present invention.

In the present example a ready request is queued for execution by SW **51** according to on-demand or in a scheduled fashion. Server **33**, upon executing the request, navigates to one or more of servers **21-25** (for example, as representative of plural servers in the Internet) holding the requested data. The location of the data is then identified according to site logic provided in the scripted template. Located data is then parsed for specified content to be returned. The resulting data is aggregated in repository **31** if the request has a scheduled delivery or user-access time. If the return data follows an on-demand criteria, then it is immediately processed and delivered over data link **35** to data center **37** for further processing before being broadcast over network **13** to a user operating such as cell phone **43**.

In another aspect of the present invention, requests and return data may be registered and received by a user operating a PDA such as PDA **47**, which is a peripheral to PC **45** illustrated as wired to Internet **11**. In this embodiment, a user operating PDA **47** registers a request to PC **45**. The request is analyzed and uploaded to server **33** under control from PDA **47**. Additional processing concerning obtaining and returning information is the same as with previously described embodiment except that instead of using data center **37** as an interface, PC **45** acts as the interfacing machine. If requested data arrives to PC **45** in a format that is not discernable to PDA **47**, then data restructuring may be performed in PC **45** by a provided instance of SW **51** that is dedicated to the purpose. PDA **47** would require no modification in either hardware or software. In yet another embodiment the client machine may be PC **45**.

The method and apparatus of the present invention provides a unique capability of restructuring data in an intelligent way. That is, instead of simply converting one format of data into another, a first data set is analyzed and understood so that an alternate data set in a format specific to applications executable on a receiving device may be created that reflects the desired content and function of the first data set. More detail about how this is accomplished is provided below.

FIG. **2** is a block diagram illustrating an exemplary hierarchy and data transformation and flow existing between various components of the data aggregation and tunneling service of FIG. **1**. The service of the present invention in a preferred embodiment comprises three basic component layers. These component layers are illustrated herein as layer **53**, layer **55** and layer **57**. Layer **53** is best described as a source-data interface layer. This portion of the service is dedicated to navigating to and obtaining data from Internet-connected data sources. Data sources (S)1-n are analogous to servers **21-25** of FIG. **1**. It will be appreciated that the number of data sources that are available on a network such as Internet **11** (FIG. **1**) is vast. Data collected from S1-Sn is continually aggregated into such as repository **31** (FIG. **1**) as indicated by the bi-directional arrows linking each S1-Sn to aggregation service **54**. Aggregated data is tagged according to requesting user and target receiving device.

Layer **53** includes all of the means and processes required for locating and parsing user-requested data according to site-specific scripting techniques and funneling the collected data back to aggregation for storage under a user-specific ID parameters. Most, if not all of the data retrieved in layer **53** will be in the form of HTML, XML, or a similar protocol. Other than XML types of data may include various multimedia types associated with audio and video data, animated graphic data, or still graphic data. All data requested by any one user is aggregated under that user's ID parameters.

Data stored in aggregation is forwarded to layer **55** according to a pre-assigned schedule for processing. Layer **55** pro-

vides an internal process comprising data restructuring and primary interface capabilities. Data processing is the first phase of layer 55 as illustrated by process 56. It is in the main the data processing phase that is unique and distinguishes the present invention from that disclosed in the copending and referenced application Ser. No. 09/323,598.

Instead of simply converting data from one language or format into another in an attempt to render it usable to a specific Internet appliance, the present invention seeks to rewrite original data in an alternate format or language that accurately represents the data presented in the original format in terms of content and function. Data expressed in this alternate format (standardized) is then restructured into the appropriate device-specific format for transmission.

To accomplish the above-described task, it is required that data obtained in layer 53 be at least machine-legible in its given language or format and understood by software 51. SW 51 must also know parameters encompassing the formats and data presentation schemes of various software routines used in various Internet-capable appliances. For example, an HTML description of a flight reservation and gate instruction as presented on an information page (WEB page) would not be expressed as a text block in such as an electronic calendar, or a PDA. Rather, the same information would have to be restructured and expressed as a series of entries expressing time and date functions associated with the particular flight schedule.

In a preferred embodiment, an algorithm is employed as part of software 51 that can take information from provided input data-templates and restructure the information to fit pre-designed and associated output data-templates. For example, an input template is created for one or more records of network-based data. The input template renders the original data into a proprietary language similar to HTML and XML. The proprietary language or code expresses the original data in a standard format that may then be manipulated by algorithm. The input template holds the rendered data according to mapped slots.

An output template is created that is generic to the parameters and presentation scheme associated with a specific Internet-capable appliance that will receive the data record or records. The output template holds the specific slots wherein data will be rendered by the algorithm. The algorithm uses provided data-restructuring rules to identify data contained in an input data template and re-map it by matching the data to appropriate data-slots presented in an output data template. As a result, one or more input records (parsed and rendered data) will produce one or more output records (data remapped by algorithm).

Data templates as described above are not analogous to logic templates described in the co-related application Ser. No. 09/323,598. Data templates work in conjunction with scripted logic-templates used to find and parse the requested data. Input templates are request-generic while output templates are device-generic. For example, there are many variations of data formats and languages that can be used when presenting data on a WEB page. Therefore, an input template should be modeled to facilitate the specific data fields, language, and format in which requested data is expected to be found. In some cases, an input template may be enhanced to support a variety of differing formats and or languages, and be made to hold more slots for data not necessarily requested. The output template is device generic and contains only usable data-slots that may be presented on its associated device.

In one embodiment of the present invention, a knowledge base (not shown) could be provided as part of SW 51 and used to equate data parameters associated with frequently requested data types from a network to data parameters that are generic to various network appliances. In this method, categories and titles describing oft-requested data records such as flight reservations, account balance information, order status information, and the like are created, coded and stored in the knowledge base. Device-specific equivalents described as rules for presenting the type data to each specific model device are also stored in the knowledge base and equated.

When a data request comes in, a runtime engine (software application) takes the input data and finds the category and subtitle that matches it. Then the data presentation rules concerning the specific receiving device are matched from the knowledge base. In this way, appropriate output records may be created that are specific to the type and model of device that is targeted to receive the data.

In one embodiment, the knowledge base method is used in conjunction with the template/algorithm method. As use of the service progresses, the knowledge base is updated with new categories and subtitles associated with repetitive requests. The knowledge base may also be updated to reflect parameters associated with new types and models of network capable devices. There are many such possibilities.

Component layer 55 includes an interfacing data center such as data center 37 represented in FIG. 1 and a desktop PC such as PC 45 of FIG. 1. Output templates contain device specific data that is ready for transmission to target devices such as devices 39-47 of FIG. 1. As output templates are completed, they may be held for requesting users at a storage facility (not shown) held in a data center, or pushed to requesting users based on the original request. Similarly, output records destined for such as Internet-connected PCs may be held therein for remote access, or pushed to requesting users operating peripherals such as PDA 47 of FIG. 1.

Component layer 57 represents various network capable appliances as described above and their associated transmission networks. Illustrated within layer 57 is a PDA with a remote (wireless) link to PC in layer 55 as shown by double-arrow connecting line. Also illustrated within layer 57 is a pager, a notebook, and a mobile phone, all having remote (wireless) connections to the data center represented in layer 55 as shown by the double-arrow connecting lines. The PC illustrated in layer 55 may be a desktop PC operated by one or more users. In another embodiment, it may be a powerful workstation shared by many users. The represented data center has all of the interface means required to bridge the appliances of layer 57 to the service.

It will be apparent to one with skill in the art that knowledge workers associated with creating input and output templates may perform their services from anywhere in a connected network without departing from the spirit and scope of the present invention. In one embodiment, input templates are supplied by knowledge workers associated with the service, while output templates are created by knowledge workers that are associated with various network hosting entities.

In another embodiment, the service of the present invention may be provided as a turnkey package wherein companies may set-up their own specific information services using the implements of the present invention.

It will also be apparent to one with skill in the art that an intermediary language derived in part from HTML and XML languages may be proprietary in nature and used as an intermediary data-conversion language between such as pure HTML and device specific protocol without departing from the spirit and scope of the present invention. Codes specific to

such an intermediate language may be licensed to entities wishing to recreate the service for their own purposes.

FIG. **3** is a block diagram illustrating client request/result loop progressing through the various process phases of the service of the present invention in a preferred embodiment. In step **57** a client (user/subscriber) initiates a request for data. Such a request may be initiated from a network capable appliance like appliances **39-43** of FIG. **1**. A client may also initiate a request from a standard PC such as PC **45** of FIG. **1**, or a PDA such as PDA **47** of FIG. **1**. Browser software of any sort is not required for a device to access the service. In this way, a low bandwidth device may be used to practice the present invention without depending on a parent or associated machine. For example, devices not having IP capability or navigational software would interface with such as data center **37** of FIG. **1** in order to gain access. Appropriate equipment and means for bridging networks is made available in data center **37**. An Internet-capable appliance having a browser function and Internet connection capability may, of course, gain access through normal wired or wireless channels.

In step **59**, a request from a client is registered to the service. If the request is initiated from a device using a wireless network wherein a data center such as center **37** is the interface, then the request data may be converted from the protocol used by the requesting device to a suitable IP protocol for registering at a server such as server **33** in ISP **15** (FIG. **1**). If an Internet-connected PC or workstation is the interface, and a requesting device is a remote peripheral such as PDA **47**, then the original request will arrive already in suitable IP format.

In step **61**, the client request is compared against a database for additional information about the initiator of the request and, perhaps to finish the package by associating the appropriate templates to the request. The templates may be stored under specific user ID for repeat requests, and created new for cases where no template is available. This includes the scripting templates of Ser. No. 09/323,598 as well as input/output templates of the present invention. Once all information and planned routines are incorporated into a request, it may be queued for execution.

In step **63**, the service navigates to a data source or sources specified in the request on behalf of the client. Site-logic scripting provided by template, along with a data-parsing convention is used to locate and identify data associated with the client's request. Data sources will typically be information pages written in such as HTML or XML. However, this is not to be construed as a limitation. Other types of data as well as some multimedia content may be located and parsed according to site logic.

In step **67**, all data obtained in step **63** is aggregated and tagged according to a user-specific and device specific manner. In some cases the data found during navigation is simply stored in one location for a client with the stored data retaining its original format. In another case, data is rendered to an intermediate form of its original language for the purpose of providing a standard format from whence further re-structuring may occur.

In step **69**, aggregated data is restructured from its original format (if applicable) to its final format (device specific) in preparation for transmission. In other cases, the data is stored for client access at his or her convenience. In a preferred embodiment, the above-described template method with algorithm is used. In an alternative method, a knowledge base technique is used. In still another embodiment, the two methods may be combined. It is assumed that by the time data restructuring occurs, an input and an output template containing the appropriate data fields pertaining to a target device have been provided. A software module (not shown) termed a data renderer converts the original data in aggregation into a suitable intermediary language that is understood to be standard to the system and compatible, in terms of further slot-mapping, according to any supported protocols specific to various network appliances interacting with the service. The intermediate language may be of a proprietary nature and licensed to other entities for use. In an embodiment wherein a knowledge base system is used, an intermediate language would not specifically be required.

The input template contains the rendered data in specific field-slots that are understood by the software algorithm. The algorithm also understands the field-slots associated with the output template. This is accomplished by creating specific rules for the algorithm to follow in operation. The algorithm re-maps the data from the input template into the field-slots in the output template according to the applicable rules. During this operation a second data renderer inserts and in some instances writes new data for insertion to specific field slots chosen by the algorithm.

In one embodiment, output templates may be provided with additional functional routines (based on the content of inserted data) that may be caused to activate a notification system or the like that is generic to a particular receiving device. For example, a round trip flight description may be rendered as a series of appointment book entries in such as a PDA. The additional notification routine in the output template may, according to the data, set an alarm or other audible alert to activate at a convenient time before the scheduled departure, as a reminder to the user.

In step **71** output records are delivered to specified devices through their respective interfaces and connected networks. In step **73**, a receiving appliance incorporates the data in usual fashion. Steps **71** and **73** may also be construed as steps for delivering and incorporating only updates to existing information. For example, the client send/return loop represented by steps **57** through **73** can be initiated for one or more requests and then be reactivated to receive periodic updates to already received data. For example, input and output records already sent to a client may be stored at the service for reference and tagged with client ID, time, date, etc. If an update request comes in from a client it can be noted in a new output template designed to carry only the new information. During the process at step **69**, the input template containing the previous data is compared to the input template containing the current data. The discrepant data in the new input template is remapped to appropriate field-slots in a new output template. In this way, the record only reflects the new data. In step **73** then, the new data overwrites the old data. Data obtained through the service may be routinely and periodically updated in a push or pull fashion.

In another embodiment, synchronization (updating) may be performed in step **63**. For example, a new update request may arrive wherein the previous input record is obtained and used to partially direct the function of parsing during the navigation process. The rule would in effect direct the parser to designate only data that is different from the old input template for collection. In this case, the algorithm may be employed in reverse fashion so that the intermediate language in an input template may be converted back to original language as seen by a parser.

In still another embodiment, the parsing engine may be equipped to read both languages. The parsing process may also include the algorithm function for re-mapping the data.

It will be apparent to one with skill in the art that the method and apparatus of the present invention may be applied to the

method and apparatus disclosed in the co-related application Ser. No. 09/323,598 to provide a new and unique service without departing from the spirit and scope of the present invention. It will also be apparent that the method and apparatus of the present invention may stand alone from Ser. No. 09/323,598 as long as a suitable method for site navigation and parsing is included in the new service.

The service of the present invention may be adapted to serve specific wireless networks and client/devices connected to them. It may also be broadened to include many wired communication networks, including the Internet and PSTN networks. Conventions may be provided to such as SW 51 for the location, parsing and restructuring of virtually any type of data that may be held on a digital network. Even conventions such as video may be played and interpreted by the service for data mapping to provided output templates for creating records that reflect the content or at least a summary of content contained in the video.

SPECIFIC EXAMPLES

The present invention in certain embodiments is to be first brought to the public after the filing of the present patent application by a new Internet company named Yodlee.com in Sunnyvale, Calif. In the first implementations the service practicing the present invention is called Yodlee2Go. Specific features of the Yodlee2Go service are included here as further examples of the present invention. In these examples restructured information is provided to onto the Palm™, but this information could be inserted onto any other mobile device as well. Many cell phones, for example, have calendar and address book applications built in, so the restructured information could be inserted onto those devices as well, and into many others.

1. Travel Reservations.

If you book your travel reservations through an online travel agency such as BizTravel.Com or Travelocity.Com and you have added the travel site to your Yodlee home page, then your travel reservation information is synchronized onto your Palm, for example, into several places. For each travel reservation that you have:

a. One record is entered into your Date Book for each "leg" of the flight. The description of the record contains the airline name on which you will by flying, your flight number, and the departure and arrival airport codes.

b. In addition, an alarm is automatically set to go off one hour before your flight time. You may change the alarm time for a particular flight by clicking on the "Details" button in your Date Book. (You may also change the default alarm time to be different than one hour by changing your Yodlee2Go preferences. This is described in Section x of this user manual.)

c. If you click on the "Note" button in the Details dialog box, you can view your confirmation number, the price that you paid for the ticket, the flight mileage, and the name of the travel agency with which you booked the flight.

d. Since Yodlee2Go knows which travel agency you booked the flight with, it synchronizes the contact information for that travel agency into your address book. This way, you will have the phone number of the travel agency with you if you run into problems at the airport. (Also, don't forget that you have your confirmation number in the note attached to the date book record!)

e. Finally, since Yodlee2Go inserts a memo into your Memo Pad application containing the entire itinerary for each of your flights.

2. Frequent Flyer Miles.

If you have added any airline sites in the frequent flyer miles category onto your Yodlee home page, then all of your frequent flyer information is copied into a single memo in your Memo Pad application on your Palm. The memo is titled "Frequent Flyer Miles" and can be accessed by clicking on the Memo Pad application on your Palm.

3. Bank Statements.

If you do your online banking on the web, and you have added your bank's site to your Yodlee home page, then a summarized version of your bank statements will by synchronized into the Memo Pad application on your Palm. One memo will be created for each of your online bank accounts. Each memo will contain the balances in each of your accounts, and a total balance across all your accounts at that bank.

4. Credit Card, Telephone Statements, and Other Billing Information.

If you have added any credit card or billing sites to your Yodlee home page, then this information will be synchronized onto your Palm to help you remember to pay your bills on time. For each bill, Yodlee2Go will insert one entry in your list of things to do in your To Do List application on your Palm device. The entry will contain the name of the company from which you received the bill, the due date, and the amount due by the due date. If you click on the "Details" button, and then click on the "Note" button to view more information about the bill.

5. Stock Portfolio Information.

If you have added your online stock broker (such as E*trade) onto your Yodlee home page, then your stock portfolio information will be synchronized onto your Palm device by Yodlee2Go. Yodlee2Go will create one memo pad entry in your Memo Pad application that contains a consolidated statement of all of your stocks across all online brokerages that you have added to your Yodlee home page. The memo is titled "Stock Quotes," and also contains a summary of the total worth of all of your stock portfolios.

The methods and apparatus of the present invention have many broad applications and therefore should be afforded the broadest of scope. The methods and apparatus of the present invention are limited only by the claims that follow.

What is claimed is:

1. A system for retrieving and disseminating information, comprising:

a server including software executing from a digital medium and coupled to the Internet network; and

a digital appliance operated by a person, coupled to the server by a network link and executing an application other than an Internet browser application;

wherein the server collects a record associated uniquely with the person from an Internet source in a first form in which the record is recorded at the Internet source, transforms the record from the first form to a second form specific to the application executing in the digital appliance, and transmits the transformed record to the digital appliance for display.

2. The system of claim 1 wherein the server is connected to the Internet by an Internet-compatible link and the digital appliance is connected to the server by other than an Internet-compatible link.

3. The system of claim 2 wherein the other-than-Internet-compatible link is an Internet Protocol Telephony link.

4. The system of claim 2 wherein the other than Internet-compatible link is a conventional telephony link operating by a conventional telephony protocol.

5. The system of claim 2 wherein the other-than-Internet-compatible link is a wireless cellular telephony link.

6. The system of claim 2 wherein the other-than-Internet-compatible link is a wireless satellite-enhanced link.

7. The system of claim 1 further comprising a personal computer (PC) connected to the server by a conventional Internet-compatible link, and the digital appliance connects to the PC by an other than Internet-compatible link, and wherein the system transmits the transformed record first to the PC which then transmits the transformed record to the digital appliance.

8. The system of claim 1 wherein the server is a subscription system, and maintains client profiles for subscribers to the system, the client profiles including data relative to information destinations on the Internet for a specific client, data records to be retrieved from the destinations, and data forms for transformation of specific records.

9. The system of claim 8 wherein the server maintains input and output templates for individual clients, the input templates having slots mapping records by type as received from Internet sources, and the output templates having slots mapping data records by type to be transmitted to the client, there being specific correlation between input template slots and output template slots for an individual client.

10. The system of claim 8 wherein data forms for transformation to transmit to digital appliances include one or more of conventional telephone protocol, Internet protocol telephony Protocol (IPNT), voice mail, e-mail, pager message, and records for applications common to personal digital assistants (PDAs), including one or more of appointment-book data records, memo-pad records, alarm records, and things-to-do records.

11. The system of claim 10 wherein airline reservations retrieved for a client from the Internet are converted into multiple appointment-book entries displayable by an appointment-book application on a PDA, one appointment book entry for each individual flight in a reservation.

12. The system of claim 10 wherein an alarm is generated for each flight at a time preceding flight time for each flight.

13. The system of claim 12 wherein a different alarm interval is used for domestic flights than for International flights.

14. The system of claim 10 wherein billing schedules retrieved for a client are converted into two or more records, one being a memo pad record detailing the details of the bill, and another being a things-to-do record to remind the client of the time the bill is due.

15. The system of claim 14 wherein an alarm record is entered to generate an alarm prior to the time the bill is due, to remind the client that the bill is due.

16. The system of claim 1 wherein the server is implemented in association with an Internet Service provider site.

17. The system of claim 1 wherein the server includes an aggregation service for aggregating client-specific records prior to transmission to digital appliances.

18. The system of claim 17 further comprising a synchronization service for keeping data on the digital appliances synchronized with data from sources on the Internet and from the aggregation service.

19. The system of claim 18 wherein the synchronization service uses an algorithm enabled to adaptively minimize round trip messages between the server and the digital appliance according to whether the digital appliance is more limited by latency or bandwidth.

20. The system of claim 19 wherein the algorithm computes Cyclic Redundancy Check (CRC) codes for input and output records, and computes intersections between CRCs on records on the digital appliance and at the aggregation service, the output of the algorithm being exactly the records that need to be sent to the digital appliance and exactly the list of records that need to be deleted from the digital appliance to keep the data sets in synchronization.

21. A method for retrieving and disseminating information records on behalf of a specific client from Internet sources, comprising steps of:

(a) collecting a record associated uniquely with the client in a first data form from an Internet source by a server connected to the Internet;

(b) transforming the record into a second data form specific to an application other than an Internet browser application, the application executable by a digital appliance operated by the client connectable to the server; and

(c) transmitting the transformed record to the digital appliance for display.

22. The method of claim 1 wherein the server is connected to the Internet by an Internet-compatible link and the digital appliance is connected to the server by other than an Internet-compatible link.

23. The method of claim 22 wherein the other-than-Internet-compatible link is an Internet Protocol Telephony link.

24. The method of claim 22 wherein the other-than-Internet-compatible link is a conventional telephony link operating by a conventional telephony protocol.

25. The method of claim 22 wherein the other-than-Internet-compatible link is a wireless cellular telephony link.

26. The method of claim 22 wherein the other-than-Internet-compatible link is a wireless satellite enhanced link.

27. The method of claim 21 further comprising a personal computer (PC) connected to the server by a conventional Internet-compatible link and the digital appliance connects to the PC by an other than Internet-compatible link, and wherein, in step (c) the system transmits the transformed record first to the PC which then transmits the transformed record to the digital appliance.

28. The system of claim 21 wherein the server is a subscription server, and maintains client profiles for subscribers to the system, the client profiles including data relative to information destinations on the Internet for a specific client, data records to be retrieved from the destinations, and data forms for transformation of specific records.

29. The method of claim 28 wherein in step (b) the server maintains input and output templates for individual clients, the input templates having slots mapping records by type as received from Internet sources, and the output templates having slots mapping data records by type to be transmitted to the client, there being specific correlation between input template slots and output template slots for an individual client.

30. The method of claim 28 wherein data forms for transformation to transmit to digital appliance include one or more of conventional telephone protocol, Internet protocol telephony Protocol (IPNT), voice mail, e-mail, pager message, and records for applications common to personal digital assistants (PDAs), including one or more of appointment-book data records, memo-pad records, alarm records, and things-to-do records.

31. The method of claim 30 wherein airline reservations retrieved for a client from the Internet are converted into multiple appointment-book entries displayable by an appointment-book application on a PDA, one appointment book entry for each individual flight in a reservation.

32. The method of claim 30 wherein an alarm is generated for each flight at a time preceding flight time for each flight.

33. The method of claim 32 wherein a different alarm interval is used for domestic flights than for International flights.

34. The method of claim 30 wherein billing schedules retrieved for a client are converted into two or more records, one being a memo pad record detailing the details of the bill, and another being a things-to-do record to remind the client of the time the bill is due.

35. The method of claim 34 wherein an alarm record is entered to generate an alarm prior to the time the bill is due, to remind the client that the bill is due.

36. The system of claim 21 wherein the server is implemented in association with an Internet Service provider site.

37. The method of claim 21 wherein the server includes an aggregation service for aggregating client-specific records prior to transmission to digital appliances.

38. The method of claim 37 further comprising a synchronization service for keeping data on digital appliances synchronized with data from sources on the Internet and from the aggregation service.

39. The method of claim 38 wherein the synchronization service uses an algorithm enabled to adaptively minimize round trip messages between the server and the digital appliance according to whether the digital appliance is more limited by latency or bandwidth.

40. The system of claim 39 wherein the algorithm computes Cyclic Redundancy Check (CRC) codes for input and output records, and computes intersections between CRCs on records on the digital appliance and at the aggregation service, the output of the algorithm being exactly the records that need to be sent to the digital appliance and exactly the list of records that need to be deleted from the digital appliance to keep the data sets in synchronization.

* * * * *

Exhibit F

US007752535B2

(12) **United States Patent**
Satyavolu

(10) **Patent No.: US 7,752,535 B2**
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(54) **CATEGORIZATION OF SUMMARIZED INFORMATION**

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See application file for complete search history.

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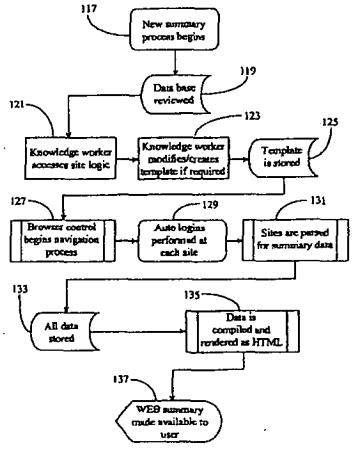
(57) **ABSTRACT**

A system for categorizing transactions includes a collection function gathering information concerning transactions, including at least date, description and amount of the transactions, for a particular person or enterprise, and a processing function categorizing individual ones of the collected transactions according to at least part of the transaction description. In preferred embodiments of the system a variety of categorization methods for collected information may be utilized including at least categorizing by providing individual categories according to category definition entered by a specific user or on behalf of an enterprise. Categorization may also be done for a first plurality of persons or enterprises according to category definition entered by a second plurality of persons or enterprises, or categories are developed from information taken from communication between users and the system. Probability algorithms may also be used in developing categories.

10 Claims, 7 Drawing Sheets



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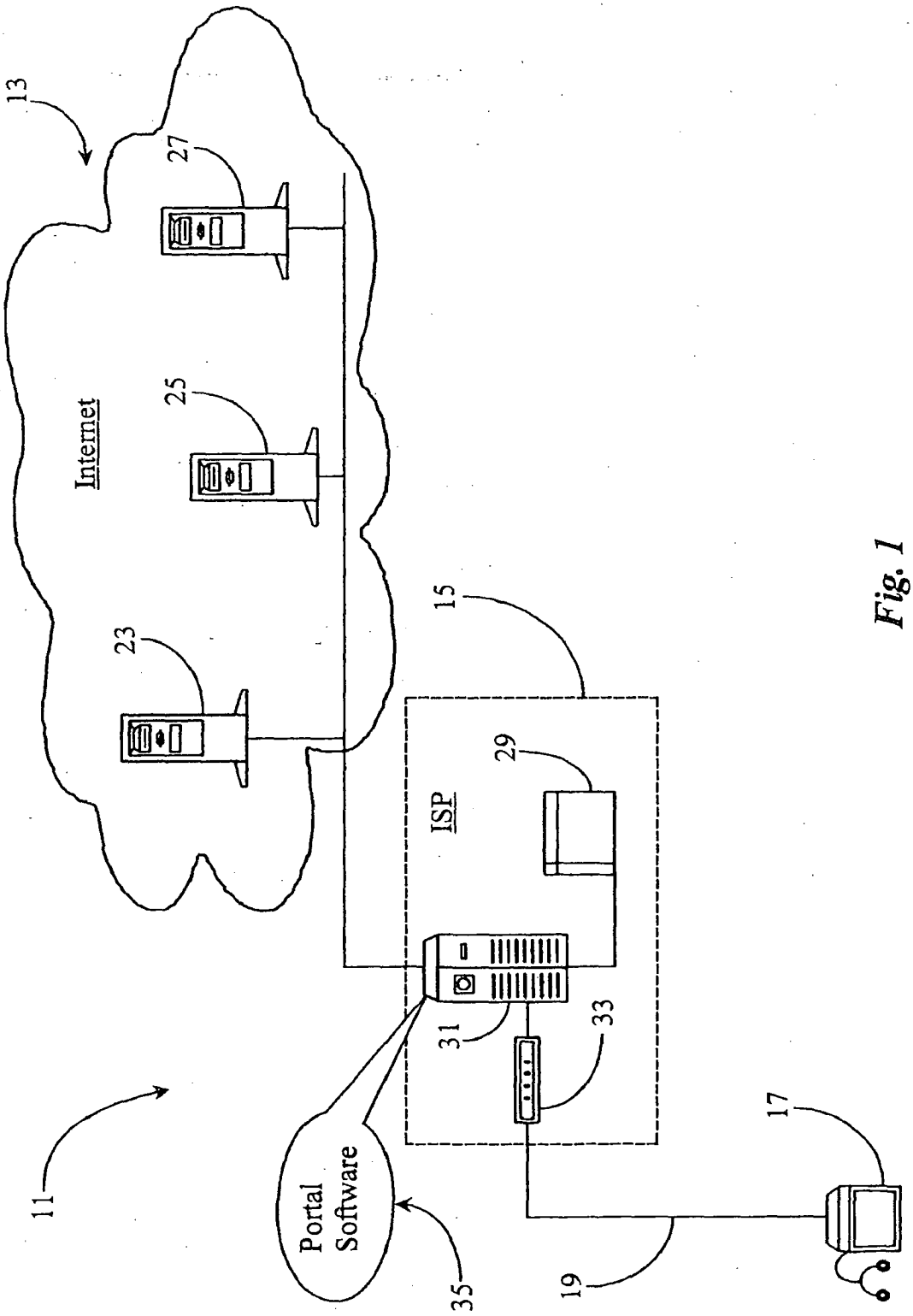


Fig. 1

Ex. 1002 Page 117

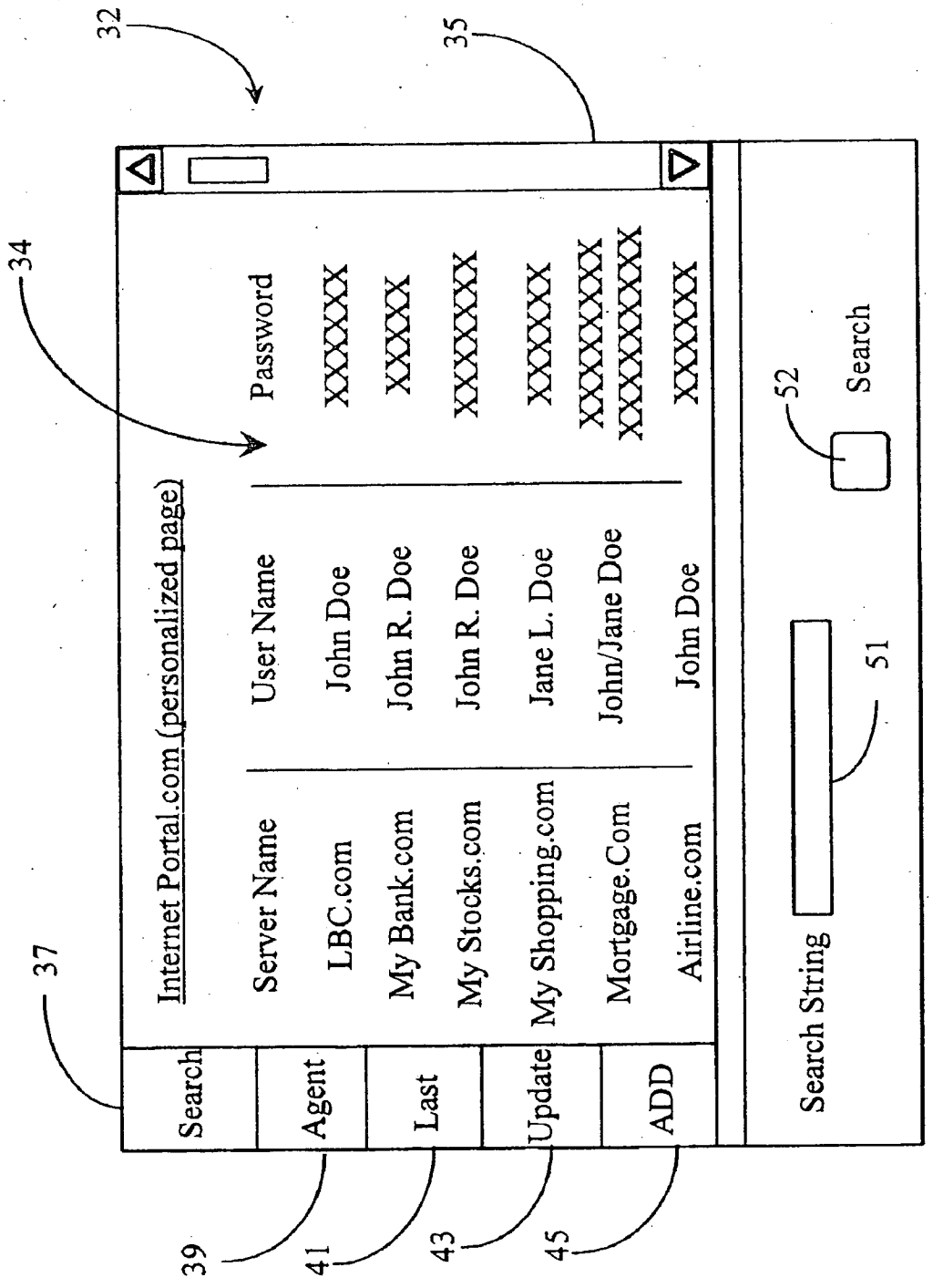


Fig. 2

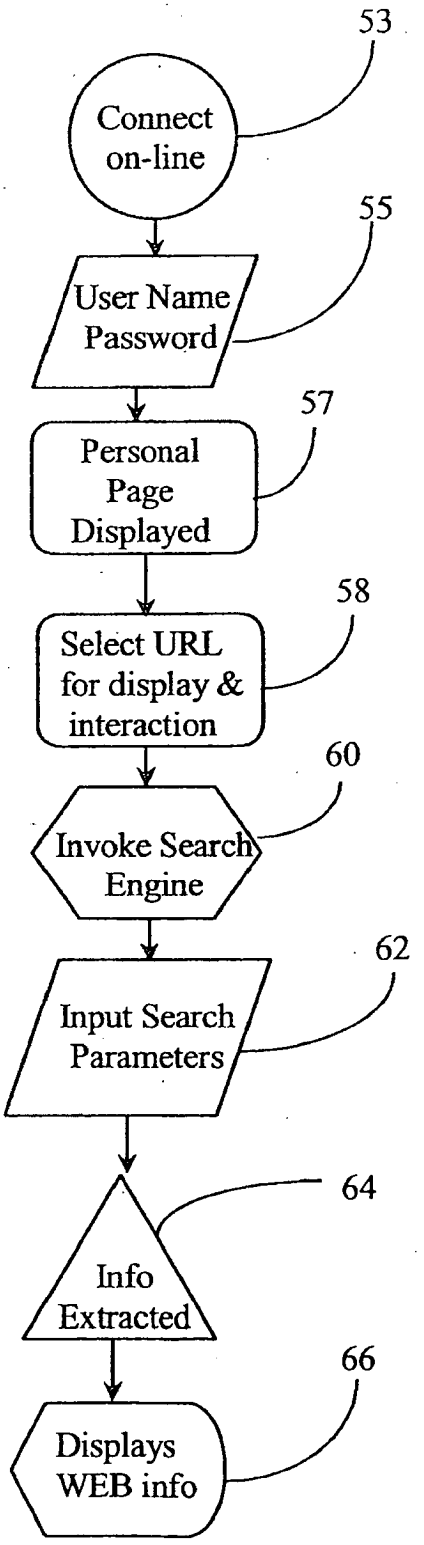

53
Connect on-line
55
User Name Password
57
Personal Page Displayed
58
Select URL for display & interaction
60
Invoke Search Engine
62
Input Search Parameters
64
Info Extracted
66
Displays WEB info

Fig. 3

Ex. 1002 Page 119

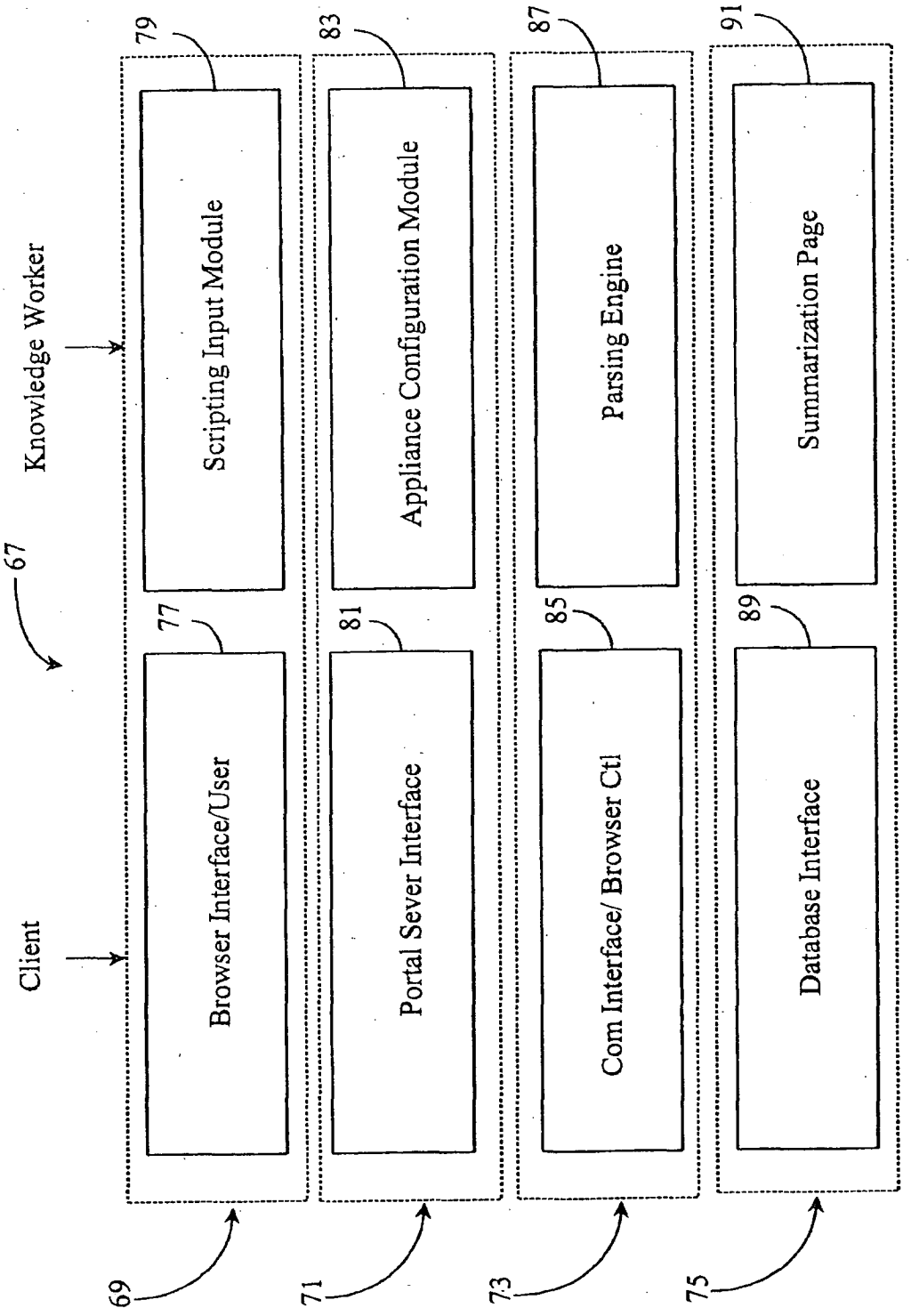


Fig. 4

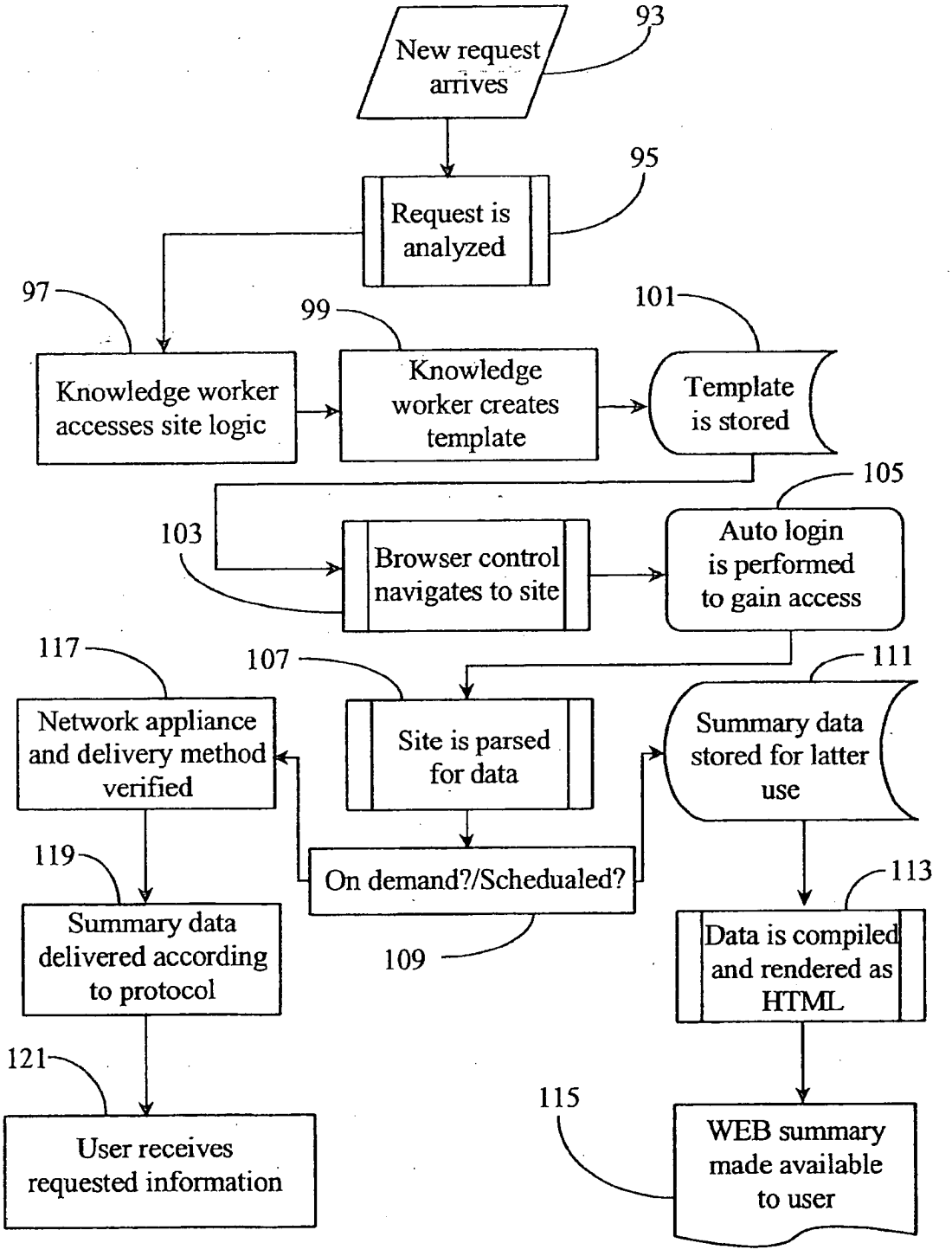

New request arrives
93
Request is analyzed
95
97
Knowledge worker accesses site logic
99
Knowledge worker creates template
101
Template is stored
105
103
Browser control navigates to site
Auto login is performed to gain access
117
Network appliance and delivery method verified
107
Site is parsed for data
111
Summary data stored for latter use
119
Summary data delivered according to protocol
On demand?/Schedualed?
109
113
Data is compiled and rendered as HTML
121
User receives requested information
115
WEB summary made available to user

Fig. 5

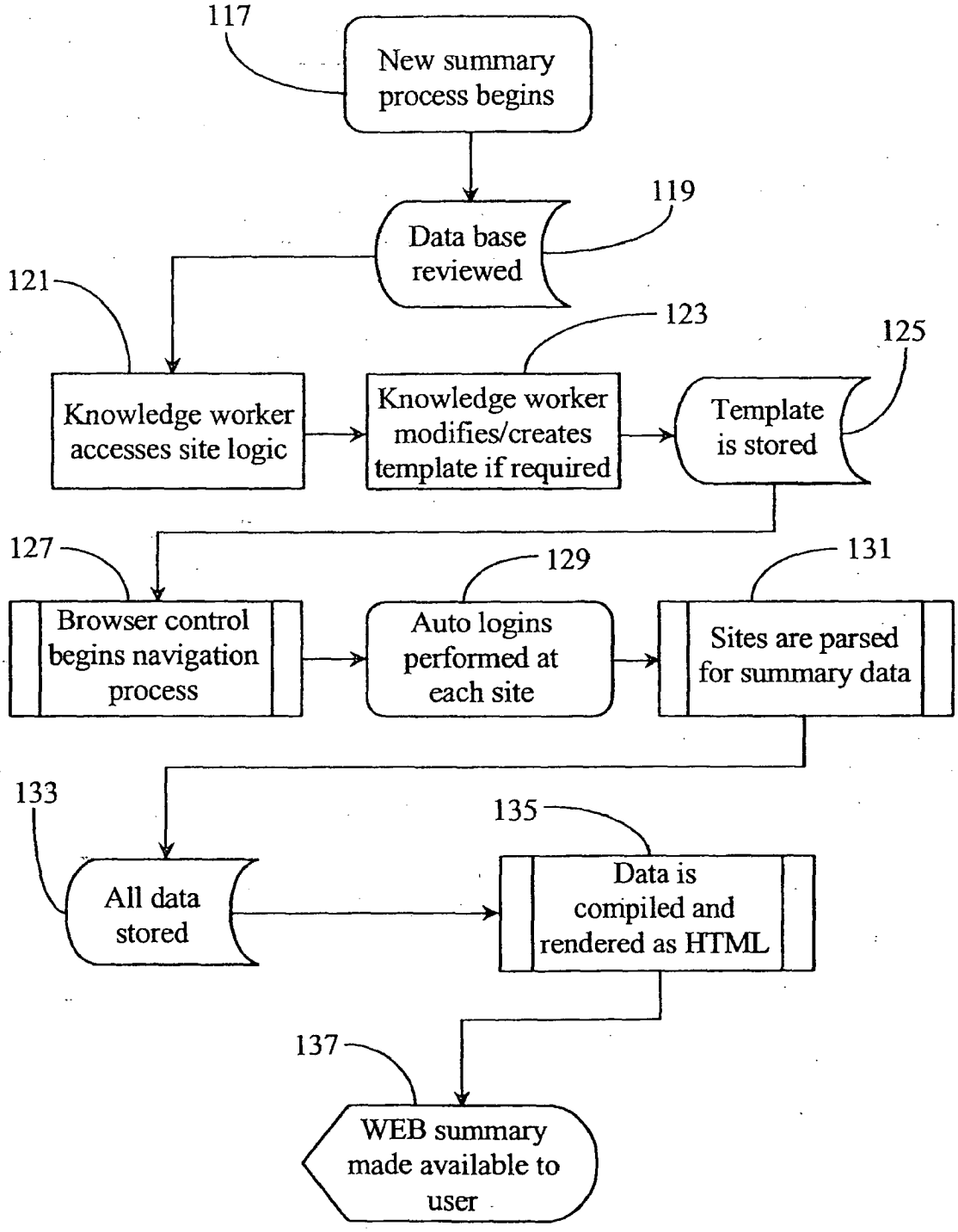
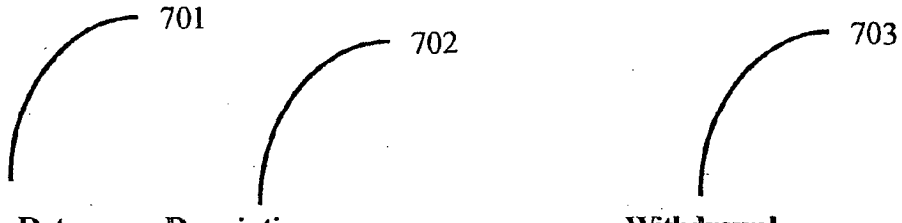

117
New summary process begins
119
Data base reviewed
121
123
125
Knowledge worker accesses site logic
Knowledge worker modifies/creates template if required
Template is stored
127
129
131
Browser control begins navigation process
Auto logins performed at each site
Sites are parsed for summary data
133
135
All data stored
Data is compiled and rendered as HTML
137
WEB summary made available to user

Fig. 6



Txn Date	Description	Withdrawal
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11/21/2005	VISA IMAGINE NATI BOULDER CO 332500186437	$58.95
11/21/2005	W/D AT 1590 NO MAIN ST SALINAS CA	$301.50
11/21/2005	W/D AT WATSONVILLE SQUARE	$200.00
11/21/2005	VISA COCO'S #0511 WATSONVI CA 043005113984	$24.02
11/21/2005	VISA CAPITOLA BOO CAPITOLA CA 532501258660	$65.33
11/21/2005	VISA FELIPES REST SAN JUAN CA 040085431826	$44.93
11/21/2005	VISA GOLDEN CHINA WATSONVI CA 040082901051	$26.60
11/21/2005	PUR AT SAFEWAY STORE 1204 SAL SALINAS CA	$148.27

Fig. 7

CATEGORIZATION OF SUMMARIZED INFORMATION

CROSS-REFERENCE TO RELATED DOCUMENTS

The present invention is a continuation in part (CIP) to patent application Ser. No. 09/737,404, filed on Dec. 14, 2000, now abandoned which is a divisional of Ser. No. 09/323,598 filed on Jun. 1, 1999, now U.S. Pat. No. 6,199,077 disclosures of which are incorporated herein in their entirety at least by reference.

FIELD OF THE INVENTION

The present invention is in the field of Internet navigation including various communication means and connection technologies and pertains more particularly to methods and apparatus, including software, for gathering summary information from users or enterprise-selected WEB sites and presenting the information as HTML to the user using either a push or pull technology.

BACKGROUND OF THE INVENTION

The information network known as the World Wide Web (WWW), which is a subset of the well-known Internet, is arguably the most complete source of publicly accessible information available. Anyone with a suitable Internet appliance such as a personal computer with a standard Internet connection may access (go on-line) and navigate to information pages (termed web pages) stored on Internet-connected servers for the purpose of garnering information and initiating transactions with hosts of such servers and pages.

Many companies offer various subscription services accessible via the Internet. For example, many people now do their banking, stock trading, shopping, and so forth from the comfort of their own homes via Internet access. Typically, a user, through subscription, has access to personalized and secure WEB pages for such functions. By typing in a user name and a password or other personal identification code, a user may obtain information, initiate transactions, buy stock, and accomplish a myriad of other tasks.

One problem that is encountered by an individual who has several or many such subscriptions to Internet-brokered services is that there are invariably many passwords and/or log-in codes to be used. Often a same password or code cannot be used for every service, as the password or code may already be taken by another user. A user may not wish to supply a code unique to the user such as, perhaps a social security number, because of security issues, including quality of security that may vary from service to service. Additionally, many users at their own volition may choose different passwords for different sites so as to have increased security, which in fact also increases the number of passwords a user may have.

Another issue that can plague a user who has many passworded subscriptions is the fact that they must bookmark many WEB pages in a computer cache so that they may quickly find and access the various services. For example, in order to reserve and pay for airline travel, a user must connect to the Internet, go to his/her book-marks file and select an airline page. The user then has to enter a user name and password, and follow on-screen instructions once the page is delivered. If the user wishes to purchase tickets from the WEB site, and wishes to transfer funds from an on-line banking service, the user must also look for and select the personal bank or account page to initiate a funds transfer for the tickets.

Different user names and passwords may be required to access these other pages, and things get quite complicated.

Although this preceding example is merely exemplary, it is generally known that much work related to finding WEB pages, logging in with passwords, and the like is required to successfully do business on the WEB.

A service known to the inventor and described in the related case listed under the cross-reference to related documents section provides a WEB service that allows a user to store all of his password protected pages in one location such that browsing and garnering information from them is much simplified. A feature of the above service allows a user to program certain tasks into the system such that requested tasks are executed by an agent (software) based on user instruction. The service stores user password and log-in information and uses the information to log-in to the user's sites, thus enabling the user to navigate without having to manually input log-in or password codes to gain access to the links.

The above-described service uses a server to present a user-personalized application that may be displayed as an interactive home page that contains all of his listed sites (hyperlinks) for easy navigation. The application lists the user's URL's in the form of hyperlinks such that a user may click on a hyperlink and navigate to the page wherein login, if required, is automatic, and transparent to the user.

The application described above also includes a software agent that may be programmed to perform scheduled tasks for the user including returning specific summaries and updates about user-account pages. A search function is provided and adapted to cooperate with the software agent to search user-entered URL's for specific content if such pages are cached somewhere in their presentable form such as at the portal server, or on the client's machine.

In addition to the features described above, it is desirable that the software agent in conjunction with the search function be enabled to navigate to any URL or group of URLs, provided as input by a user or otherwise deemed appropriate by the service provider, for the purpose of providing summary information regarding updated content for each URL, which may be presented as an HTML information-page to the user.

What is clearly needed is a method and apparatus that can independently navigate to user-supplied or known URLs, login with the appropriate password information at each URL (if required), and return requested summary information to a user in the form of a human and machine-readable HTML document. Such a system would provide an effective summarization service wherein important information may be presented to a user without requiring that the user invoke hyperlinks at his personal portal home page. Such a unique system would have even further value if categorization of collected information could be done for users in a variety of ways.

SUMMARY OF THE INVENTION

A system for categorizing transactions is provided, comprising a collection function gathering information concerning transactions, including at least date, description and amount of the transactions, for a particular person or enterprise, and a processing function categorizing individual ones of the collected transactions according to at least part of the transaction description.

In one embodiment the system further comprises a compilation function summarizing transactions in individual categories. In another embodiment the system further comprises a reporting function reporting the summarized transactions to the particular person or enterprise. In yet another embodiment categorization is done according to category definition

entered by the particular person or on behalf of the enterprise. In yet another embodiment categorization is done for a first plurality of persons or enterprises according to category definition entered by a second plurality of persons or enterprises.

In some embodiments categories are developed from information taken from communication between clients and the system, and in other embodiments a probability algorithm may be used in developing categories. In some embodiments the identifiers for categories are periodically amended according to further information collected and processed.

In still other embodiments the system collects the information concerning transactions from Internet-connected web sites adapted to provide account information to clients, and also in some cases reports to clients through the Internet network.

In yet another embodiment the system further comprises a function storing past transaction history associated with the particular person or enterprise, and in some cases the transaction history may be used to predict future transaction history.

In another aspect of the invention a method is provided for categorizing transactions, comprising steps of (a) gathering information concerning transactions by a collection function, including at least date, description and amount of the transactions, for a particular person or enterprise; and (b) categorizing individual ones of the collected transactions according to at least part of the transaction description by a processing function.

In one embodiment of the method there is further a step comprising summarizing transactions in individual categories by a compilation function. In another embodiment there is a step for reporting the summarized transactions to the particular person or enterprise by a reporting function. In still another embodiment categorization is done according to category definition entered by the particular person or on behalf of the enterprise. In some embodiments categorization is done for a first plurality of persons or enterprises according to category definition entered by a second plurality of persons or enterprises.

In some embodiments categories are developed from information taken from communication between clients and the system. Also in some embodiments a probability algorithm is used in developing categories. In some cases identifiers for categories are periodically amended according to further information collected and processed.

In still other embodiments of the method the system collects the information concerning transactions from Internet-connected web sites adapted to provide account information to clients. In some embodiments the system reports to clients through the Internet network. In other embodiments method further comprises a step for storing past transaction history associated with the particular person or enterprise. And in some embodiments the past transaction history is used to predict future transaction history.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. **1** is an overview of an Internet portal system and network according to an embodiment of the present invention.

FIG. **2** is an exemplary plan view of a personalized Portal home page application as it may be seen on a display monitor according to an embodiment of the present invention.

FIG. **3** is a flow diagram illustrating user interaction with the Internet portal of FIG. **1**.

FIG. **4** is a block diagram illustrating a summarization software agent and capabilities thereof according to an embodiment of the present invention.

FIG. **5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** operating in a user-defined mode.

FIG. **6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** in a User-independent smart mode with minimum user input.

FIG. **7** is an illustration of transaction records taken from an actual on-line banking display.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to a preferred embodiment of the present invention, a unique Internet portal is provided and adapted to provide unique services to users who have obtained access via an Internet or other network connection from an Internet-capable appliance. Such an interface provides users with a method for storing many personal WEB pages and further provides search function and certain task-performing functions. The methods and apparatus of the present invention are taught in enabling detail below.

FIG. **1** is an overview of an Internet portal system **11** and Internet network **13** according to an embodiment of the present invention. Portal system **11**, in this embodiment, operates as an ISP in addition to a unique network portal, but may, in other embodiments be implemented as a stand-alone alone Internet server. In yet other embodiments the service and apparatus described herein may also be provided by a search and listing service (Alta Vista'™, Yahoo™) or by any other enterprise hosting a WEB-connected server.

Internet **13** is representative of a preferred use of the present invention, but should not be considered limiting, as the invention could apply in other networks and combinations of networks.

ISP **15** in this embodiment comprises a server **31**, a modem bank **33**, represented here by a single modem, and a mass storage repository **29** for storing digital data. The modem bank is a convenience, as connection to the server could be by another type of network link. ISP **15**, as is typical in the art, provides Internet access services for individual subscribers. In addition to well-known Internet access services, ISP **15** also provides a unique subscription service as an Internet portal for the purpose of storing many WEB pages or destinations along with any passwords and or personal codes associated with those pages, in a manner described in more detail below. This unique portal service is provided by execution of Portal Software **35**, which is termed by the inventors the Password-All suite. The software of the invention is referred to herein both as the Portal Software, and as the Password-all software suite. Also, in much of the description below, the apparatus of the invention is referred to by the Password-All terminology, such as the Password-All Server or Password-All Portal.

ISP **15** is connected to Internet **13** as shown. Other equipment known in the art to be present and connected to a network such as Internet **13**, for example, IP data routers, data switches, gateway routers, and the like, are not illustrated here but may be assumed to be present. Access to ISP **15** is through a connection-oriented telephone system as is known in the art, or through any other Internet/WEB access connection, such as through a cable modem, special network connection (e.g.

T1), ISDN, and so forth. Such connection is illustrated via access line **19** from Internet appliance **17** through modem bank **33**.

In a preferred embodiment a user has access to Internet Password-All Portal services by a user name and password as is well known in the art, which provides an individualized WEB page to the subscriber. In another embodiment wherein a user has other individuals that use his or her Internet account, then an additional password or code unique to the user may be required before access to portal **31** is granted. Such personalized Portal WEB pages may be stored in repository **29**, which may be any convenient form of mass storage.

Three Internet servers **23**, **25**, and **27**, are shown in Internet **13**, and represent Internet servers hosted by various enterprises and subscribed to by a user operating appliance **17**. For example, server **23** may be a bank server wherein interactive on-line banking and account managing may be performed. Server **25** may be an investment server wherein investment accounts may be created and managed. Server **27** may be an airline or travel server wherein flights may be booked, tickets may be purchased, and so on. In this example, all three servers are secure servers requiring user ID and password for access, but the invention is not necessarily limited to just secure services.

In a preferred embodiment of the present invention, a subscribing user operating an Internet-capable appliance, such as appliance **17**, connects to Password-All Portal system **11** hosted by ISP **15**, and thereby gains access to a personalized, interactive WEB page, which in turn provides access to any one of a number of servers on Internet **13** such as servers **23**, **25**, and **27**, without being required to enter additional passwords or codes. In a preferred embodiment the software that enables this service is termed Password-All by the inventors. Password-All may be considered to be a software suite executing on the unique server, and in some instances also on the user's station (client). Additional interactivity provided by portal software **35** allows a connected user to search his listed pages for information associated with keywords, text strings, or the like, and allows a user to program user-defined tasks involving access and interaction with one or more Internet-connected servers such as servers **23**, **25**, and **27** according to a pre-defined time schedule. These functions are taught in enabling detail below.

FIG. **2** is an illustration of a personalized portal page as may be seen on a display monitor according to an embodiment of the present invention, provided by Password-All Portal software **35** executing on server **31**, in response to secure access by a subscriber. Page **32** presents an interactive listing **34** of user-subscribed or member WEB pages, identified in this example by URL, but which may also be identified by any convenient pseudonym, preferably descriptive, along with user name and typically encrypted password information for each page. Listed in a first column under Server Name destination, are exemplary destinations LBC.com, My Bank.com, My Stocks.com, My shopping.com, Mortgage.com, and Airline.com. These are but a few of many exemplary destinations that may be present and listed as such on page **33**. In order to view additional listings listed but not immediately viewable from within application **33**, a scroll bar **35** is provided and adapted to allow a user to scroll up or down the list to enable viewing as is known in the art.

Items listed in list **34** in this example may be considered destinations on such as servers **23**, **25**, and **27** of FIG. **1**. Typically the URL associated with an item on this list will not take a user to a server, per se, but to a page stored on a server. User names and password data associated with each item in list **34** are illustrated in respective columns labeled user name, and password, to the right of the column labeled Server Name destination. Each listing, or at least a portion of each listing, is a hyperlink invoking, when selected, the URL to that destination. In some instances a particular service may have more than one associated URL. For example, My Bank.com may have more than one URL associated for such as different accounts or businesses associated also with a single subscriber. In this case there may be a sub-listing for different destinations associated with a single higher-level listing. This expedient is not shown, but given this teaching the mechanism will be apparent to those with skill in the art.

In some embodiments one page **32** may be shared by more than one user, such as a husband and wife sharing a common account and subscription. An instance of this is illustrated herein with respect to the saver labeled Mortgage.com wherein both a John and a Jane Doe are listed together under the column labeled user name. In another embodiment, a network of individuals, perhaps business owners, authorized co-workers, investment parties, or the like may share one application. In this way, system **11** may be adapted for private individuals as well as business uses.

After gaining access to application **33** which is served via Internet portal server **31** of FIG. **1**, a user may scroll, highlight, and select any URL in his or her list **34** for the purpose of navigation to that particular destination for further interaction. Application **33** already has each password and user name listed for each URL. It is not necessary, however, that the password and user name be displayed for a user or users. These may well be stored transparently in a user's profile, and invoked as needed as a user makes selections. Therefore, a user is spared the need of entering passwords and user names for any destinations enabled by list **34**. Of course, each list **34** is built, configured and maintained by a subscribing user or users, and an editing facility is also provided wherein a user may edit and update listings, including changing URL's adding and deleting listings, and the like.

In another aspect of the invention new listings for a user's profile, such as a new passthrough to a bank or other enterprise page, may be added semi-automatically as follows: Typically, when a user opens a new account with an enterprise through interaction with a WEB page hosted by the enterprise, the user is required to provide certain information, which will typically include such as the user's ID, address, e-mail account, and so forth, and typically a new user name and password to access the account. In this process the user will be interacting with the enterprise's page from his/her browser. A Password-All plug-in is provided wherein, after entering the required information for the new enterprise, the user may activate a predetermined signal (right click, key stroke, etc.), and the Password-All suite will then enter a new passthrough in the user's Password. All profile at the Password-All Portal server.

In a related method for new entries, the enterprise hosting the Password-All Portal may, by agreement with other enterprises, provide login and sign-up services at the Password-All Portal, with most action transparent to the user. For example, there may be, at the Password-All Portal, a selectable browser list of cooperating enterprises, such as banks, security services, and the like, and a user having a Password-All Portal subscription and profile may select among such cooperating enterprises and open new accounts, which will simultaneously and automatically be added to the Password-All Portal page for the user and to the server hosted by the cooperating enterprise. There may be some interactivity required for different accounts, but in the main page, much information from the user's profile may be used directly without being re-entered.

The inventors have anticipated that many potential users may well be suspicious of providing passwords and user names to an enterprise hosting a Password-All Portal Server executing a service like Password-All according to embodiments of the present invention. To accommodate this problem, in preferred embodiments, it is not necessary that the user provide the cleartext password to Password-All. Instead, an encrypted version of each password is provided. When a user links to his passthrough page in Password-All at the Password-All Portal server, when he/she invokes a hyperlink, the encrypted password is returned to the user's system, which then, by virtue of the kept encryption key or master password, invokes the true and necessary password for connection to the selected destination. It is thus not necessary that cleartext passwords be stored at the Password-All Portal server, where they may be vulnerable to attack from outside sources, or to perceived misuse in other ways as well.

In a related safety measure, in a preferred embodiment of the invention, a user's complete profile is never stored on a single server, but is distributed over two or more, preferably more, servers, so any problem with any one server will minimize the overall effect for any particular user.

Password-All, as described above, allows a user to access a complete list of the user's usual cyberspace destinations, complete with necessary log-on data, stored in an encrypted fashion, so a user may simply select a destination (a hyperlink) in the Password-All list, and the user's browser then invokes the URL for the selected destination. In an added feature, Password-All may display banner ads and other types of advertisement during the navigation time between a hyperlink being invoked and the time the destination WEB page is displayed.

In yet another embodiment of the invention, a user/subscriber need not access the Password-All page to enjoy the advantages of the unique features provided. In this variation, a Plug-In is provided for the subscriber's WEB browser. If the subscriber navigates by use of the local browser to a WEB page requiring a secure log-in, such as his/her on-line banking destination, when the subscriber is presented with an input window for ID and Password, the plug in may be activated by a predetermined user input, such as a hot key or right click of the mouse device. The plug-in then accesses, transparently, the Password-All page (which may be cached at the client), and automatically accesses and provides the needed data for log-on.

In yet another aspect of the invention a search option **37** allows a user to search list **34** for specific URL's based on typed input such as keywords or the like. In some cases, the number of URL's stored in list **34** can be extensive making a search function such as function **37** an attractive option. A criteria dialog box **51** illustrated as logically separated from and below list **34** is provided and adapted to accept input for search option **37** as is known in the art. In one embodiment, search option **37** may bring up a second window wherein a dialog box such as box **51** could be located.

In another aspect of the invention the search function may also be configured in a window invoked from window **33** and caused to search all or selected ones of listed destinations, and to return results in a manner that may be, at least to some extent, configured by a user. For example a dialog box may be presented wherein a user may enter a search criteria and select among all of the listed destinations. The search will then be access each of the selected destinations in turn, and the result may be presented to the user as each instance of the criteria is found, or results may be listed in a manner to be accessed after the search.

Preferably the search function is a part of the Password-All Portal software, available for all users, and may be accessed by hyperlinks in user's personal pages. In some embodiments users may create highly individualized search functions that may be stored in a manner to be usable only by the user who creates such a function.

In many aspects of the present invention, knowledge of specific WEB pages, and certain types of WEB pages, is highly desirable. In many embodiments characteristics of destination WEB pages are researched by persons (facilitators) maintaining and enhancing Password-All Portal software **35**, and many characteristics may be provided in configuration modules for users to accomplish specific tasks. In most cases these characteristics are invoked and incorporated transparent to the user.

In yet another aspect of the present invention, the Password-All suite is structured to provide periodic reports to a user, in a manner to be structured and timed by the user, through the user's profile. For example, reports of changes in account balances in bank accounts, stock purchases, stock values, total airline travel purchases, frequent-flier miles, and the like may be summarized and provided to the users in many different ways. Because the Password-All Portal server with the Password-All software site handles a broad variety of transactional traffic for a user, there is an opportunity to summarize and collect and process statistics in many useful ways. In preferred embodiments of the invention such reports may be furnished and implemented in a number of different ways, including being displayed on the user's secure personal WEB page on the Password-All Portal.

In addition to the ability of performing tasks as described above, task results, including reports and hard documents such as airline tickets may be sent over the Internet or other data packet-networks to user-defined destinations such as fax machines, connected computer nodes, e-mail servers, and other Internet-connected appliances. All tasks may be set-up and caused to run according to user-defined schedules while the user is doing something else or is otherwise not engaged with the scheduled task.

In another embodiment of the present invention, recognizing the increasing use of the Internet for fiscal transactions, such as purchasing goods and services, a facility is provided in a user's profile to automatically track transactions made at various destinations, and to authorize payment either on a transaction-by-transaction basis, or after a session, using access to the user's bank accounts, all of which may be pre-programmed and authorized by the user.

Other functions or options illustrated as part of application **35** include a last URL option **41**, an update function **43**, and an add function **45**. Function **41** allows a user to immediately navigate to a last visited URL. Update function **43** provides a means of updating URL's for content and new address. An add function enables a user to add additional URL's to list **34**. Similarly, function **45** may also provide a means to delete entries. Other ways to add accounts are described above. It should be noted that the services provided by the unique Password-All Portal in embodiments of the present invention, and by the Password-All software suite are not limited to destinations requiring passwords and user names. The Password-All Portal and software in many embodiments may also be used to manage all of a user's bookmarks, including editing of bookmarks and the like. In this aspect, bookmarks will typically be presented in indexed, grouped, and hierarchical ways.

There are editing features provided with Password-All for adding, acquiring, deleting, and otherwise managing bookmarks. As a convenience, in many embodiments of the inven-

tion, bookmarks may be downloaded from a user's Password-All site, and loaded onto the same user's local browser. In this manner, additions and improvements in the bookmark set for a user may be used without the necessity of going to Password-All. Further, bookmarks may be uploaded from a user's local PC to his/her home page on the Password-All site by use of one or more Password-All plug-ins.

It will be apparent to the skilled artisan, given the teaching herein, that the functionality provided in various embodiments of the invention is especially applicable to Internet-capable appliances that may be limited in input capability. For example, a set-top box in a WEB TV application may well be without a keyboard for entering IDs and Passwords and the like. In practice of the present invention keyboard entry is minimized or eliminated. The same comments apply to many other sorts of Internet appliances.

In preferred embodiments of the invention, once a subscriber-user is in Password-All, only an ability to point-and-click is needed for all navigation. To get into the Password-All site, using a limited apparatus, such as an appliance without a keyboard or keypad, a Smartcard or embedded password may be used, or some other type of authentication.

It will be apparent to one with skill in the art that an interactive application such as application **33** may be provided in a form other than a WEB page without departing from the spirit and scope of the present invention. For example, an application such as application **33** may be provided as a downloadable module or program that may be set-up and configured off-line and made operational when on-line.

FIG. **3** is a flow diagram illustrating user interaction with the Internet Password-All Portal of FIG. **1**. The following process steps illustrated, according to an embodiment of the present invention, are intended to illustrate exemplary user-steps and automated software processes that may be initiated and invoked during interaction with an Internet portal of the present invention such as portal **31** of FIG. **1**. In step **53** a user connects to the Internet or another previously described switched-packet network via a compatible appliance such as Internet appliance **17** of FIG. **1**.

At step **55**, a user enters a user-name and password, which, in one embodiment, may simply be his ISP user name and password. In another embodiment, a second password or code would be required to access an Internet portal such as portal server **31** of FIG. **1** after logging onto the Internet through the ISP. In some cases, having a special arrangement with the ISP, there may be one password for both Internet access through the ISP and for Password-All. At step **57** a personal WEB page such as page **32** of FIG. **2** is displayed via Internet portal server **31**. At minimum, the personalized WEB page will contain all user configured URL's, and may also be enhanced by a search function, among other possibilities.

In step **58** a user will, minimally, select a URL from his or her bookmarked destinations, and as is known by hyperlink technology, the transparent URL will be invoked, and the user will navigate to that destination for the purpose of normal user interaction. In this action, the Password-All Portal software transparently logs the user on to the destination page, if such log-on is needed.

At step **60** the user invokes a search engine by clicking on an option such as described option **37** of FIG. **2**. At step **62**, the user inputs search parameters into a provided text field such as text field **51** of FIG. **2**. After inputting such parameters, the user starts the search by a button such as button **52**. The search engine extracts information in step **64**. Such information may be, in one option, of the form of URL's fitting the description provided by search parameters. A searched list of URL's may be presented in a separate generated page in step **66** after which a user may select which URL to navigate to. In an optional search function, the user may provide search criteria, and search any or all of the possible destinations for the criteria.

In another embodiment wherein WEB pages are cached in their presentable form, information extracted in step **64** may include any information contained in any of the stored pages such as text, pictures, interactive content, or the like. In this case, one displayed result page may provide generated links to search results that include the URL associated with the results. Perhaps by clicking on a text or graphic result, the associated WEB page will be displayed for the user with the result highlighted and in view with regards to the display window.

Enhanced Agent for WEB Summaries

In another aspect of the present invention, a software agent, termed a gatherer by the inventors, is adapted to gather and return summary information about URL's according to user request or enterprise discretion. This is accomplished in embodiments of the present invention by a unique scripting and language parsing method provided by the inventor wherein human knowledge workers associated with the service provide written scripts to such a gatherer according to subscriber or enterprise directives. Such a software gatherer, and capabilities thereof, is described in enabling detail below.

Referring now to FIG. **1**, there is illustrated an exemplary architecture representing a portal service-network which, in this case is hosted by ISP **15**. Portal software **35** in this embodiment executes on portal server **31** set-up at the ISP location. Mass repository **29** is used for storing subscriber information such as passwords, login names, and the like. Internet servers **23**, **25**, and **27** represent servers that are adapted to serve WEB pages of enterprises patronized by a subscriber to the portal service such as one operating Internet appliance **17**.

The main purpose of portal software **35**, as described above with reference to FIG. **2**, is to provide an interactive application that lists all of the subscriber's WEB sites in the form of hyperlinks. When a user invokes a hyperlink from his personal list, software **35** uses the subscriber's personal information to provide an automatic and transparent login function for the subscriber while jumping the subscriber to the subject destination.

Referring again to FIG. **2**, an interactive list **34** containing user-entered hyperlinks and a set of interactive tools is displayed to a subscriber by portal software **35** of FIG. **1**. One of the tools available to a subscriber interacting with list **34** is agent (software) **39**. Agent **39** may be programmed to perform certain tasks such as obtaining account information, executing simple transactions, returning user-requested notification information about upcoming events, and so on. Search function **37** and update function **43** may be integrated with agent **39** as required to aid in functionality.

It is described in the above disclosure that agent **39** may, in some embodiments, search for and return certain summary information contained on user-subscribed WEB pages, such as account summaries, order tracking information and certain other information according to user-defined parameters. This feature may be programmed by a user to work on a periodic time schedule, or on demand.

In the following disclosure, enhancements are provided to agent **39**. Such enhancements, described in detail below, may be integrated into agent **39** of portal software **35** (FIGS. **1** and **2**); and may be provided as a separate agent or gatherer to run

with portal software 35; or may, in some embodiments, be provided as a standalone service that is separate from portal software 35.

FIG. 4 is a block diagram illustrating a summarization software agent 67 and various capabilities and layers thereof according to an embodiment of the present invention. Summarization agent 67, hereinafter termed gatherer 67, is a programmable and interactive software application adapted to run on a network server. Gatherer 67 may, in one embodiment, be integrated with portal software 35 of FIG. 1 and be provided in the form of a software module separate from agent 39 (FIG. 2). In another embodiment, gatherer 67 may be a part of agent 39 as an enhancement to the function of that agent as previously described. In still another embodiment, gatherer 67 may be provided as a parent or client-side application controlled by a separate service from the portal service described above.

In this exemplary embodiment gatherer 67 is a multi-featured software application having a variety of sub-modules and interface modules incorporated therein to provide enhanced function. Gatherer 67 has a client/service interface layer 69 adapted to enable directive input from both a client (user) and a knowledge worker or workers associated with the service. A browser interface 77 is provided in layer 69, and adapted to provide access to application 67 from a browser running on a client's PC or other Internet or network appliance. Interface 77 facilitates bi-directional communication with a user's browser application (not shown) for the purpose of allowing the user to input summary requests into gatherer 67 and receive summary results. Interface 77 supports all existing network communication protocols such as may be known in the art, and may be adapted to support future protocols.

Layer 69 also comprises a unique input scripting module 79 that is adapted to allow a human knowledge worker to create and supply directive scripts containing the site logic needed by gatherer 67 to find and retrieve data from a WEB site. In this case, gatherer 67 executes and runs on a network server such as server 31 of FIG. 1. However, this is not required in order to practice the present invention.

It is assumed in this example that gatherer 67 is part of the portal software suite 35 running on server 31 of FIG. 1. Gatherer 67 may be provided as several dedicated agents or as one multi-functional agent without departing from the spirit and scope of the present invention. For example, one gatherer 67 may be scripted and programmed to execute a single user request with additional gatherers 67 called upon to perform additional user-requests. Alternatively, one gatherer 67 may be dedicated and assigned to each individual user and adapted to handle all requests from that user.

Interface layer 69 facilitates exchange of information from both a client and a knowledge worker. A client operating a WEB browser with an appropriate plug-in is enabled to communicate and interact with gatherer 67. For example, a user may enter a request to return a summary of pricing for all apartments renting for under $1000.00 per month located in a given area (defined by the user) from apartments.com (one of user's registered WEB sites). The just mentioned request would be categorized as either a periodic request, or a one time (on demand) request. The communicated request initiates a service action wherein a knowledge worker associated with the service uses module 79 to set-up gatherer 67 to perform its function. Module 79 is typically executed from a network-connected PC operated by the knowledge worker.

According to an embodiment of the present invention, a unique scripting method facilitated by module 79 is provided to enable gatherer 67 to obtain the goal information requested by a user. For example, the above mentioned example of WEB-site apartments.com has a specific HTML (hyper-text-markup-language) logic that it uses to create its site and post its information. Such site logic is relatively standard fare for a majority of different sites hosted by different entities. Using this knowledge, a knowledge worker creates a site-specific script or template for gatherer 67 to follow. Such a template contains descriptions and locations of the appropriate fields used, for example, at apartments.com. Apartment description, location, deposit information, rental information, agent contact information, and other related fields are matched in terms of location and label description on the template created with module 79. Completed templates are stored in a database contained in a storage facility such as, perhaps, repository 29 of FIG. 1. Such templates may be reused and may be updated (edited) with new data.

In one embodiment, one script may contain site logics for a plurality of WEB pages, and instructions for specific navigational instruction and password or login information may be contained therein and executed serially, such as one site at a time. It is important to note that the knowledge worker or workers may perform much of their scripting via automatic controls such as by object linking and embedding (OLE) and a minor portion of scripting may be performed manually in an appropriate computer language, many of which are known in the art).

Gatherer 67 also has a process layer 71 adapted for internal information gathering and parameter configuration. An optional portal server interface 81 is provided and adapted to allow gather 67 to provide updated information to a user's list of hyperlinks and also to obtain data from portal server 31 if required. For example, required hyperlinks may be mirrored from a user's home page to a scripting template for navigational purposes. In an embodiment wherein gatherer 67 is part of a standalone service, a convention for providing user login information may be supplied at the client's end when a request is made. For example, an encrypted password may be supplied by a client plug-in and gatherer 67 may temporarily borrow the user's encryption key when auto login is performed.

An appliance configuration module 83 is provided and adapted to allow a user to define and configure an Internet appliance to communicate with the service and receive summary information. Such appliances may include but are not limited to palm top PC's, lap top PC's, cellular telephones, WEB TV's, and so on. Typically, a user will be presented a configuration WEB page from a network server that displays in his browser window on his desktop PC. The page contains an interface for communicating device parameters and communication protocol types to module 83. In this way, a user may configure a preferred device for receipt of summary information. Device parameters and communication protocols inherent to such a device are incorporated into the scripting of the site template and are used as instructions for WEB summary delivery.

A navigation layer 73 is provided and adapted to perform the function of external site navigation and data gathering for gatherer 67. To this end, a communication interface/browser control module 85 is provided and adapted to function as a WEB browser to access WEB sites containing WEB data. Control 85 receives its instruction from the scripted template created by the knowledge worker.

A parsing engine 87 is provided and adapted to parse individual WEB sites according to a template created via scripting module 79. Parsing engine 87 may be a Pearl engine, an IE HTML engine, or any other or combination of known parsing engines. The template (not shown) tells control 85

and parsing engine **87** where to go and what fields at the destination site to look for to access desired data. Once the data fields are located, parsing engine **87** gathers current data in the appropriate field, and returns that data to the service for further processing such as data conversion, compression and storage, and the like.

Because WEB sites use tools that use consistent logic in setting up their sites, this logic may be used by the summarization service to instruct control **83** and parsing engine **87**. The inventor provides herein an exemplary script logic for navigating to and garnishing data from amazon™.com. The hyperlinks and/or actual URLs required for navigation are not shown, but may be assumed to be included in the template script. In this example, a company name Yodlee (known to the inventors) is used in the script for naming object holders and object containers, which are in this case Active X™ conventions. In another embodiment, Java™ script or another object linking control may be used. The scripted template logic example is as follows:

```
# Site amazon.orders.x - shows status of orders from Amazon
login( 7 );
get( "/exec/obidos/order-list/" );
my @tables = get_tables_containing_text( "Orders:" );
my $order_list = new Yodlee::ObjectHolder( 'orders' );
$order_list->source( 'amazon' );
$order_list->link_info( get_link_info( ) );
my @href_list;
my @container_list;
foreach my $table ( @tables ) {
    my @rows = get_table_rows( );
foreach my $i ( 0 . . . $#rows ) {
    select_row( $i );
    my $text = get_text( $rows[ $i ] );
    next if $text =~ /Orders:|Status/;
    my @items = get_row_items( );
    next unless @items >= 4;
    my( $order_num, $date, $status );
    select_cell( 1 );
    $order_num = get_cell_text( );
    my $href = get_url_of_first_href( get_cell( ) );
    select_cell( 2 );
    $date = get_cell_text( );
    select_cell( 3 );
    $status = get_cell_text( );
    next unless defined $order_num and defined $date and defined
$status;
    my $order = new Yodlee::Container( 'orders' );
    $order->order_number( $order_num );
    $order->date( $date );
    $order->status( $status );
    $order_list->push_object( $order );
    if( defined $href ) {
      push( @href_list, $href );
      push( @container_list, $order );
foreach my $i ( 0 . . . $#href_list ) {
    get( $href_list[ $i ] );
    @tables = get_tables_containing_text( "Items Ordered:" );
foreach my $table ( @tables ) {
    my @rows = get_table_rows( );
foreach my $j ( 0 . . . $#rows ) {
    select_row( $j );
    my $href = get_url_of_first_href( get_row( ) );
    next unless defined $href;
    my @child_list = get_children( get_row( ), 'a' );
    next unless defined $child_list[ 0 ];
    my $text = get_text( $child_list[ 0 ] );
    $container_list[ $i ]->description( $text );
  }
 }
}
result( $order_list );
```

The above example is a script that instructs control **85** and parser **87** to navigate to and obtain data from Amazon™.com, specifically that data that reflects the user's current order status. Scripts may also be written to obtain virtually any type of text information available from any site. For example, a user may wish to obtain the New York Times headlines, the top ten performing stocks, a comparative list of flights from San Francisco to New York, etc. In one embodiment, metadata may be associated with and used in-place of the actual scripted language for the purpose of reducing complication in the case of many scripts on one template.

A data processing layer **75** is provided and adapted to store, process, and present returned data to users according to enterprise rules and client direction. A database interface module **89** is provided and adapted to provide access for gatherer **67** to a mass repository such as repository **29** of FIG. **1**, for the purpose of storing and retrieving summary data, templates, presentation directives, and so on. Gatherer agent **67** may also access data through interface **89** such as profile information, user account and URL information, stored site logics and so on. Data scanned from the WEB is stored in a canonical format in a database such as repository **29**, or in another connected storage facility. All stored data is, of course, associated with an individual who requested it, or for whom the data is made available according to enterprise discretion.

A summarization page module **91** is provided and adapted to organize and serve a WEB summary page to a user. Module **91**, in some embodiments, may immediately push a WEB summary to a user, or module **91** may store such summarized pages for a user to access via a pull method, in which case a notification may be sent to the user alerting him of the summary page availability. Summarization module **91** includes an HTML renderer that is able to format data into HTML format for WEB page display. In this way, e-mail messages and the like may be presented as HTML text on a user's summarization page. Moreover, any summary data from any site may include an embedded hyperlink to that site. In this way, a user looking at an e-mail text in HTML may click on it and launch the appropriate e-mail program. Other sites will, by default, be linked through the summary page.

Many users will access their summary data through a WEB page as described above, however, this is not required in order to practice the present invention. In some embodiments, users will want their summary information formatted and delivered to one of a variety of Internet-capable appliances such as a palm top or, perhaps a cell phone. To this end, the renderer is capable of formatting and presenting the summary data into a number of formats specific to alternative devices. Examples of different known formats include, but are not limited to XML, plain text, VoxML, HDML, audio, video, and so on.

In a preferred embodiment of the present invention, gather **67** is flexible in such a way as it may act according to enterprise rules, client directives, or a combination of the two. For example, if a user makes a request for summary data about a user/subscribed WEB page to be periodically executed and presented in the form of a HTML document, then gather **67** would automatically access and analyze the required internal information and user provided information to formulate a directive. Using scripting module **79**, a knowledge worker provides a template (if one is not already created for that site) that contains the "where to go" and "what to get" information according to site logic, user input, and known information.

Alternatively, if a user requests a summary about data on one of his sites such as, perhaps, current interest rates and re-finance costs at his mortgage site, the service may at its own discretion provide an additional unsolicited summary from an alternate mortgage site for comparison. This type of summarization would be designed to enhance a user's position based on his profile information. In this case, updated

data about latest interest rates, stock performances, car prices, airline ticket discounts, and so on would be stored by the service for comparative purposes. If a user request for a summary can be equaled or bettered in terms of any advantage to the user, such summary data may be included.

In many cases, created templates may be re-used unless a WEB site changes its site logic parameters, in which case, the new logic must be accessed and any existing templates must be updated, or a new template may be created for the site. The templates contain site-specific script obtained from the site and stored by the knowledge workers. In one embodiment, companies hosting WEB pages automatically provide their site logics and any logic updates to the service by virtue of an agreement between the service and the WEB hosts.

In an alternative embodiment gatherer **67** may be implemented as a client application installed on a user's PC. In this embodiment, a user would not be required to supply log-in or password codes. Summarization scripts may be sent to the client software and templates may be automatically created with the appropriate scripts using log-in and password information encrypted and stored locally on the user's machine.

In addition to providing WEB summary information, gatherer **67** may also be used to provide such as automatic registration to new sites, and for updating old registration information to existing sites. For example, if a user wishes to subscribe, or register at a new site, only the identification of the site is required from the user as long as his pertinent information has not changed. If a new password or the like is required, gatherer **67** through control module **73** may present login or password codes from a list of alternative codes provided by a user. In another embodiment, a database (not shown) containing a wealth of password options may be accessed by gatherer **67** for the purpose of trying different passwords until one is accepted by the site. Once a password or log-in code is accepted, it may be sent to a user and stored in his password list and at the network level.

It will be apparent to one with skill in the art that a software application such as gatherer **67** may be implemented in many separate locations connected in a data network. For example, a plurality of gatherer applications may be distributed over many separate servers linked to one or more mass repositories. Client applications include but are not limited to a WEB-browser plug-in for communicating to the service. Plug-in extensions may also be afforded to proxy servers so that auto-login and data access may still be performed transparent to a user.

In another embodiment, plug-ins enabling communication with gatherer **67** may be provided and configured to run on other network devices for the purpose of enabling such a device to initiate a request and get a response without the need for a desktop computer.

In most embodiments a user operating a desktop PC will order a one time or periodic summary related to some or all of his subscribed WEB sites. A logical flow of an exemplary request/response interaction is provided below.

FIG. **5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** operating in a user-defined mode. In step **93**, a user has initiated a new request for a summary (summary order). It is assumed for the purpose of discussion, that the request of step **93** involves a site wherein no template has been created. In step **95**, the request is received and analyzed. A knowledge worker will likely perform this step. The new request may be posted to the user's portal home page, sent directly to gatherer **67**, or even communicated through e-mail or other media to the service.

In step **97** a knowledge worker accesses particular site logic associated with the request URLs. For example, if the request involves a plurality of URLs, then all site logics for those URLs are accessed. Logic may be available in a repository such as repository **29** of FIG. **1** if they were obtained at the time of user registration to a particular URL, or sent in by WEB-site hosts shortly after registration. If it is a completely new URL, then the logic must be obtained from the site. In most cases however, the logic will be known by virtue of a plurality of users accessing common URLs. Therefore cross-linking in a database of logic/user associations may be performed to access a logic for a site that is new to one particular user, but not new to another.

In step **99**, the knowledge worker creates a template by virtue of scripting module **79** (FIG. **4**) containing all site logic, URLs, log-in and password information, and the user request information. As described previously, templates may be re-used for a same request. In most cases, scripting may be mostly automated with minimum manual input performed by the knowledge worker. In many cases, an existing template will match a new request exactly, and may be re-used. In that case steps **97**, **99**, and **101** would not be required.

In step **101** the template is stored and associated with the requesting user. The stored template may now be retrieved at a scheduled time for performing the summary gathering. At step **103**, a browser control such as module **85** of FIG. **4** is activated to access the stored template and navigate to specified URLs for the purpose of gathering summary data. If a timing function is attributed to the template stored in step **101**, then the template may self execute and call up the browser function. In another embodiment, the knowledge worker may notify the browser control to get the template for its next task. In some embodiments, a plurality of controls may be used with one template as previously described.

In step **105**, automatic log-in is performed, if required, to gain access to each specified URL. In step **107**, a specified WEB-page is navigated to and parsed for requested data according to the logic on the template. If there are a plurality of WEB pages to parse then this step is repeated for the number of pages. A variety of parsing engines may be used for this process such as an IE™ parser, or a Pearl™ parser. Only the requested data is kept in step **107**.

A request may be an on-demand request requiring immediate return, or a scheduled request wherein data may be posted. At step **109**, such logic is confirmed. If the data is to be presented according to a periodic schedule, then summary data parsed in step **107** is stored for latter use in step **111**. In step **113**, the summary data is rendered as HTML if not already formatted, and displayed in the form of a summary WEB-page in step **115**. The summary page may be posted for access by a user at a time convenient to the user (pull), or may be pushed as a WEB-page to the user and be made to automatically display on the user's PC. Notification of summary page availability may also be sent to a user to alert him of completion of order.

If the summary data is from a one-time on-demand request and required immediately by a user, then a network appliance and data delivery method (configured by the user) is confirmed, and the data is rendered in the appropriate format for delivery and display in step **117**. In step **119**, the summary data is delivered according to protocol to a user's designated appliance. In step **121** a user receives requested information in the appropriate format.

It will be apparent to one with skill in the art that there may be more or fewer logical steps as well as added sub-steps than are illustrated in this example. For example, step **105** may in other embodiments include sub-steps such as getting an

encryption key from a user. In still another embodiment, part of a request may be rendered as HTML as in step **113** while certain other portions of the same request data might be rendered in another format and delivered via alternative methods. There are many possibilities.

The method and apparatus of the present invention may be used to present summaries to users without user input. Process logic such as this is detailed below.

FIG. **6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** in a User-independent smart mode with minimum or no user input. In step **117** an enterprise-initiated summary process begins. In this case, the enterprise may be assisting a user in finding a better deal or, perhaps presenting the individual with summaries from and links to alternative pages not yet subscribed to by a user.

In step **119**, a database containing user information and parameters is accessed and reviewed. Certain information specific to a user may be required to initiate an enterprise-sponsored summary report. At step **121**, the knowledge worker accesses the site logic specific to the specified target site or sites for summarization. In step **123**, the knowledge worker modifies an existing user template, or creates a new one if necessary. At step **125** the template is stored in a repository such as repository **29** and associated with the user.

As described in FIG. **5**, the template either self-executes according to a timed function and invokes a browser control such as control **85** (FIG. **4**), or is accessed by control **85** as a result of task notification. In step **127**, the browser control begins navigation. Auto logins are performed, if required, in step **129** to gain access to selected sites. If the WEB pages are new to a user, and the user has no registration with the WEB site, then through agreement, or other convention, the service may be provided access to such sites. Such an agreement may be made, for example, if the host of the WEB site realizes a possibility of gaining a new customer if the customer likes the summary information presented. In many other situations, no password or login information is required to obtain general information that is not personal to a client.

In step **131**, all sites are parsed for summary data and stored in canonical fashion in step **133**. At step **135**, the data is compiled and rendered as HTML for presentation on a summary page. In step **137** a WEB summary containing all of the data is made available to a user and the user is notified of its existence.

Providing certain information not requested by a user may aid in enhancing a user's organization of his or her current business on the WEB. Moreover, unsolicited WEB summaries may provide better opportunities than the current options in the user's profile. Of course, assisting a user in this manner will require that the enterprise (service) have access to the user's profile and existing account and service information with various WEB sites on the user's list. A user may forbid use of a user's personal information, in which case, no enterprise-initiated summaries would be performed unless they are conducted strictly in an offer mode instead of a comparative mode.

Categorization of Collected and Summarized Information

A novel system and a process are described above in several embodiments for navigating to network sites specific to individual users, collecting information from such sites, and summarizing, normalizing and presenting the collected information to the specific user. In many situations there is further processing that might be done to add considerable value for the user. For example, a client might like to know, over a specified period of time, exactly how much he or she has spent, using a charge card of some sort, for gasoline. Following the examples given above, a system according to an embodiment of the invention might collect a client's expenditures from a certain bank checking account via an ATM card registered to the account, over specified time periods. The system, as described above, might also monitor the account balance, and so on.

In an embodiment of the present invention, the system might identify, at a client's desire, all expenditures over a time period for gasoline, for oil, for all transportation-related activities, and so forth. As another example, food expenditures, entertainment expenditures, and just about any other imaginable category might be tracked and summarized for a client. There are truly many possibilities for nature of categorization in such a system.

In the descriptions above and in the priority document Ser. No. 09/323,598 filed on Jun. 1, 1999, referenced above, rich and detailed description is provided related to data collection and summarization for clients. Automatic log-in at various web-bases sites may be done on behalf clients, and data scraping may be done on a periodic basis automatically, and at a user's specific direction. Data collected may be normalized and summarized in a number of ways.

In the system descriptions provided, services may be accomplished for a large number of clients, and data may be collected from a broad variety of sources, not necessarily all Internet-connected. One source, however, is certainly credit card accounts, and bank accounts through Automatic Teller Machine (ATM) card records. In these cases transactions are listed along with a notation as to the person or enterprise to whom a payment was made.

FIG. **7** illustrates transaction records taken from an actual on-line banking display. This display is exemplary of such displays, but not meant to be limiting, as there may be many variations in such displays among different financial institutions and for different individuals. In this example the date of a transaction, which in many cases may be authorized by a card such as an ATM card, is listed in column **701** headed Txn Date. Nine different transaction records are displayed. The description for each transaction is listed under column **702** headed Description. Lastly the transaction amount is listed in column **703** headed Withdrawal.

The first and last of the transaction listed in this example are described in column **702** as "PUR AT SAFEWAY STORE 1204 SAL SALINAS CA". This is notation for a particular Safeway Super Market. The clear description may be easily recognized as a grocery purchase, and a software routine may be used to parse such headings looking for certain words, such as "SAFEWAY" or "STORE", or the two-word combination "SAFEWAY STORE".

In a relatively simple embodiment of a categorization service a system might rely on specific instructions from a client (subscriber) to collect and summarize very specific items. The client may, for example, wish to track her expenditures at Costco, summarized on a weekly basis, as an aid for example, in her budgeting goals. In this example the client may edit her personal profile with specific instructions to periodically collect, summarize and present weekly the expenditures for Costco according to one or more accounts. The client could for example, include in this profile and instruction a checking account having an associated ATM card, and a credit card not associated with a specific bank. The client also is not necessarily limited to items in the bank account transacted through the ATM card, but issued and cleared checks on the account to Costco might be included as well. In this simple embodiment the system of the invention would scrape information from the profiled accounts, looking in the description column **702**

(FIG. 7) for all description including the string "Costco", and perhaps normalize and summarize the information, and present to the client as requested.

In a somewhat more robust embodiment a client may want to categorize transactions for "eating out", for example. These transactions will not all be for one enterprise, but may cover a variety of restaurants. The client might profile a list of his usual haunts, but that might not be adequate for an efficient accomplishment of such a service, because the client may well visit new establishments that are not on the profiled list. In this case, and especially because the hosting enterprise may have a large number of clients to whom the system provides this service, other abilities are needed to make appropriate determinations.

The inventors in this case term the unique abilities provided in embodiments of the present invention Network Categorization. Beyond the simple case of a client providing the exact listing in "description" from account information that can be searched, the client may want summarization for "travel-related" expenditures. The host, in an embodiment, may compile, by a variety of methods, a robust set of identifiers to find travel-related expenditures for clients, and the identifiers need not be specific to any one client or small set of clients. For example, the host system, which relies on a software suite to accomplish the regular scraping of information and the normalization, summarization and presentation of the information to clients, might develop a set of identifiers including terms and phrases like, "gas", "Chevron", "station" "oil", "lube service" and many more for this purpose. If it is understood that the intent is broadly for travel-related expenditures, the system might include terms that can test and trap expenditures for airline tickets, meals far from home related to travel, and other such travel-related information.

One source of identifiers for such a system is information entered by specific clients. If, for whatever reason, a client of the service enters "Valero 101" as a description (or partial in the description column), as an expenditure for gasoline, then the hosts system may add that term to one or several scraping code sub-systems for identifying gas purchase. If "Valero 101" is a gas station for one client, it is likely a gas station for all clients. Further the host system may parse the "Valero 101" into two identifiers: "Valero" and "101"

A key ingredient in such a system is an ability to grow and improve the network categorization system. For example, if one client enters a descriptor as a particular category of transaction, then the system may be adapted to treat all such descriptors in that category, until errors, reported either by clients or found by knowledge workers, cause re-consideration and amendment (increased intelligence). At another level, the system may use a democratic approach, such that identifiers are included based on a majority use among clients. At still another level, the system may have probabilistic algorithms that are capable of passing identifiers into the system that meet a probability threshold, or of removing identifiers and filters that fail such a threshold.

In yet a further embodiment the system can incorporate predictive and budgeting functions such that, in addition to reporting to a client that he/she has spent $X on groceries in the past week, the system might report further that the expenditure is Y % of the average expenditure over the past ten weeks, and that an amendment to the budget is in order, increasing budgeted expenditures for groceries by Z %. Other functionality may be incorporated that is not specific to clients at all, but derived from the client's activity and the ability of the system to scrape the data and manipulate the data in a number of ways. The system might, for example, predict trends and timelines by virtue of the tracked transactions of customers. The increased cost of travel can be accurately tracked for people in different demographics, and predictions can be made in a generic way, of use to a broad variety of businesses in developing company strategy, advertising campaigns and the like.

The kinds of services described above may be applied to small businesses, health care facilities, advertising companies, and a broad variety of enterprises. The sources of information need not be limited to Internet-based sites for client's accounts, but may also include paper and cash transactions and the like.

The methods and apparatus described may also may be practiced in a language and platform independent manner, and be implemented over a variety of scalable server architectures.

The methods and apparatus of the present invention may be practiced via private individuals on the Internet, businesses operating on a WAN connected to the Internet, businesses operating via private WAN, and so on. There are many customizable situations.

The present inventions as taught herein and above should be afforded the broadest of scope consistent with the enabling disclosure provided. The spirit and scope of the present invention is limited only by the claims that follow.

What is claimed is:

1. A system tangibly embodied on a computer-readable medium for sorting and reporting transaction information, comprising;

a collection function automatically navigating to and retrieving transaction information associated with a specific person or enterprise from third-party Internet-connected web sites and gathering information concerning transactions, the transaction information including at least date, description, and amount of the transactions;

an input function enabling a client to provide to the system a request for a summary of transactions over a specific range of dates, according to a definition of purpose of transaction including at least expenditure types;

a processing function categorizing individual ones of the collected transactions according to at least part of the transaction description for determining the purpose of transaction using pre-stored description characteristics associated with the purpose;

a compilation function summarizing the transactions that meet the purpose and fall into the specific range of dates;

a reporting function for providing the summary of transactions to the specific person or enterprise; and

a function storing past transaction history associated with the particular person or enterprise,

wherein the past transaction history is used to predict future transaction statistical information, and

wherein a probability algorithm is used in developing the description characteristics, wherein the description characteristics are periodically amended according to further information that is collected and processed.

2. The system of claim **1** wherein the reporting function provides a total transaction expenditure amount with the summary of transactions.

3. The system of claim **1** wherein a summary is provided for a first plurality of persons or enterprises subscribing to the system according to requests entered by a second plurality of persons or enterprises subscribing to the system.

4. The system of claim **1** wherein the description characteristics are developed from information taken from communication between clients and the system.

5. The system of claim **1** wherein the system reports transactions to clients through the Internet network.

6. In a computer system, a method for sorting and reporting transaction information using proprietary software tangibly embodied on a computer-readable medium, comprising:

(a) automatically navigating to and retrieving transaction information associated with a specific person or enterprise from third-party Internet-connected web sites and gathering information concerning transactions by a collection function of the proprietary software said information including at least date, description, and amount of the transactions;

(b) requesting a summary of transactions by a client via an input function of the proprietary software over a specific range of dates, according to a definition of purpose of transactions including at least expenditure types;

(c) categorizing individual ones of the collected transactions according to at least part of the transaction description for determining the purpose, via a processing function of the proprietary software using pre-stored description characteristics associated with the purpose;

(d) summarizing, by a compilation function of the proprietary software, the transactions that meet the purpose and fall into the specific range of dates;

(e) reporting the summary of transactions to the particular person or enterprise by a reporting function;

(f) storing past transaction history associated with the particular person or enterprise,

wherein the past transaction history is used to predict future transaction statistical information, and

wherein a probability algorithm is used in developing the description characteristics, and wherein the description characteristics are periodically amended according to further information that is collected and processed.

7. The method of claim 6 wherein the reporting function provides a total transaction expenditure amount with the summary of transactions.

8. The method of claim 6 wherein a summary is provided for a first plurality of persons or enterprises according to category definition entered by a second plurality of persons or enterprises.

9. The method of claim 6 wherein the description characteristics are developed from information taken from communication between clients and the system.

10. The method of claim 6 wherein the system reports to clients through the Internet network.

* * * * *

Exhibit G

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(12) **United States Patent**
Satyavolu

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(54) **CATEGORIZATION OF SUMMARIZED INFORMATION**

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(52) **U.S. Cl.** **715/205**; 715/234; 715/254; 715/273; 715/35; 715/78; 715/341; 709/203

(58) **Field of Classification Search** 715/200, 715/201, 202, 203, 204, 205, 206, 207, 209, 715/226, 229, 234, 243, 253, 254, 256, 273, 715/733, 760, 861; 705/1.1, 14.17, 14.23, 705/14.49, 14.51, 14.53, 26.41, 29, 341, 705/35, 40, 52, 53, 77, 78; 709/201, 202, 709/203, 204, 205, 209, 212, 217, 218, 219
See application file for complete search history.

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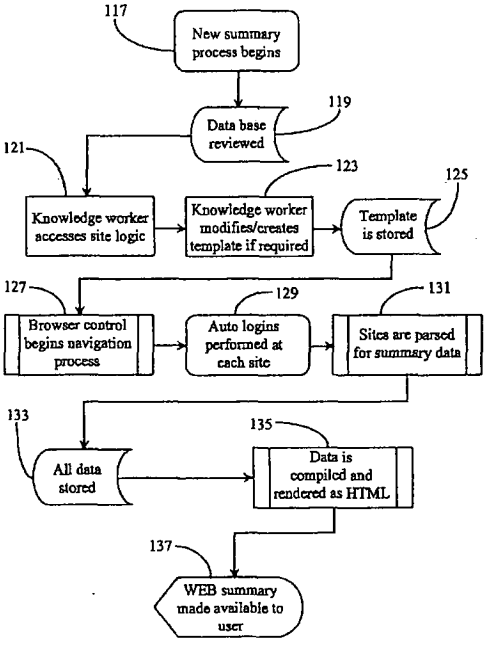
(57) **ABSTRACT**

A system for categorizing transactions includes a collection function gathering information concerning transactions, including at least date, description and amount of the transactions, for a particular person or enterprise, and a processing function categorizing individual ones of the collected transactions according to at least part of the transaction description.

12 Claims, 7 Drawing Sheets



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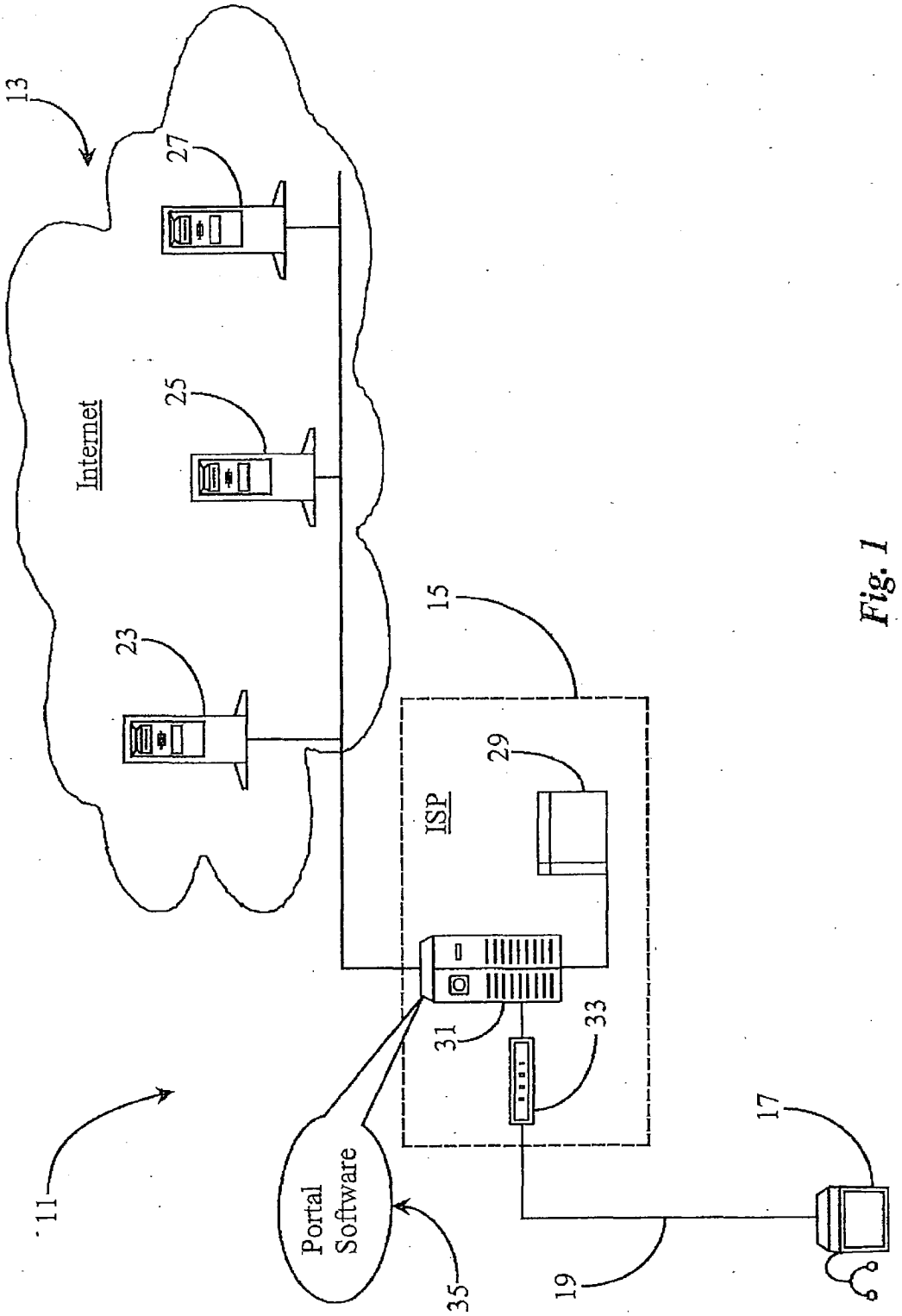

Fig. 1

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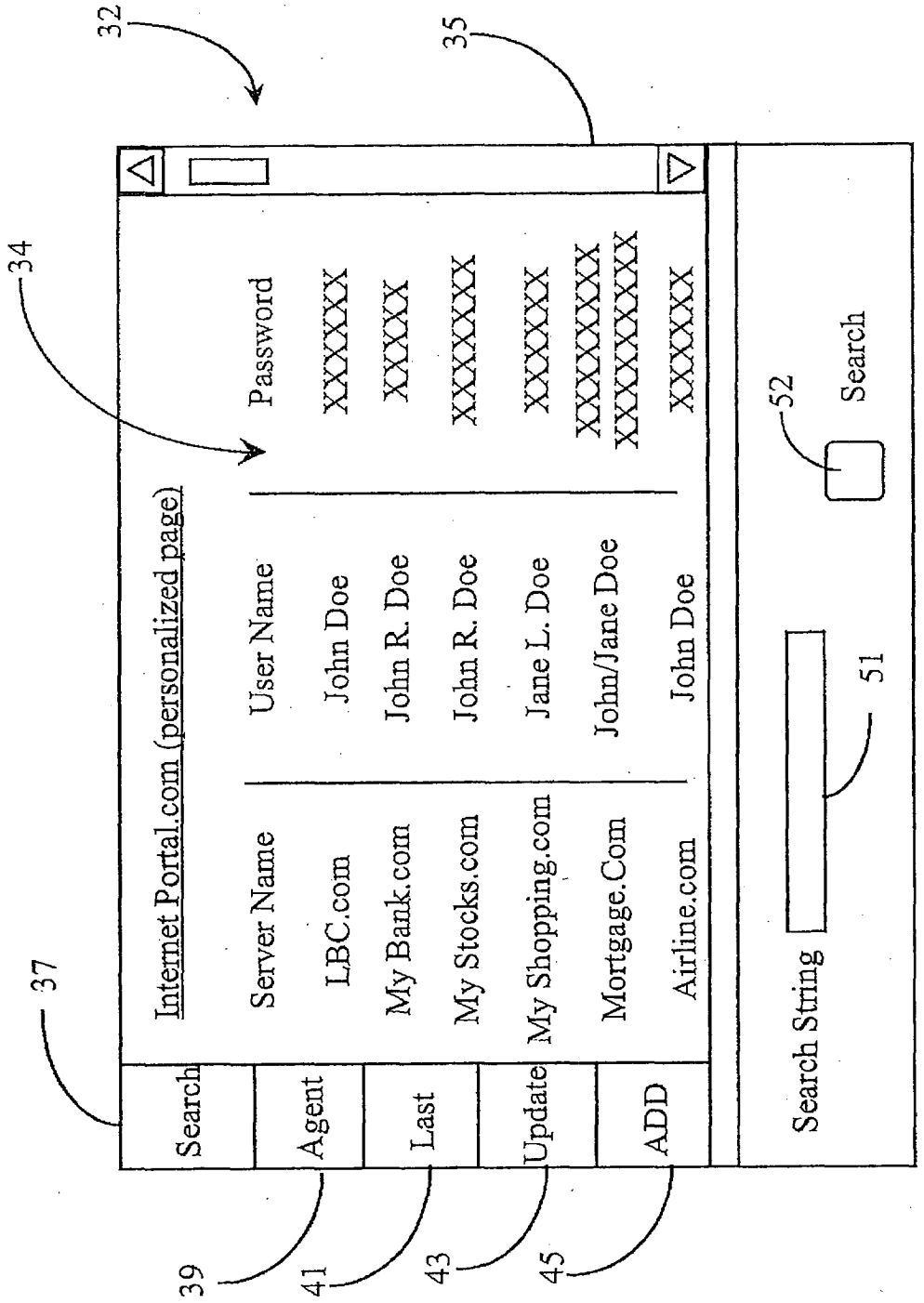


Fig. 2

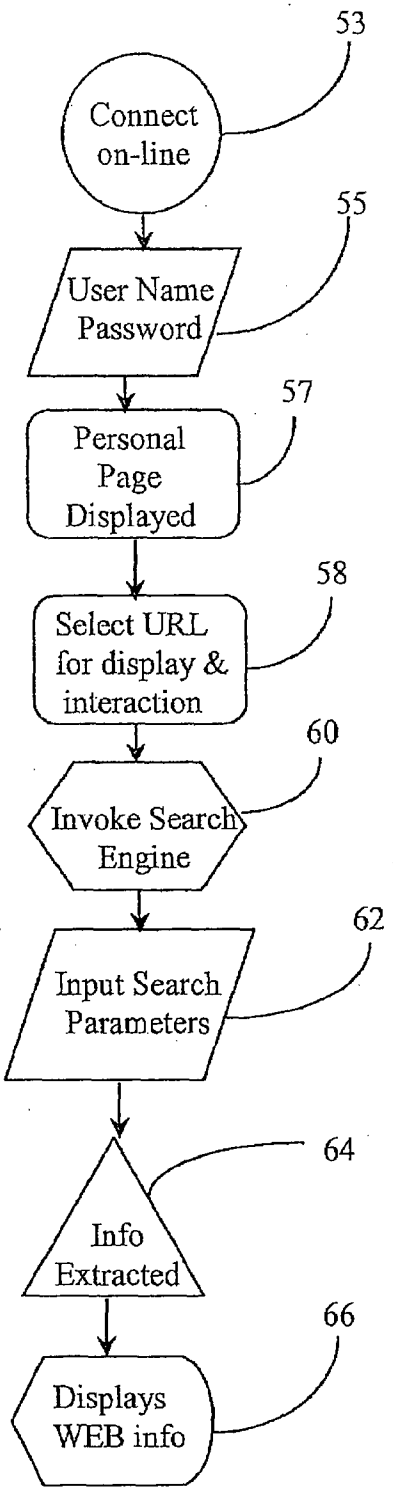

53
Connect on-line
55
User Name Password
57
Personal Page Displayed
58
Select URL for display & interaction
60
Invoke Search Engine
62
Input Search Parameters
64
Info Extracted
66
Displays WEB info

Fig. 3

Ex. 1002 Page 139

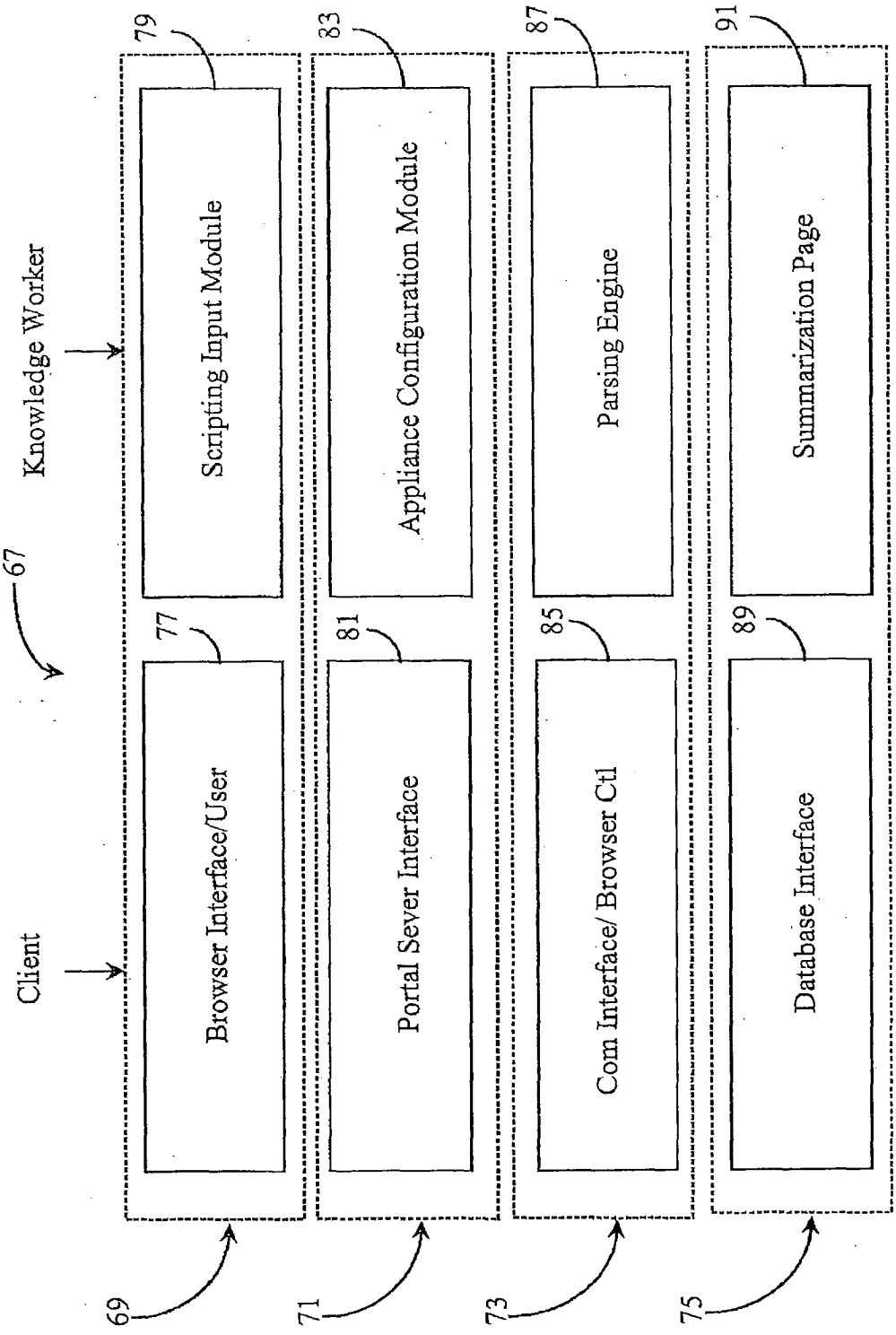


Fig. 4

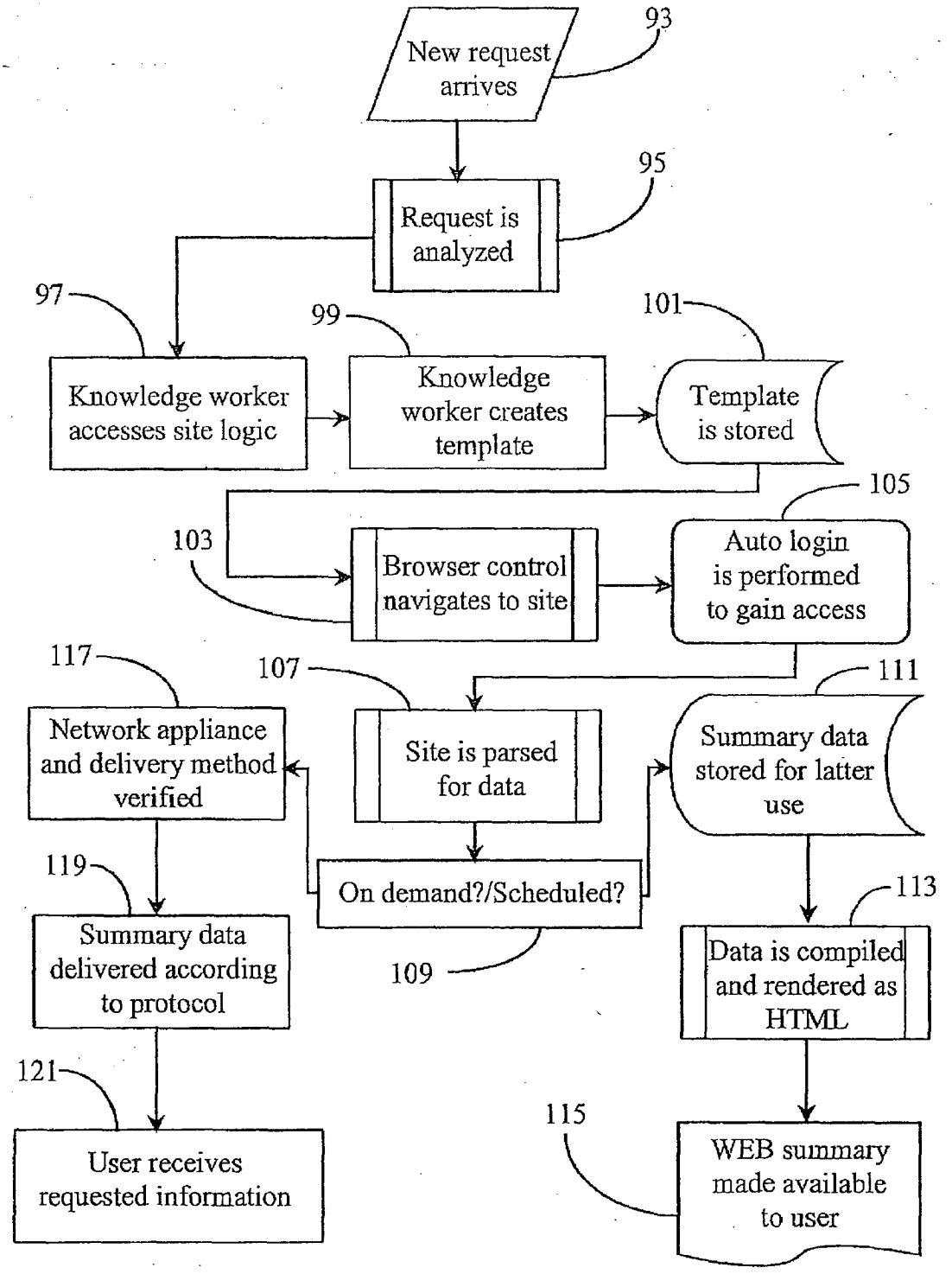

New request arrives
93
Request is analyzed
95
97
99
101
Knowledge worker accesses site logic
Knowledge worker creates template
Template is stored
105
103
Browser control navigates to site
Auto login is performed to gain access
117
107
111
Network appliance and delivery method verified
Site is parsed for data
Summary data stored for latter use
119
On demand?/Scheduled?
113
Summary data delivered according to protocol
109
Data is compiled and rendered as HTML
121
115
User receives requested information
WEB summary made available to user

Fig. 5

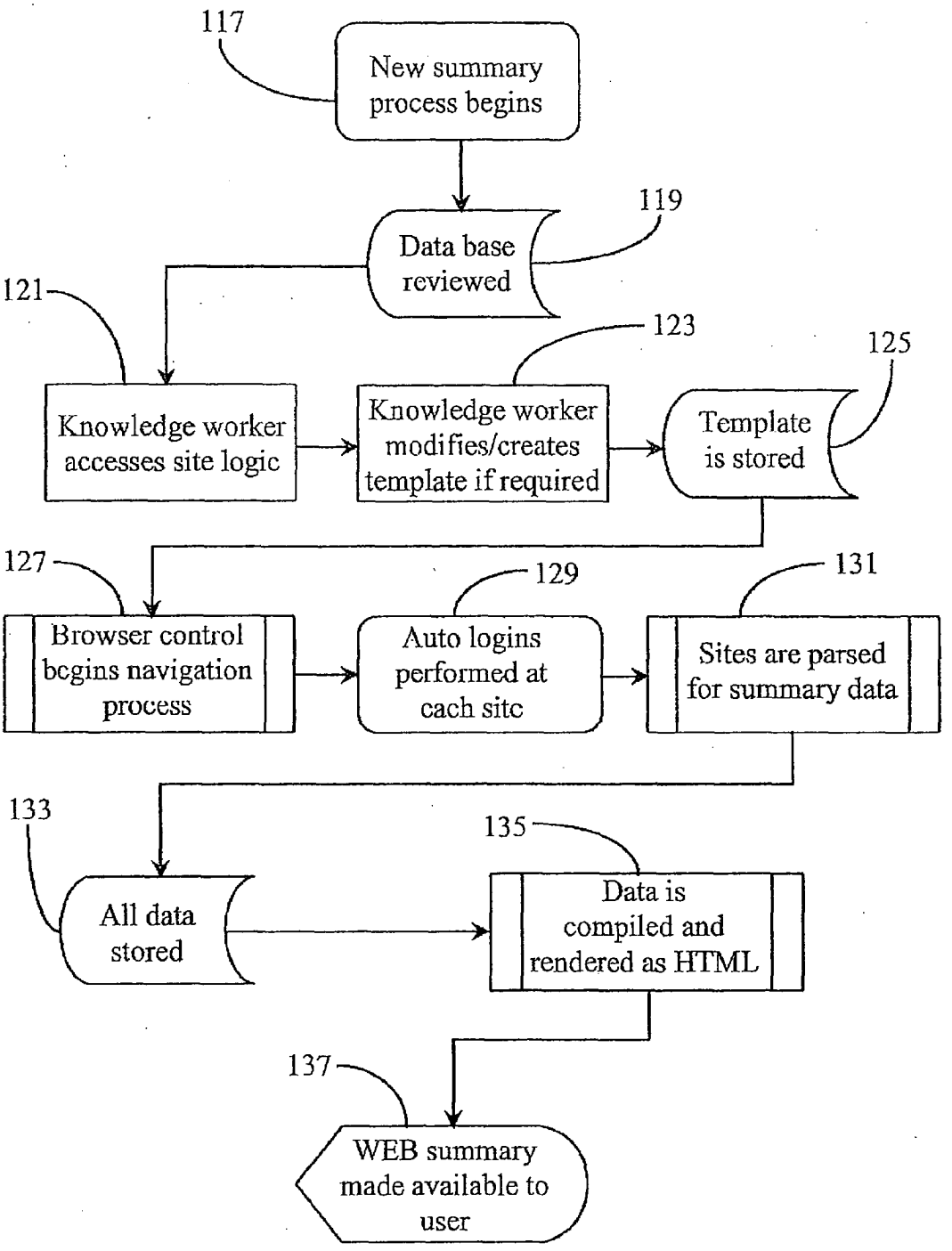
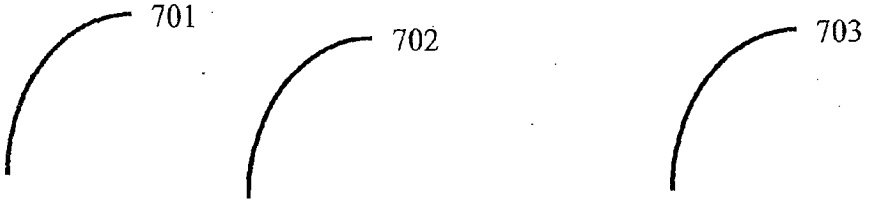

117
New summary process begins
119
Data base reviewed
121
123
125
Knowledge worker accesses site logic
Knowledge worker modifies/creates template if required
Template is stored
127
129
131
Browser control begins navigation process
Auto logins performed at each site
Sites are parsed for summary data
133
135
All data stored
Data is compiled and rendered as HTML
137
WEB summary made available to user

Fig. 6



Txn Date	Description	Withdrawal
11/21/2005	PUR AT SAFEWAY STORE 1204 SAL SALINAS CA	$111.22
11/21/2005	VISA IMAGINE NATI BOULDER CO 332500186437	$58.95
11/21/2005	W/D AT 1590 NO MAIN ST SALINAS CA	$301.50
11/21/2005	W/D AT WATSONVILLE SQUARE	$200.00
11/21/2005	VISA COCO'S #0511 WATSONVI CA 043005113984	$24.02
11/21/2005	VISA CAPITOLA BOO CAPITOLA CA 532501258660	$65.33
11/21/2005	VISA FELIPES REST SAN JUAN CA 040085431826	$44.93
11/21/2005	VISA GOLDEN CHINA WATSONVI CA 040082901051	$26.60
11/21/2005	PUR AT SAFEWAY STORE 1204 SAL SALINAS CA	$148.27

Fig. 7

CATEGORIZATION OF SUMMARIZED INFORMATION

CROSS-REFERENCE TO RELATED DOCUMENTS

The present invention is a continuation of patent application Ser. No. 11/293,350, filed on Dec. 1, 2005, issued as U.S. Pat. No. 7,752,535 on Jul. 6, 2010, which is a continuation in part (CIP) to patent application Ser. No. 09/737,404, filed on Dec. 14, 2000 and abandoned on Apr. 2, 2008, which is a divisional of Ser. No. 09/323,598 filed on Jun. 1, 1999 and issued as U.S. Pat. No. 6,199,077 on Mar. 26, 2001, disclosures of which are incorporated herein in their entirety at least by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is in the field of Internet navigation including various communication means and connection technologies and pertains more particularly to methods and apparatus, including software, for gathering summary information from users or enterprise-selected WEB sites and presenting the information as HTML to the user using either a push or pull technology.

2. Discussion of the State of the Art

The information network known as the World Wide Web (WWW), which is a subset of the well-known Internet, is arguably the most complete source of publicly accessible information available. Anyone with a suitable Internet appliance such as a personal computer with a standard Internet connection may access (go on-line) and navigate to information pages (termed web pages) stored on Internet-connected servers for the purpose of garnering information and initiating transactions with hosts of such servers and pages..

Many companies offer various subscription services accessible via the Internet. For example, many people now do their banking, stock trading, shopping, and so forth from the comfort of their own homes via Internet access. Typically, a user, through subscription, has access to personalized and secure WEB pages for such functions. By typing in a user name and a password or other personal identification code, a user may obtain information, initiate transactions, buy stock, and accomplish a myriad of other tasks.

One problem that is encountered by an individual who has several or many such subscriptions to Internet-brokered services is that there are invariably many passwords and/or log-in codes to be used. Often a same password or code cannot be used for every service, as the password or code may already be taken by another user. A user may not wish to supply a code unique to the user such as, perhaps a social security number, because of security issues, including quality of security that may vary from service to service. Additionally, many users at their own volition may choose different passwords for different sites so as to have increased security, which in fact also increases the number of passwords a user may have.

Another issue that can plague a user who has many passworded subscriptions is the fact that they must bookmark many WEB pages in a computer cache so that they may quickly find and access the various services. For example, in order to reserve and pay for airline travel, a user must connect to the Internet, go to his/her book-marks file and select an airline page. The user then has to enter a user name and password, and follow on-screen instructions once the page is delivered. If the user wishes to purchase tickets from the WEB site, and wishes to transfer funds from an on-line banking

service, the user must also look for and select the personal bank or account page to initiate a funds transfer for the tickets. Different user names and passwords may be required to access these other pages, and things get quite complicated.

Although this preceding example is merely exemplary, it is generally known that much work related to finding WEB pages, logging in with passwords, and the like is required to successfully do business on the WEB.

A service known to the inventor and described in the related case listed under the cross-reference to related documents section provides a WEB service that allows a user to store all of his password protected pages in one location such that browsing and garnering information from them is much simplified. A feature of the above service allows a user to program certain tasks into the system such that requested tasks are executed by an agent (software) based on user instruction. The service stores user password and log-in information and uses the information to log-in to the user's sites, thus enabling the user to navigate without having to manually input log-in or password codes to gain access to the links.

The above-described service uses a server to present a user-personalized application that may be displayed as an interactive home page that contains all of his listed sites (hyperlinks) for easy navigation. The application lists the user's URL's in the form of hyperlinks such that a user may click on a hyperlink and navigate to the page wherein login, if required, is automatic, and transparent to the user.

The application described above also includes a software agent that may be programmed to perform scheduled tasks for the user including returning specific summaries and updates about user-account pages. A search function is provided and adapted to cooperate with the software agent to search user-entered URL's for specific content if such pages are cached somewhere in their presentable form such as at the portal server, or on the client's machine.

In addition to the features described above, it is desirable that the software agent in conjunction with the search function be enabled to navigate to any URL or group of URL's, provided as input by a user or otherwise deemed appropriate by the service provider, for the purpose of providing summary information regarding updated content for each URL, which may be presented as an HTML information-page to the user.

What is clearly needed is a method and apparatus that can independently navigate to user-supplied or known URL's, login with the appropriate password information at each URL (if required), and return requested summary information to a user in the form of a human and machine-readable HTML document. Such a system would provide an effective summarization service wherein important information may be presented to a user without requiring that the user invoke hyperlinks at his personal portal home page. Such a unique system would have even further value if categorization of collected information could be done for users in a variety of ways.

SUMMARY OF THE INVENTION

A system for categorizing transactions is provided, comprising a collection function gathering information concerning transactions, including at least date, description and amount of the transactions, for a particular person or enterprise, and a processing function categorizing individual ones of the collected transactions according to at least part of the transaction description.

In one embodiment the system further comprises a compilation function summarizing transactions in individual categories. In another embodiment the system further comprises a reporting function reporting the summarized transactions to

the particular person or enterprise. IN yet another embodiment categorization is done according to category definition entered by the particular person or on behalf of the enterprise. In yet another embodiment categorization is done for a first plurality of persons or enterprises according to category definition entered by a second plurality of persons or enterprises.

In some embodiments categories are developed from information taken from communication between clients and the system, and in other embodiments a probability algorithm may be used in developing categories. In some embodiments the identifiers for categories are periodically amended according to further information collected and processed.

In still other embodiments the system collects the information concerning transactions from Internet-connected web sites adapted to provide account information to clients, and also in some cases reports to clients through the Internet network.

In yet another embodiment the system further comprises a function storing past transaction history associated with the particular person or enterprise, and in some cases the transaction history may be used to predict future transaction history.

In another aspect of the invention a method is provided for categorizing transactions, comprising steps of (a) gathering information concerning transactions by a collection function, including at least date, description and amount of the transactions, for a particular person or enterprise; and (b) categorizing individual ones of the collected transactions according to at least part of the transaction description by a processing function.

In one embodiment of the method there is further a step comprising summarizing transactions in individual categories by a compilation function. In another embodiment there is a step for reporting the summarized transactions to the particular person or enterprise by a reporting function. In still another embodiment categorization is done according to category definition entered by the particular person or on behalf of the enterprise. In some embodiments categorization is done for a first plurality of persons or enterprises according to category definition entered by a second plurality of persons or enterprises.

In some embodiments categories are developed from information taken from communication between clients and the system. Also in some embodiments a probability algorithm is used in developing categories. In some cases identifiers for categories are periodically amended according to further information collected and processed.

In still other embodiments of the method the system collects the information concerning transactions from Internet-connected web sites adapted to provide account information to clients. In some embodiments the system reports to clients through the Internet network. In other embodiments method further comprises a step for storing past transaction history associated with the particular person or enterprise. And in some embodiments the past transaction history is used to predict future transaction history.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. **1** is an overview of an Internet portal system and network according to an embodiment of the present invention.

FIG. **2** is an exemplary plan view of a personalized Portal home page application as it may be seen on a display monitor according to an embodiment of the present invention.

FIG. **3** is a flow diagram illustrating user interaction with the Internet portal of FIG. **1**.

FIG. **4** is a block diagram illustrating a summarization software agent and capabilities thereof according to an embodiment of the present invention.

FIG. **5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** operating in a user-defined mode.

FIG. **6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** in a User-independent smart mode with minimum user input.

FIG. **7** illustrates transaction records taken from an actual on-line banking display.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to a preferred embodiment of the present invention, a unique Internet portal is provided and adapted to provide unique services to users who have obtained access via an Internet or other network connection from an Internet-capable appliance. Such an interface provides users with a method for storing many personal WEB pages and further provides search function and certain task-performing functions. The methods and apparatus of the present invention are taught in enabling detail below.

FIG. **1** is an overview of an Internet portal system **11** and Internet network **13** according to an embodiment of the present invention. Portal system **11**, in this embodiment, operates as an ISP in addition to a unique network portal, but may, in other embodiments be implemented as a stand-alone Internet server. In yet other embodiments the service and apparatus described herein may also be provided by such as a search and listing service (AltaVista™, Yahoo™) or by any other enterprise hosting a WEB-connected server.

Internet **13** is representative of a preferred use of the present invention, but should not be considered limiting, as the invention could apply in other networks and combinations of networks.

ISP **15** in this embodiment comprises a server **31**, a modem bank **33**, represented here by a single modem, and a mass storage repository **29** for storing digital data. The modem bank is a convenience, as connection to the server could be by another type of network link. ISP **15**, as is typical in the art, provides Internet access services for individual subscribers. In addition to well-known Internet access services, ISP **15** also provides a unique subscription service as an Internet portal for the purpose of storing many WEB pages or destinations along with any passwords and or personal codes associated with those pages, in a manner described in more detail below. This unique portal service is provided by execution of Portal Software **35**, which is termed by the inventors the Password-All suite. The software of the invention is referred to herein both as the Portal Software, and as the Password-all software suite. Also, in much of the description below, the apparatus of the invention is referred to by the Password-All terminology, such as the Password-All Server or Password-All Portal.

ISP **15** is connected to Internet **13** as shown. Other equipment known in the art to be present and connected to a network such as Internet **13**, for example, IP data routers, data switches, gateway routers, and the like, are not illustrated here but may be assumed to be present. Access to ISP **15** is through a connection-oriented telephone system as is known in the art, or through any other Internet/WEB access connection, such as through a cable modem, special network connection (e.g.

T1), ISDN, and so forth. Such connection is illustrated via access line **19** from Internet appliance **17** through modem bank **33**.

In a preferred embodiment a user has access to Internet Password-All Portal services by a user name and password as is well known in the art, which provides an individualized WEB page to the subscriber. In another embodiment wherein a user has other individuals that use his or her Internet account, then an additional password or code unique to the user may be required before access to portal **31** is granted. Such personalized Portal WEB pages may be stored in repository **29**, which may be any convenient form of mass storage.

Three Internet servers **23**, **25**, and **27**, are shown in Internet **13**, and represent Internet servers hosted by various enterprises and subscribed to by a user operating appliance **17**. For example, server **23** may be a bank server wherein interactive on-line banking and account managing may be performed. Server **25** may be an investment server wherein investment accounts may be created and managed. Server **27** may be an airline or travel server wherein flights may be booked, tickets may be purchased, and so on. In this example, all three servers are secure servers requiring user ID and password for access, but the invention is not necessarily limited to just secure services.

In a preferred embodiment of the present invention, a subscribing user operating an Internet-capable appliance, such as appliance **17**, connects to Password-All Portal system **11** hosted by ISP **15**, and thereby gains access to a personalized, interactive WEB page, which in turn provides access to any one of a number of servers on Internet **13** such as servers **23**, **25**, and **27**, without being required to enter additional passwords or codes. In a preferred embodiment the software that enables this service is termed Password-All by the inventors. Password-All may be considered to be a software suite executing on the unique server, and in some instances also on the user's station (client). Additional interactivity provided by portal software **35** allows a connected user to search his listed pages for information associated with keywords, text strings, or the like, and allows a user to program user-defined tasks involving access and interaction with one or more Internet-connected servers such as servers **23**, **25**, and **27** according to a pre-defined time schedule. These functions are taught in enabling detail below.

FIG. **2** is an illustration of a personalized portal page as may be seen on a display monitor according to an embodiment of the present invention, provided by Password-All Portal software **35** executing on server **31**, in response to secure access by a subscriber. Page **32** presents an interactive listing **34** of user-subscribed or member WEB pages, identified in this example by URL, but which may also be identified by any convenient pseudonym, preferably descriptive, along with user name and typically encrypted password information for each page. Listed in a first column under destination, are exemplary destinations LBC.com, My Bank.com, My Stocks.com, My shopping.com, Mortgage.com, and Airline.com. These are but a few of many exemplary destinations that may be present and listed as such on page **33**. In order to view additional listings listed but not immediately viewable from within application **33**, a scroll bar **35** is provided and adapted to allow a user to scroll up or down the list to enable viewing as is known in the art.

Items listed in list **34** in this example may be considered destinations on such as servers **23**, **25**, and **27** of FIG. **1**. Typically the URL associated with an item on this list will not take a user to a server, per se, but to a page stored on a server. User names and password data associated with each item in list **34** are illustrated in respective columns labeled user name, and password, to the right of the column labeled destination. Each listing, or at least a portion of each listing, is a hyperlink invoking, when selected, the URL to that destination. In some instances a particular service may have more than one associated URL. For example, My Bank.com may have more than one URL associated for such as different accounts or businesses associated also with a single subscriber. In this case there may be a sub-listing for different destinations associated with a single higher-level listing. This expedient is not shown, but given this teaching the mechanism will be apparent to those with skill in the art.

In some embodiments one page **33** may be shared by more than one user, such as a husband and wife sharing a common account and subscription. An instance of this is illustrated herein with respect to the server labeled Mortgage.com wherein both a John and a Jane Doe are listed together under the column labeled user name. In another embodiment, a network of individuals, perhaps business owners, authorized co-workers, investment parties, or the like may share one application. In this way, system **11** may be adapted for private individuals as well as business uses.

After gaining access to application **33** which is served via Internet portal server **31** of FIG. **1**, a user may scroll, highlight, and select any URL in his or her list **34** for the purpose of navigation to that particular destination for further interaction. Application **33** already has each password and user name listed for each URL. It is not necessary, however, that the password and user name be displayed for a user or users. These may well be stored transparently in a user's profile, and invoked as needed as a user makes selections. Therefore, a user is spared the need of entering passwords and user names for any destinations enabled by list **34**. Of course, each list **34** is built, configured and maintained by a subscribing user or users, and an editing facility is also provided wherein a user may edit and update listings, including changing URL's adding and deleting listings, and the like.

In another aspect of the invention new listings for a user's profile, such as a new passthrough to a bank or other enterprise page, may be added semi-automatically as follows: Typically, when a user opens a new account with an enterprise through interaction with a WEB page hosted by the enterprise, the user is required to provide certain information, which will typically include such as the user's ID, address, e-mail account, and so forth, and typically a new user name and password to access the account. In this process the user will be interacting with the enterprises page from his/her browser. A Password-All plug-in is provided wherein, after entering the required information for the new enterprise, the user may activate a pre-determined signal (right click, key stroke, etc.), and the Password-All suite will then enter a new passthrough in the user's Password. All profile at the Password-All Portal server.

In a related method for new entries, the enterprise hosting the Password-All Portal may, by agreement with other enterprises, provide log-in and sign-up services at the Password-All Portal, with most action transparent to the user. For example, there may be, at the Password-All Portal, a selectable browser list of cooperating enterprises, such as banks, security services, and the like, and a user having a Password-All Portal subscription and profile may select among such cooperating enterprises and open new accounts, which will simultaneously and automatically be added to the Password-All Portal page for the user and to the server hosted by the cooperating enterprise. There may be some interactivity required for different accounts, but in the main, much information from the user's profile may be used directly without being re-entered.

The inventors have anticipated that many potential users may well be suspicious of providing passwords and user names to an enterprise hosting a Password-All Portal Server executing a service like Password-All according to embodiments of the present invention. To accommodate this problem, in preferred embodiments, it is not necessary that the user provide the cleartext password to Password-All. Instead, an encrypted version of each password is provided. When a user links to his passthrough page in Password-All at the Password-All Portal server, when he/she invokes a hyperlink, the encrypted password is returned to the user's system, which then, by virtue of the kept encryption key or master password, invokes the true and necessary password for connection to the selected destination. It is thus not necessary that cleartext passwords be stored at the Password-All Portal server, where they may be vulnerable to attack from outside sources, or to perceived misuse in other ways as well.

In a related safety measure, in a preferred embodiment of the invention, a user's complete profile is never stored on a single server, but is distributed over two or more, preferably more, servers, so any problem with any one server will minimize the overall effect for any particular user.

Password-All, as described above, allows a user to access a complete list of the user's usual cyberspace destinations, complete with necessary log-on data, stored in an encrypted fashion, so a user may simply select a destination (a hyperlink) in the Password-All list, and the user's browser then invokes the URL for the selected destination. In an added feature, Password-All may display banner ads and other types of advertisement during the navigation time between a hyperlink being invoked and the time the destination WEB page is displayed.

In yet another embodiment of the invention, a user/subscriber need not access the Password-All page to enjoy the advantages of the unique features provided. In this variation, a Plug-In is provided for the subscriber's WEB browser. If the subscriber navigates by use of the local browser to a WEB page requiring a secure log-in, such as his/her on-line banking destination, when the subscriber is presented with an input window for ID and Password, the plug in may be activated by a predetermined user input, such as a hot key or right click of the mouse device. The plug-in then accesses, to transparently, the Password-All page (which may be cached at the client), and automatically accesses and provides the needed data for log-on.

In yet another aspect of the invention a search option **37** allows a user to search list **34** for specific URL's based on typed input such as keywords or the like. In some cases, the number of URL's stored in list **34** can be extensive making a search function such as function **37** an attractive option. A criteria dialog box **51** illustrated as logically separated from and below list **34** is provided and adapted to accept input for search option **37** as is known in the art. In one embodiment, search option **37** may bring up a second window wherein a dialog box such as box **51** could be located.

In another aspect of the invention the search function may also be configured in a window invoked from window **33** and caused to search all or selected ones of listed destinations, and to return results in a manner that may be, at least to some extent, configured by a user. For example a dialog box may be presented wherein a user may enter a search criteria and select among all of the listed destinations. The search will then be access each of the selected destinations in turn, and the result may be presented to the user as each instance of the criteria is found, or results may be listed in a manner to be accessed after the search.

Preferably the search function is a part of the Password-All Portal software, available for all users, and may be accessed by hyperlinks in user's personal pages. In some embodiments users may create highly individualized search functions that may be stored in a manner to be usable only by the user who creates such a function.

In many aspects of the present invention, knowledge of specific WEB pages, and certain types of WEB pages, is highly desirable. In many embodiments characteristics of destination WEB pages are researched by persons (facilitators) maintaining and enhancing Password-All Portal software **35**, and many characteristics may be provided in configuration modules for users to accomplish specific tasks. In most cases these characteristics are invoked and incorporated transparent to the user.

In yet another aspect of the present invention, the Password-All suite is structured to provide periodic reports to a user, in a manner to be structured and timed by the user, through the user's profile. For example, reports of changes in account balances in bank accounts, stock purchases, stock values, total airline travel purchases, frequent-flier miles, and the like may be summarized and provided to the users in many different ways. Because the Password-All Portal server with the Password-All software site handles a broad variety of transactional traffic for a user, there is an opportunity to summarize and collect and process statistics in many useful ways. In preferred embodiments of the invention such reports may be furnished and implemented in a number of different ways, including being displayed on the user's secure personal WEB page on the Password-All Portal.

In addition to the ability of performing tasks as described above, task results, including reports and hard documents such as airline tickets may be sent over the Internet or other data packet-networks to user-defined destinations such as fax machines, connected computer nodes, e-mail servers, and other Internet-connected appliances. All tasks may be set-up and caused to run according to user-defined schedules while the user is doing something else or is otherwise not engaged with the scheduled task.

In another embodiment of the present invention, recognizing the increasing use of the Internet for fiscal transactions, such as purchasing goods and services, a facility is provided in a user's profile to automatically track transactions made at various destinations, and to authorize payment either on a transaction-by-transaction basis, or after a session, using access to the user's bank accounts, all of which may be pre-programmed and authorized by the user.

Other functions or options illustrated as part of application **35** include a last URL option **41**, an update function **43**, and an add function **45**. Function **41** allows a user to immediately navigate to a last visited URL. Update function **43** provides a means of updating URL's for content and new address. An add function enables a user to add additional URL's to list **34**. Similarly, function **45** may also provide a means to delete entries. Other ways to add accounts are described above. It should be noted that the services provided by the unique Password-All Portal in embodiments of the present invention, and by the Password-All software suite are not limited to destinations requiring passwords and user names. The Password-All Portal and software in many embodiments may also be used to manage all of a user's bookmarks, including editing of bookmarks and the like. In this aspect, bookmarks will typically be presented in indexed, grouped, and hierarchical ways.

There are editing features provided with Password-All for adding, acquiring, deleting, and otherwise managing bookmarks. As a convenience, in many embodiments of the inven-

tion, bookmarks may be downloaded from a user's Password-All site, and loaded onto the same user's local browser. In this manner, additions and improvements in the bookmark set for a user may be used without the necessity of going to Password-All. Further, bookmarks may be uploaded from a user's local PC to his/her home page on the Password-All site by use of one or more Password-All plug-ins.

It will be apparent to the skilled artisan, given the teaching herein, that the functionality provided in various embodiments of the invention is especially applicable to Internet-capable appliances that may be limited in input capability. For example, a set-top box in a WEB TV application may well be without a keyboard for entering IDs and Passwords and the like. In practice of the present invention keyboard entry is minimized or eliminated. The same comments apply to many other sorts of Internet appliances.

In preferred embodiments of the invention, once a subscriber-user is in Password-All, only an ability to point-and-click is needed for all navigation. To get into the Password-All site, using a limited apparatus, such as an appliance without a keyboard or keypad, a Smartcard or embedded password may be used, or some other type of authentication.

It will be apparent to one with skill in the art that an interactive application such as application **33** may be provided in a form other than a WEB page without departing from the spirit and scope of the present invention. For example, an application such as application **33** may be provided as a downloadable module or program that may be set-up and configured off-line and made operational when on-line.

FIG. **3** is a flow diagram illustrating user interaction with the Internet Password-All Portal of FIG. **1**. The following process steps illustrated, according to an embodiment of the present invention, are intended to illustrate exemplary user-steps and automated software processes that may be initiated and invoked during interaction with an Internet portal of the present invention such as portal **31** of FIG. **1**. In step **53** a user connects to the Internet or another previously described switched-packet network via a compatible appliance such as Internet appliance **17** of FIG. **1**.

At step **55**, a user enters a user-name and password, which, in one embodiment, may simply be his ISP user name and password. In another embodiment, a second password or code would be required to access an Internet portal such as portal server **31** of FIG. **1** after logging onto the Internet through the ISP. In some cases, having a special arrangement with the ISP, there may be one password for both Internet access through the ISP and for Password-All. At step **57** a personal WEB page such as page **32** of FIG. **2** is displayed via Internet portal server **31**. At minimum, the personalized WEB page will contain all user configured URL's, and may also be enhanced by a search function, among other possibilities.

In step **58** a user will, minimally, select a URL from his or her bookmarked destinations, and as is known by hyperlink technology, the transparent URL will be invoked, and the user will navigate to that destination for the purpose of normal user interaction. In this action, the Password-All Portal software transparently logs the user on to the destination page, if such log-on is needed.

At step **60** the user invokes a search engine by clicking on an option such as described option **37** of FIG. **2**. At step **62**, the user inputs search parameters into a provided text field such as text field **51** of FIG. **2**. After inputting such parameters, the user starts the search by a button such as button **52**. The search engine extracts information in step **64**. Such information may be, in one option, of the form of URL's fitting the description provided by search parameters. A searched list of URL's may be presented in a separate generated page in step **66** after which a user may select which URL to navigate to. In an optional search function, the user may provide search criteria, and search any or all of the possible destinations for the criteria.

In another embodiment wherein WEB pages are cached in their presentable form, information extracted in step **64** may include any information contained in any of the stored pages such as text, pictures, interactive content, or the like. In this case, one displayed result page may provide generated links to search results that include the URL associated with the results. Perhaps by clicking on a text or graphic result, the associated WEB page will be displayed for the user with the result highlighted and in view with regards to the display window.

Enhanced Agent for WEB Summaries

In another aspect of the present invention, a software agent, termed a gatherer by the inventors, is adapted to gather and return summary information about URL's according to user request or enterprise discretion. This is accomplished in embodiments of the present invention by a unique scripting and language parsing method provided by the inventor wherein human knowledge workers associated with the service provide written scripts to such a gatherer according to subscriber or enterprise directives. Such a software gatherer, and capabilities thereof, is described in enabling detail below.

Referring now to FIG. **1**, there is illustrated an exemplary architecture representing a portal service-network which, in this case is hosted by ISP **15**. Portal software **35** in this embodiment executes on portal server **31** set-up at the ISP location. Mass repository **29** is used for storing subscriber information such as passwords, login names, and the like. Internet servers **23**, **25**, and **27** represent servers that are adapted to serve WEB pages of enterprises patronized by a subscriber to the portal service such as one operating Internet appliance **17**.

The main purpose of portal software **35**, as described above with reference to FIG. **2**, is to provide an interactive application that lists all of the subscriber's WEB sites in the form of hyperlinks. When a user invokes a hyperlink from his personal list, software **35** uses the subscriber's personal information to provide an automatic and transparent login function for the subscriber while jumping the subscriber to the subject destination.

Referring again to FIG. **2**, an interactive list **34** containing user-entered hyperlinks and a set of interactive tools is displayed to a subscriber by portal software **35** of FIG. **1**. One of the tools available to a subscriber interacting with list **34** is agent (software) **39**. Agent **39** may be programmed to perform certain tasks such as obtaining account information, executing simple transactions, returning user-requested notification information about upcoming events, and so on. Search function **37** and update function **43** may be integrated with agent **39** as required to aid in functionality.

It is described in the above disclosure that agent **39** may, in some embodiments, search for and return certain summary information contained on user-subscribed WEB pages, such as account summaries, order tracking information and certain other information according to user-defined parameters. This feature may be programmed by a user to work on a periodic time schedule, or on demand.

In the following disclosure, enhancements are provided to agent **39**. Such enhancements, described in detail below, may be integrated into agent **39** of portal software **35** (FIGS. **1** and **2**); and may be provided as a separate agent or gatherer to run

with portal software 35; or may, in some embodiments, be provided as a standalone service that is separate from portal software 35.

FIG. 4 is a block diagram illustrating a summarization software agent 67 and various capabilities and layers thereof according to an embodiment of the present invention. Summarization agent 67, hereinafter termed gatherer 67, is a programmable and interactive software application adapted to run on a network server. Gatherer 67 may, in one embodiment, be integrated with portal software 35 of FIG. 1 and be provided in the form of a software module separate from agent 39 (FIG. 2). In another embodiment, gatherer 67 may be a part of agent 39 as an enhancement to the function of that agent as previously described. In still another embodiment, gatherer 67 may be provided as a parent or client-side application controlled by a separate service from the portal service described above.

In this exemplary embodiment gatherer 67 is a multi-featured software application having a variety of sub-modules and interface modules incorporated therein to provide enhanced function. Gatherer 67 has a client/service interface layer 69 adapted to enable directive input from both a client (user) and a knowledge worker or workers associated with the service. A browser interface 77 is provided in layer 69, and adapted to provide access to application 67 from a browser running on a client's PC or other Internet or network appliance. Interface 77 facilitates bi-directional communication with a user's browser application (not shown) for the purpose of allowing the user to input summary requests into gatherer 67 and receive summary results. Interface 77 supports all existing network communication protocols such as may be known in the art, and may be adapted to support future protocols.

Layer 69 also comprises a unique input scripting module 79 that is adapted to allow a human knowledge worker to create and supply directive scripts containing the site logic needed by gatherer 67 to find and retrieve data from a WEB site. In this case, gatherer 67 executes and runs on a network server such as server 31 of FIG. 1. However, this is not required in order to practice the present invention.

It is assumed in this example that gatherer 67 is part of the portal software suite 35 running on server 31 of FIG. 1. Gatherer 67 may be provided as several dedicated agents or as one multi-functional agent without departing from the spirit and scope of the present invention. For example, one gatherer 67 may be scripted and programmed to execute a single user request with additional gatherers 67 called upon to perform additional user-requests. Alternatively, one gatherer 67 may be dedicated and assigned to each individual user and adapted to handle all requests from that user.

Interface layer 69 facilitates exchange of information from both a client and a knowledge worker. A client operating a WEB browser with an appropriate plug-in is enabled to communicate and interact with gatherer 67. For example, a user may enter a request to return a summary of pricing for all apartments renting for under $1000.00 per month located in a given area (defined by the user) from apartments.com (one of user's registered WEB sites). The just mentioned request would be categorized as either a periodic request, or a one time (on demand) request. The communicated request initiates a service action wherein a knowledge worker associated with the service uses module 79 to set-up gatherer 67 to perform its function. Module 79 is typically executed from a network-connected PC operated by the knowledge worker.

According to an embodiment of the present invention, a unique scripting method facilitated by module 79 is provided to enable gatherer 67 to obtain the goal information requested by a user. For example, the above mentioned example of WEB-site apartments.com has a specific HTML (hyper-text-markup-language) logic that it uses to create its site and post its information. Such site logic is relatively standard fare for a majority of different sites hosted by different entities. Using this knowledge, a knowledge worker creates a site-specific script or template for gatherer 67 to follow. Such a template contains descriptions and locations of the appropriate fields used, for example, at apartments.com. Apartment description, location, deposit information, rental information, agent contact information, and other related fields are matched in terms of location and label description on the template created with module 79. Completed templates are stored in a database contained in a storage facility such as, perhaps, repository 29 of FIG. 1. Such templates may be reused and may be updated (edited) with new data.

In one embodiment, one script may contain site logics for a plurality of WEB pages, and instructions for specific navigational instruction and password or login information may be contained therein and executed serially, such as one site at a time. It is important to note that the knowledge worker or workers may perform much of their scripting via automatic controls such as by object linking and embedding (OLE) and a minor portion of scripting may be performed manually in an appropriate computer language, many of which are known in the art).

Gatherer 67 also has a process layer 71 adapted for internal information gathering and parameter configuration. An optional portal server interface 81 is provided and adapted to allow gather 67 to provide updated information to a user's list of hyperlinks and also to obtain data from portal server 31 if required. For example, required hyperlinks may be mirrored from a user's home page to a scripting template for navigational purposes. In an embodiment wherein gatherer 67 is part of a standalone service, a convention for providing user login information may be supplied at the client's end when a request is made. For example, an encrypted password may be supplied by a client plug-in and gatherer 67 may temporarily borrow the user's encryption key when auto login is performed.

An appliance configuration module 83 is provided and adapted to allow a user to define and configure an Internet appliance to communicate with the service and receive summary information. Such appliances may include but are not limited to palm top PC's, lap top PC's, cellular telephones, WEB TV's, and so on. Typically, a user will be presented a configuration WEB page from a network server that displays in his browser window on his desktop PC. The page contains an interface for communicating device parameters and communication protocol types to module 83. In this way, a user may configure a preferred device for receipt of summary information. Device parameters and communication protocols inherent to such a device are incorporated into the scripting of the site template and are used as instructions for WEB summary delivery.

A navigation layer 73 is provided and adapted to perform the function of external site navigation and data gathering for gatherer 67. To this end, a communication interface/browser control module 85 is provided and adapted to function as a WEB browser to access WEB sites containing WEB data. Control 85 receives its instruction from the scripted template created by the knowledge worker.

A parsing engine 87 is provided and adapted to parse individual WEB sites according to a template created via scripting module 79. Parsing engine 87 may be a Perl engine, an IE HTML engine, or any other combination of known parsing engines. The template (not shown) tells control 85

and parsing engine **87** where to go and what fields at the destination site to look for to access desired data. Once the data fields are located, parsing engine **87** gathers current data in the appropriate field, and returns that data to the service for further processing such as data conversion, compression, storage, and the like.

Because WEB sites use tools that use consistent logic in setting up their sites, this logic may be used by the summarization service to instruct control **83** and parsing engine **87**. The inventor provides herein an exemplary script logic for navigating to and garnishing data from Amazon™.com. The hyperlinks and/or actual URLs required for navigation are not shown, but may be assumed to be included in the template script. In this example, a company name Yodlee (known to the inventors) is used in the script for naming object holders and object containers, which are in this case Active X™ conventions. In another embodiment, Java™ script or another object linking control may be used. The scripted template logic example is as follows:

```
# Site amazon.orders.x - shows status of orders from Amazon
login( 7 );
get( "/exec/obidos/order-list/" );
my @tables = get_tables_containing_text( "Orders:" );
my $order_list = new Yodlee::ObjectHolder( 'orders' );
$order_list->source( 'amazon' );
$order_list->link_info( get_link_info( ) );
my @href_list;
my @container_list;
foreach my $table ( @tables ) {
    my @rows = get_table_rows( );
foreach my $i ( 0 .. $#rows ) {
    select_row( $i );
    my $text = get_text( $rows[ $i ] );
    next if $text =~ /Orders:|Status/;
    my @items = get_row_items( );
    next unless @items >= 4;
    my( $order_num, $date, $status );
    select_cell( 1 );
    $order_num = get_cell_text( );
    my $href = get_url_of_first_href( get_cell( ) );
    select_cell( 2 );
    $date = get_cell_text( );
    select_cell( 3 );
    $status = get_cell_text( );
    next unless defined $order_num and defined $date and defined
    $status;
    my $order = new Yodlee::Container( 'orders' );
    $order->order_number( $order_num );
    $order->date( $date );
    $order->status( $status );
    $order_list->push_object( $order );
    if( defined $href ) {
      push( @href_list, $href );
      push( @container_list, $order );
foreach my $i ( 0 .. $#href_list ) {
    get( $href_list[ $i ] );
    @tables = get_tables_containing_text( "Items Ordered:" );
foreach my $table ( @tables ) {
    my @rows = get_table_rows( );
foreach my $j ( 0 .. $#rows ) {
    select_row( $j );
    my $href = get_url_of_first_href( get_row( ) );
    next unless defined $href;
    my @child_list = get_children( get_row( ), 'a' );
    next unless defined $child_list[ 0 ];
    my $text = get_text( $child_list[ 0 ] );
    $container_list[ $i ]->description( $text );
  }
 }
}
result( $order_list );
```

The above example is a script that instructs control **85** and parser **87** to navigate to and obtain data from Amazon™.com, specifically that data that reflects the user's current order status. Scripts may also be written to obtain virtually any type of text information available from any site. For example, a user may wish to obtain the New York Times headlines, the top ten performing stocks, a comparative list of flights from San Francisco to New York, etc. In one embodiment, metadata may be associated with and used in-place of the actual scripted language for the purpose of reducing complication in the case of many scripts on one template.

A data processing layer **75** is provided and adapted to store, process, and present returned data to users according to enterprise rules and client direction. A database interface module **89** is provided and adapted to provide access for gatherer **67** to a mass repository such as repository **29** of FIG. **1**, for the purpose of storing and retrieving summary data, templates, presentation directives, and so on. Gatherer agent **67** may also access data through interface **89** such as profile information, user account and URL information, stored site logics and so on. Data scanned from the WEB is stored in a canonical format in a database such as repository **29**, or in another connected storage facility. All stored data is, of course, associated with an individual who requested it, or for whom the data is made available according to enterprise discretion.

A summarization page module **91** is provided and adapted to organize and serve a WEB summary page to a user. Module **91**, in some embodiments, may immediately push a WEB summary to a user, or module **91** may store such summarized pages for a user to access via a pull method, in which case a notification may be sent to the user alerting him of the summary page availability. Summarization module **91** includes an HTML renderer that is able to format data into HTML format for WEB page display. In this way, e-mail messages and the like may be presented as HTML text on a user's summarization page. Moreover, any summary data from any site may include an embedded hyperlink to that site. In this way, a user looking at an e-mail text in HTML may click on it and launch the appropriate e-mail program. Other sites will, by default, be linked through the summary page.

Many users will access their summary data through a WEB page as described above, however, this is not required in order to practice the present invention. In some embodiments, users will want their summary information formatted and delivered to one of a variety of Internet-capable appliances such as a palm top or, perhaps a cell phone. To this end, the renderer is capable of formatting and presenting the summary data into a number of formats specific to alternative devices. Examples of different known formats include, but are not limited to XML, plain text, VoxML, HDML, audio, video, and so on.

In a preferred embodiment of the present invention, gather **67** is flexible in such a way as it may act according to enterprise rules, client directives, or a combination of the two. For example, if a user makes a request for summary data about a user/subscribed WEB page to be periodically executed and presented in the form of a HTML document, then gather **67** would automatically access and analyze the required internal information and user provided information to formulate a directive. Using scripting module **79**, a knowledge worker provides a template (if one is not already created for that site) that contains the "where to go" and "what to get" information according to site logic, user input, and known information.

Alternatively, if a user requests a summary about data on one of his sites such as, perhaps, current interest rates and re-finance costs at his mortgage site, the service may at its own discretion provide an additional unsolicited summary from an alternate mortgage site for comparison. This type of summarization would be designed to enhance a user's position based on his profile information. In this case, updated

data about latest interest rates, stock performances, car prices, airline ticket discounts, and so on would be stored by the service for comparative purposes. If a user request for a summary can be equaled or bettered in terms of any advantage to the user, such summary data may be included.

In many cases, created templates may be re-used unless a WEB site changes its site logic parameters, in which case, the new logic must be accessed and any existing templates must be updated, or a new template may be created for the site. The templates contain site-specific script obtained from the site and stored by the knowledge workers. In one embodiment, companies hosting WEB pages automatically provide their site logics and any logic updates to the service by virtue of an agreement between the service and the WEB hosts.

In an alternative embodiment gatherer **67** may be implemented as a client application installed on a user's PC. In this embodiment, a user would not be required to supply log-in or password codes. Summarization scripts may be sent to the client software and templates may be automatically created with the appropriate scripts using log-in and password information encrypted and stored locally on the user's machine.

In addition to providing WEB summary information, gatherer **67** may also be used to provide such as automatic registration to new sites, and for updating old registration information to existing sites. For example, if a user whishes to subscribe, or register at a new site, only the identification of the site is required from the user as long as his pertinate information has not changed. If a new password or the like is required, gatherer **67** through control module **73** may present login or password codes from a list of alternative codes provided by a user. In another embodiment, a database (not shown) containing a wealth of password options may be accessed by gatherer **67** for the purpose of trying different passwords until one is accepted by the site. Once a password or log-in code is accepted, it may be sent to a user and stored in his password list and at the network level.

It will be apparent to one with skill in the art that a software application such as gatherer **67** may be implemented in many separate locations connected in a data network. For example, a plurality of gatherer applications may be distributed over many separate servers linked to one or more mass repositories. Client applications include but are not limited to a WEB-browser plug-in for communicating to the service. Plug-in extensions may also be afforded to proxy servers so that auto-login and data access may still be performed transparent to a user.

In another embodiment, plug-ins enabling communication with gatherer **67** may be provided and configured to run on other network devices for the purpose of enabling such a device to initiate a request and get a response without the need for a desktop computer.

In most embodiments a user operating a desktop PC will order a one time or periodic summary related to some or all of his subscribed WEB sites. A logical flow of an exemplary request/response interaction is provided below.

FIG. **5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** operating in a user-defined mode. In step **93**, a user has initiated a new request for a summary (summary order). It is assumed for the purpose of discussion, that the request of step **93** involves a site wherein no template has been created. In step **95**, the request is received and analyzed. A knowledge worker will likely perform this step. The new request may be posted to the user's portal home page, sent directly to gatherer **67**, or even communicated through e-mail or other media to the service.

In step **97** a knowledge worker accesses particular site logic associated with the request URLs. For example, if the request involves a plurality of URLs, then all site logics for those URLs are accessed. Logic may be available in a repository such as repository **29** of FIG. **1** if they were obtained at the time of user registration to a particular URL, or sent in by WEB-site hosts shortly after registration. If it is a completely new URL, then the logic must be obtained from the site. In most cases however, the logic will be known by virtue of a plurality of users accessing common URLs. Therefore cross-linking in a database of logic/user associations may be performed to access a logic for a site that is new to one particular user, but not new to another.

In step **99**, the knowledge worker creates a template by virtue of scripting module **79** (FIG. **4**) containing all site logic, URLs, log-in and password information, and the user request information. As described previously, templates may be re-used for a same request. In most cases, scripting may be mostly automated with minimum manual input performed by the knowledge worker. In many cases, an existing template will match a new request exactly, and may be re-used. In that case steps **97**, **99**, and **101** would not be required.

In step **101** the template is stored and associated with the requesting user. The stored template may now be retrieved at a scheduled time for performing the summary gathering. At step **103**, a browser control such as module **85** of FIG. **4** is activated to access the stored template and navigate to specified URLs for the purpose of gathering summary data. If a timing function is attributed to the template stored in step **101**, then the template may self execute and call up the browser function. In another embodiment, the knowledge worker may notify the browser control to get the template for its next task. In some embodiments, a plurality of controls may be used with one template as previously described.

In step **105**, automatic log-in is performed, if required, to gain access to each specified URL. In step **107**, a specified WEB-page is navigated to and parsed for requested data according to the logic on the template. If there are a plurality of WEB pages to parse then this step is repeated for the number of pages. A variety of parsing engines may be used for this process such as an IE™ parser, or a Pearl™ parser. Only the requested data is kept in step **107**.

A request may be an on-demand request requiring immediate return, or a scheduled request wherein data may be posted. At step **109**, such logic is confirmed. If the data is to be presented according to a periodic schedule, then summary data parsed in step **107** is stored for latter use in step **111**. In step **113**, the summary data is rendered as HTML if not already formatted, and displayed in the form of a summary WEB-page in step **115**. The summary page may be posted for access by a user at a time convenient to the user (pull), or may be pushed as a WEB-page to the user and be made to automatically display on the user's PC. Notification of summary page availability may also be sent to a user to alert him of completion of order.

If the summary data is from a one-time on-demand request and required immediately by a user, then a network appliance and data delivery method (configured by the user) is confirmed, and the data is rendered in the appropriate format for delivery and display in step **117**. In step **119**, the summary data is delivered according to protocol to a user's designated appliance. In step **121** a user receives requested information in the appropriate format.

It will be apparent to one with skill in the art that there may be more or fewer logical steps as well as added sub-steps than are illustrated in this example. For example, step **105** may in other embodiments include sub-steps such as getting an

encryption key from a user. In still another embodiment, part of a request may be rendered as HTML as in step **113** while certain other portions of the same request data might be rendered in another format and delivered via alternative methods. There are many possibilities.

The method and apparatus of the present invention may be used to present summaries to users without user input. Process logic such as this is detailed below.

FIG. **6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** in a User-independent smart mode with minimum or no user input. In step **117** an enterprise-initiated summary process begins. In this case, the enterprise may be assisting a user in finding a better deal or, perhaps presenting the individual with summaries from and links to alternative pages not yet subscribed to by a user.

In step **119**, a database containing user information and parameters is accessed and reviewed. Certain information specific to a user may be required to initiate an enterprise-sponsored summary report. At step **121**, the knowledge worker accesses the site logic specific to the specified target site or sites for summarization. In step **123**, the knowledge worker modifies an existing user template, or creates a new one if necessary. At step **125** the template is stored in a repository such as repository **29** and associated with the user.

As described in FIG. **5**, the template either self-executes according to a timed function and invokes a browser control such as control **85** (FIG. **4**), or is accessed by control **85** as a result of task notification. In step **127**, the browser control begins navigation. Auto logins are performed, if required, in step **129** to gain access to selected sites. If the WEB pages are new to a user, and the user has no registration with the WEB site, then through agreement, or other convention, the service may be provided access to such sites. Such an agreement may be made, for example, if the host of the WEB site realizes a possibility of gaining a new customer if the customer likes the summary information presented. In many other situations, no password or login information is required to obtain general information that is not personal to a client.

In step **131**, all sites are parsed for summary data and stored in canonical fashion in step **133**. At step **135**, the data is compiled and rendered as HTML for presentation on a summary page. In step **137** a WEB summary containing all of the data is made available to a user and the user is notified of its existence.

Providing certain information not requested by a user may aid in enhancing a user's organization of his or her current business on the WEB. Moreover, unsolicited WEB summaries may provide better opportunities than the current options in the user's profile. Of course, assisting a user in this manner will require that the enterprise (service) have access to the user's profile and existing account and service information with various WEB sites on the user's list. A user may forbid use of a user's personal information, in which case, no enterprise-initiated summaries would be performed unless they are conducted strictly in an offer mode instead of a comparative mode.

Categorization of Collected and Summarized Information

A novel system and a process are described above in several embodiments for navigating to network sites specific to individual users, collecting information from such sites, and summarizing, normalizing and presenting the collected information to the specific user. In many situations there is further processing that might be done to add considerable value for the user. For example, a client might like to know, over a specified period of time, exactly how much he or she has spent, using a charge card of some sort, for gasoline. Following the examples given above, a system according to an embodiment of the invention might collect a client's expenditures from a certain bank checking account via an ATM card registered to the account, over specified time periods. The system, as described above, might also monitor the account balance, and so on.

In an embodiment of the present invention, the system might identify, at a client's desire, all expenditures over a time period for gasoline, for oil, for all transportation-related activities, and so forth. As another example, food expenditures, entertainment expenditures, and just about any other imaginable category might be tracked and summarized for a client. There are truly many possibilities for nature of categorization in such a system.

In the descriptions above and in the priority document Ser. No. 09/323,598 filed on Jun. 1, 1999, referenced above, rich and detailed description is provided related to data collection and summarization for clients. Automatic log-in at various web bases based sites may be done on behalf clients, and data scraping may be done on a periodic basis automatically, and at a user's specific direction. Data collected may be normalized and summarized in a number of ways.

In the system descriptions provided, services may be accomplished for a large number of clients, and data may be collected from a broad variety of sources, not necessarily all Internet-connected. One source, however, is certainly credit card accounts, and bank accounts through Automatic Teller Machine (ATM) card records. In these cases transactions are listed along with a notation as to the person or enterprise to whom a payment was made.

FIG. **7** illustrates transaction records taken from an actual on-line banking display. This display is exemplary of such displays, but not meant to be limiting, as there may be many variations in such displays among different financial institutions and for different individuals. In this example the date of a transaction, which in many cases may be authorized by a card such as an ATM card, is listed in column **701** headed Txn Date. Nine different transaction records are displayed. The description for each transaction is listed under column **702** headed Description. Lastly the transaction amount is listed in column **703** headed Withdrawal.

The first and last of the transaction listed in this example are described in column **702** as "PUR AT SAFEWAY STORE 1204 SAL SALINAS CA". This is notation for a particular Safeway Super Market. The clear description may be easily recognized as a grocery purchase, and a software routine may be used to parse such headings looking for certain words, such as "SAFEWAY" or "STORE", or the two-word combination "SAFEWAY STORE".

In a relatively simple embodiment of a categorization service a system might rely on specific instructions from a client (subscriber) to collect and summarize very specific items. The client may, for example, wish to track her expenditures at Costco, summarized on a weekly basis, as an aid for example, in her budgeting goals. In this example the client may edit her personal profile with specific instructions to periodically collect, summarize and present weekly the expenditures for Costco according to one or more accounts. The client could for example, include in this profile and instruction a checking account having an associated ATM card, and a credit card not associated with a specific bank. The client also is not necessarily limited to items in the bank account transacted through the ATM card, but issued and cleared checks on the account to Costco might be included as well. In this simple embodiment the system of the invention would scrape information from the profiled accounts, looking in the description column **702** (FIG. **7**) for all description including the string "Costco", and

perhaps normalize and summarize the information, and present to the client as requested.

In a somewhat more robust embodiment a client may want to categorize transactions for "eating out", for example. These transactions will not all be for one enterprise, but may cover a variety of restaurants. The client might profile a list of his usual haunts, but that might not be adequate for an efficient accomplishment of such a service, because the client may well visit new establishments that are not on the profiled list. In this case, and especially because the hosting enterprise may have a large number of clients to whom the system provides this service, other abilities are needed to make appropriate determinations.

The inventors in this case term the unique abilities provided in embodiments of the present invention Network Categorization. Beyond the simple ease of a client providing the exact listing in "description" from account information that can be searched, the client may want summarization for "travel-related" expenditures. The host, in an embodiment, may compile, by a variety of methods, a robust set of identifiers to find travel-related expenditures for clients, and the identifiers need not be specific to any one client or small set of clients. For example, the host system, which relies on a software suite to accomplish the regular scraping of information and the normalization, summarization and presentation of the information to clients, might develop a set of identifiers including terms and phrases like, "gas", "Chevron", "station" "oil", "lube service" and many more for this purpose. If it is understood that the intent is broadly for travel-related expenditures, the system might include terms that can test and trap expenditures for airline tickets, meals far from home related to travel, and other such travel-related information.

One source of identifiers for such a system is information entered by specific clients. If, for whatever reason, a client of the service enters "Valero 101" as a description (or partial in the description column), as an expenditure for gasoline, then the hosts system may add that term to one or several scraping code subsystems for identifying gas purchase. If "Valero 101" is a gas station for one client, it is likely a gas station for all clients. Further the host system may parse the "Valero 101" into two identifiers: "Valero" and "101"

A key ingredient in such a system is an ability to grow and improve the network categorization system. For example, if one client enters a descriptor as a particular category of transaction, then the system may be adapted to treat all such descriptors in that category, until errors, reported either by clients or found by knowledge workers, cause re-consideration and amendment (increased intelligence). At another level, the system may use a democratic approach, such that identifiers are included based on a majority use among clients. At still another level, the system may have probabilistic algorithms that are capable of passing identifiers into the system that meet a probability threshold, or of removing identifiers and filters that fail such a threshold.

In yet a further embodiment the system can incorporate predictive and budgeting functions such that, in addition to reporting to a client that he/she has spent $X on groceries in the past week, the system might report further that the expenditure is Y % of the average expenditure over the past ten weeks, and that an amendment to the budget is in order, increasing budgeted expenditures for groceries by Z %. Other functionality may be incorporated that is not specific to clients at all, but derived from the client's activity and the ability of the system to scrape the data and manipulate the data in a number of ways. The system might, for example, predict trends and timelines by virtue of the tracked transactions of customers. The increased cost of travel can be accurately tracked for people in different demographics, and predictions can be made in a generic way, of use to a broad variety of businesses in developing company strategy, advertising campaigns and the like.

The kinds of services described above may be applied to small businesses, health care facilities, advertising companies, and a broad variety of enterprises. The sources of information need not be limited to Internet-based sites for client's accounts, but may also include paper and cash transactions and the like.

The methods and apparatus described may also may be practiced in a language and platform independent manner, and be implemented over a variety of scalable server architectures.

The methods and apparatus of the present invention may be practiced via private individuals on the Internet, businesses operating on a WAN connected to the Internet, businesses operating via private WAN, and so on. There are many customizable situations.

The present inventions as taught herein and above should be afforded the broadest of scope consistent with the enabling disclosure provided. The spirit and scope of the present invention is limited only by the claims that follow.

What is claimed is:

1. An Internet connected server having software executing from memory providing a system for sorting and reporting financial transaction information, comprising:

a collector function of the software, the collector function navigating to one or more network information sites and retrieving therefrom financial transaction information regarding expenditures associated with a specific person or enterprise, the transaction information including at least date, description and amount of the transactions;

an input function of the software enabling a user to provide to the system a request for a summary of transactions over a specific range of dates; according to types and category of expenditures;

a processing function parsing the collected transaction descriptions for determining an purpose expenditure category from a plurality of possible expenditures for each expenditure, using pre-stored description characteristics associated with each category, and summarizing those transactions that meet the category and fall into the date range; and

a reporting function of the software reporting the summarized transactions,

wherein expenditure categories are developed from information taken from communication between users and the system,

wherein a probability algorithm is used in developing the expenditure categories, and

wherein the expenditure categories are periodically amended according to further information that is collected and processed.

2. The system of claim 1 wherein the reporting function provides a total transaction amount with the summarized transactions for each purpose.

3. The system of claim 2 wherein the system further comprises a function storing past transaction history associated with the particular person or enterprise.

4. The system of claim 3 wherein the past transaction history is used to predict future transaction statistical information.

5. The system of claim 1 wherein a summary is provided for a first plurality of persons or enterprises subscribing to the system according to requests entered by a second plurality of persons or enterprises subscribing to the system.

6. The system of claim 1 wherein the system reports to users through the Internet network.

7. A method for sorting and reporting financial transaction information, comprising:

(a) navigating to one or more network information sites by a collector software function executing from memory of an Internet-connected server and retrieving therefrom financial transaction information regarding expenditures associated with a specific person or enterprise, the transaction information including at least date, description and amount of the transactions;

(b) providing by a user to the system through an input function of the software a request for a summary of transactions over a specific range of dates, according to types and category of expenditures;

(c) parsing the collected transaction descriptions by a processing function, determining an purpose expenditure category from a plurality of possible expenditures for each expenditure, using pre-stored description characteristics associated with each category, and summarizing those transactions that meet the purpose and fall into the date range; and

(d) reporting the summarized transactions by a reporting function of the software,

wherein expenditure categories are developed from information taken from communication between users and the system,

wherein a probability algorithm is used in developing the expenditure categories, and

wherein the expenditure categories are periodically amended according to further information that is collected and processed.

8. The method of claim 7 wherein the reporting function provides a total transaction amount with the summarized transactions for each expenditure.

9. The method of claim 8 wherein the system further comprises a function storing past transaction history associated with the particular person or enterprise.

10. The method of claim 9 wherein the past transaction history is used to predict future transaction statistical information.

11. The method of claim 7 wherein a summary is provided for a first plurality of persons or enterprises subscribing to the system according to requests entered by a second plurality of persons or enterprises subscribing to the system.

12. The method of claim 7 wherein the system reports to users through the Internet network.

* * * * *

CIVIL COVER SHEET

The JS 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. *(SEE INSTRUCTIONS ON NEXT PAGE OF THIS FORM.)*

I. (a) PLAINTIFFS
YODLEE, INC.

(b) County of Residence of First Listed Plaintiff *(EXCEPT IN U.S. PLAINTIFF CASES)*

(c) Attorneys *(Firm Name, Address, and Telephone Number)*
Robert M. Oakes / Tel: (302) 652-5070
Fish & Richardson P.C.
222 Delaware Ave., 17th Floor
Wilmington, DE 19801

DEFENDANTS
PLAID TECHNOLOGIES INC.

County of Residence of First Listed Defendant San Francisco
(IN U.S. PLAINTIFF CASES ONLY)
NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED

Attorneys *(If Known)*

II. BASIS OF JURISDICTION *(Place an "X" in One Box Only)*

- ☐ 1. U.S. Government Plaintiff
- ☒ 3. Federal Question *(U.S. Government Not a Party)*
- ☐ 2. U.S. Government Defendant
- ☐ 4. Diversity *(Indicate Citizenship of Parties in Item III)*

III. CITIZENSHIP OF PRINCIPAL PARTIES *(Place an "X" in One Box for Plaintiff and One Box for Defendant)*
(For Diversity Cases Only)

	PTF	DEF		PTF	DEF
Citizen of This State	☐ 1	☐ 1	Incorporated *or* Principal Place of Business In This State	☐ 4	☐ 4
Citizen of Another State	☐ 2	☐ 2	Incorporated *and* Principal Place of Business In Another State	☐ 5	☐ 5
Citizen or Subject of a Foreign Country	☐ 3	☐ 3	Foreign Nation	☐ 6	☐ 6

IV. NATURE OF SUIT *(Place an "X" in One Box Only)*

CONTRACT
- ☐ 110 Insurance
- ☐ 120 Marine
- ☐ 130 Miller Act
- ☐ 140 Negotiable Instrument
- ☐ 150 Recovery of Overpayment & Enforcement of Judgment
- ☐ 151 Medicare Act
- ☐ 152 Recovery of Defaulted Student Loans (Excl. Veterans)
- ☐ 153 Recovery of Overpayment of Veteran's Benefits
- ☐ 160 Stockholders' Suits
- ☐ 190 Other Contract
- ☐ 195 Contract Product Liability
- ☐ 196 Franchise

TORTS

PERSONAL INJURY
- ☐ 310 Airplane
- ☐ 315 Airplane Product Liability
- ☐ 320 Assault, Libel & Slander
- ☐ 330 Federal Employers' Liability
- ☐ 340 Marine
- ☐ 345 Marine Product Liability
- ☐ 350 Motor Vehicle
- ☐ 355 Motor Vehicle Product Liability
- ☐ 360 Other Personal Injury
- ☐ 362 Personal Injury – Med. Malpractice

PERSONAL INJURY
- ☐ 365 Personal Injury - Product Liability
- ☐ 367 Health Care/ Pharmaceutical Personal Injury Product Liability
- ☐ 368 Asbestos Personal Injury Product Liability

PERSONAL PROPERTY
- ☐ 370 Other Fraud
- ☐ 371 Truth In Lending
- ☐ 380 Other Personal Property Damage
- ☐ 385 Property Damage Product Liability

FORFEITURE/PENALTY
- ☐ 625 Drug Related Seizure of Property 21 USC 881
- ☐ 690 Other

BANKRUPTCY
- ☐ 422 Appeal 28 USC 158
- ☐ 423 Withdrawal 28 USC 157

PROPERTY RIGHTS
- ☐ 820 Copyrights
- ☒ 830 Patent
- ☐ 840 Trademark

LABOR
- ☐ 710 Fair Labor Standards Act
- ☐ 720 Labor/ Management Relations
- ☐ 740 Railway Labor Act
- ☐ 751 Family and Medical Leave Act
- ☐ 790 Other Labor Litigation
- ☐ 791 Employee Retirement Income. Security Act

SOCIAL SECURITY
- ☐ 861 HIA (1395ff)
- ☐ 862 Black Lung (923)
- ☐ 863 DIWC/DIWW (405(g))
- ☐ 864 SSID Title XVI
- ☐ 865 RSI (405(g))

OTHER STATUTES
- ☐ 375 False Claims Act
- ☐ 400 State Reapportionment
- ☐ 410 Antitrust
- ☐ 430 Banks and Banking
- ☐ 450 Commerce
- ☐ 460 Deportation
- ☐ 470 Racketeer Influenced and Corrupt Organizations
- ☐ 480 Consumer Credit
- ☐ 490 Cable/Sat TV
- ☐ 850 Securities/ Commodities / Exchange
- ☐ 890 Other Statutory Actions
- ☐ 891 Agricultural Acts
- ☐ 893 Environmental Matters
- ☐ 895 Freedom of Information Act
- ☐ 896 Arbitration
- ☐ 899 Administrative Procedure Act/Review or Appeal of Agency Decision
- ☐ 950 Constitutionality of State Statutes

REAL PROPERTY
- ☐ 210 Land Condemnation
- ☐ 220 Foreclosure
- ☐ 230 Rent Lease & Ejectment
- ☐ 240 Torts to Land
- ☐ 245 Tort Product Liability
- ☐ 290 All Other Real Property

CIVIL RIGHTS
- ☐ 440 Other Civil Rights
- ☐ 441 Voting
- ☐ 442 Employment
- ☐ 443 Housing / Accommodations
- ☐ 445 Amer. w/Disabilities Employment
- ☐ 446 Amer. w/Disabilities Other
- ☐ 448 Education

PRISONER PETITIONS
- ☐ 510 Motions to Vacate Sentence

Habeas Corpus:
- ☐ 530 General
- ☐ 535 Death Penalty
- ☐ 540 Mandamus & Other
- ☐ 550 Civil Rights
- ☐ 555 Prison Condition
- ☐ 560 Civil Detainee – Conditions of Confinement

IMMIGRATION
- ☐ 462 Naturalization Application
- ☐ 463 Habeas Corpus – Alien Detainee (Prisoner Petition)
- ☐ 465 Other Immigration Actions

FEDERAL TAX SUITS
- ☐ 870 Taxes (U.S. Plaintiff or Defendant)
- ☐ 871 IRS – Third Party 26 USC 7609

V. ORIGIN *(Place "X" in One Box Only)*
☒ 1 Original Proceeding ☐ 2 Removed from State Court ☐ 3 Remanded from Appellate Court ☐ 4 Reinstated or Reopened ☐ 5 Transferred from another district *(specify)* ☐ 6 Multidistrict Litigation

VI. CAUSE OF ACTION
(Cite the U.S. Civil Statute under which you are filing. **(Do not cite jurisdictional statutes unless diversity.)**)
Brief description of cause: Patent infringement under 35 U.S.C. §§ 271, *et seq.*

VII. PREVIOUS BANKRUPCTCY MATTERS
(For nature of suit 422 and 423, enter the case number and judge for any associated bankruptcy matter previously adjudicated by a judge of this Court. Use a separate attachment if necessary.

VIII. REQUESTED IN COMPLAINT: ☐ CHECK IF THIS IS A CLASS ACTION UNDER F.R.C.P. 23 **Demand: $** CHECK YES only if demanded in Complaint
JURY DEMAND ☒ Yes ☐ No

IX. RELATED CASE(S) IF ANY (See Instructions): JUDGE DOCKET NUMBER

X. This case (check one box) ☒ Is not a refiling of a previously dismissed action ☐ Is a refiling of case number previously dismissed by Judge

DATE: December 1, 2014
SIGNATURE OF ATTORNEY OF RECORD: */s/ Robert M. Oakes*
TYPE NAME OF ATTORNEY: Robert M. Oakes

FOR OFFICE USE ONLY
RECEIPT # _____ AMOUNT _____ APPLYING IFP _____ JUDGE _____ MAG. JUDGE _____

INSTRUCTIONS FOR ATTORNEYS COMPLETING CIVIL COVER SHEET FORM JS 44

Authority For Civil Cover Sheet

The JS 44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and service of pleading or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. The attorney filing a case should complete the form as follows:

I. (a) **Plaintiffs – Defendants**. Enter names (last, first, middle initial) of plaintiff and defendant. If the plaintiff or defendant is a government agency, use only the full name or standard abbreviations. If the plaintiff or defendant is an official within a government agency, identify first the agency and then the official, giving both name and title.

(b) County of Residence. For each civil case filed, except U.S. plaintiff cases, enter the name of the county where the first listed plaintiff resides at the time of filing. In U.S. plaintiff cases, enter the name of the county in which the first listed defendant resides at the time of filing. (NOTE: In land condemnation cases, the county of residence of the "defendant" is the location of the tract of land involved.)

(c) Attorneys. Enter the firm name, address, telephone number, and attorney of record. If there are several attorneys, list them on an attachment, noting in this section "(see attachment)".

II. Jurisdiction. The basis of jurisdiction is set forth under Rule 8(a), F.R.C.P., which requires that jurisdictions be shown in pleadings. Place an "X" in one of the boxes. If there is more than one basis of jurisdiction, precedence is given in the order shown below.

United States plaintiff. (1) Jurisdiction based on 28 U.S.C. 1345 and 1348. Suits by agencies and officers of the United States are included here.

United States defendant. (2) When the plaintiff is suing the United States, its officers or agencies, place an "X" in this box.

Federal question. (3) This refers to suits under 28 U.S.C.1331, where jurisdiction arises under the Constitution of the United States, an amendment to the Constitution, and act of Congress or a treaty of the United States. In cases where the U.S. agency is a party, the U.S. plaintiff or defendant code takes precedence, and box 1 or 2 should be marked.

Diversity of citizenship. (4) This refers to suits under 28 U.S.C.1332, where parties are citizens of different states. When Box 4 is checked, the citizenship of the different parties must be checked. (See Section III below; federal question actions take precedence over diversity cases.)

III. Residence (citizenship) of Principal Parties. This section of the JS 44 is to be completed if diversity of citizenship was indicated above. Mark this section for each principal party.

IV. Nature of Suit. Place an "X" in the appropriate box. If the nature of suit cannot be determined, be sure the cause of action, in Section VI below, is sufficient to enable the deputy clerk or the statistical clerks in the Administrative Office to determine the nature of suit. If the cause fits more than one nature of suit, select the most definitive.

V. Origin. Place and "X" in one of the seven boxes.

Original Proceedings. (1) Cases which originate in the United States district courts.

Removed from State Court. (2) Proceedings initiated in state courts may be removed to the district courts under Title 28 U.S.C., Section 1441. When the petition for removal is granted, check this box.

Remanded from Appellate Court. (3) Check this box for cases remanded to the district court for further action. Use the date of remand as the filing date.

Reinstated or Reopened. (4) Check this box for cases reinstated or reopened in the district court. Use the reopening date as the filing date.

Transferred from Another District. (5) For cases transferred under Title 28 U.S.C. Section 1404(a). Do not use this for within district transfers or multidistrict litigation transfers.

Multidistrict Litigation. (6) Check this box when a multidistrict case is transferred into the district under authority of Title 28 U.S.C. Section 1407. When this box is checked, do not check (5) above.

VI. Cause of Action. Report the civil statute directly related to the cause of action and give a brief description of the cause. **Do not cite jurisdictional states unless diversity**. Example: U.S. Civil Statute: 47 USC 553
Brief Description: Unauthorized reception of cable service

VII. Previous Bankruptcy Matters. For nature of suit 422 and 423 enter the case number and judge for any associated bankruptcy matter previously adjudicated by a judge of this court. Use a separate attachment if necessary.

VIII. Requested in Complaint. Class Action. Place an "X" in this box if you are filing a class action under Rule 23, F.R.CvP. Demand. In this space enter the actual dollar amount being demanded or indicate other demand, such as a preliminary injunction Jury Demand. Check the appropriate box to indicate whether or not a jury is being demanded.

IX. Related Cases. This section of the JS 44 is used to reference related pending cases, if any. If there are related pending cases, insert the docket numbers and the corresponding judge names for such cases.

X. Refiling Information. Place an "X" in one of the two boxes indicating if the case is or is not a refiling of a previously dismissed action, insert the case number and judge.

Date and Attorney Signature. Date and sign the civil cover sheet.

OFFICE OF THE CLERK
UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE

John A. Cerino
CLERK OF COURT

844 North King Street, Unit 18
Wilmington, DE 19801-3570
www.ded.uscourts.gov
(302) 573-6170

DISTRICT OF DELAWARE
LOCAL RULE 73.1

Magistrate Judges; Trial by Consent

Where the parties consent, the Magistrate Judge may conduct a jury or nonjury trial in any civil action and order the entry of final judgment in accordance with 28 U.S.C. § 636 (c) and Fed. R. Civ. P. 73-76. In the course of conducting proceedings in any civil action upon the consent of the parties, a Magistrate Judge may hear and determine any an all pretrial and post-trial motions including case dispositive motions.

(a) The Clerk shall notify the parties in all cases that they may consent to have a Magistrate Judge conduct any or all proceedings in the case and order the entry of final judgment.

(b) **The Clerk shall not accept a consent form for filing unless it has been signed by all parties in a case.** Plaintiff shall be responsible for securing execution and filing of such a consent form. No consent form will be made available, nor will its contents be made known to any District Judge or Magistrate Judge, unless all stated parties have consented to the reference to a Magistrate Judge.

(c) The consent form shall be filed with the Clerk not later than the final pretrial conference, unless otherwise ordered.

(d) After the consent form has been executed and filed, the Clerk shall so advise the District Court Judge to whom the case has been assigned. At the discretion of the District Judge, the Clerk shall prepare, for the District Judge's signature, an order referring the case to the Magistrate Judge. Once the case has been referred, the Magistrate Judge shall have the authority to conduct any and all proceedings to which the parties have consented and to direct the Clerk to enter a final judgment in the same manner as if a District Judge presided.

UNITED STATES DISTRICT COURT

for the

District of Delaware

_____ *Plaintiff*	)	
v.	)	Civil Action No.
_____ *Defendant*	)	

NOTICE, CONSENT, AND REFERENCE OF A CIVIL ACTION TO A MAGISTRATE JUDGE

Notice of a magistrate judge's availability. A United States magistrate judge of this court is available to conduct all proceedings in this civil action (including a jury or nonjury trial) and to order the entry of a final judgment. The judgment may then be appealed directly to the United States court of appeals like any other judgment of this court. A magistrate judge may exercise this authority only if all parties voluntarily consent.

You may consent to have your case referred to a magistrate judge, or you may withhold your consent without adverse substantive consequences. The name of any party withholding consent will not be revealed to any judge who may otherwise be involved with your case.

Consent to a magistrate judge's authority. The following parties consent to have a United States magistrate judge conduct all proceedings in this case including trial, the entry of final judgment, and all post-trial proceedings.

Parties' printed names	*Signatures of parties or attorneys*	*Dates*
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Reference Order

IT IS ORDERED: This case is referred to a United States magistrate judge to conduct all proceedings and order the entry of a final judgment in accordance with 28 U.S.C. § 636(c) and Fed. R. Civ. P. 73.

Date: _____

_____
District Judge's signature

_____
Printed name and title

Note: Return this form to the clerk of court only if you are consenting to the exercise of jurisdiction by a United States magistrate judge. Do not return this form to a judge.

AO 85A (Rev. 01/09) Notice, Consent, and Reference of a Dispositive Motion to a Magistrate Judge

UNITED STATES DISTRICT COURT

for the

District of Delaware

_____ *Plaintiff*	)	
v.	)	Civil Action No.
_____ *Defendant*	)	

NOTICE, CONSENT, AND REFERENCE OF A DISPOSITIVE MOTION TO A MAGISTRATE JUDGE

Notice of a magistrate judge's availability. A United States magistrate judge of this court is available to conduct all proceedings and enter a final order dispositive of each motion. A magistrate judge may exercise this authority only if all parties voluntarily consent.

You may consent to have motions referred to a magistrate judge, or you may withhold your consent without adverse substantive consequences. The name of any party withholding consent will not be revealed to any judge who may otherwise be involved with your case.

Consent to a magistrate judge's consideration of a dispositive motion. The following parties consent to have a United States magistrate judge conduct any and all proceedings and enter a final order as to each motion identified below *(identify each motion by document number and title).*

Motions: _____

_____

_____

Parties' printed names	*Signatures of parties or attorneys*	*Dates*
_____	_____	_____
_____	_____	_____
_____	_____	_____

Reference Order

IT IS ORDERED: The motions are referred to a United States magistrate judge to conduct all proceedings and enter a final order on the motions identified above in accordance with 28 U.S.C. § 636(c).

Date: _____

_____
District Judge's signature

_____
Printed name and title

Note: Return this form to the clerk of court only if you are consenting to the exercise of jurisdiction by a United States magistrate judge. Do not return this form to a judge.

AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 U.S.C. §290 and/or 15 U.S.C. § 1116, you are hereby advised that a court action has been filed in the U.S. District Court for the District of Delaware on the following ☐ Trademarks or ☒ Patents (☐ the patent action involves 35 U.S.C.§290.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	December 1, 2014	District of Delaware

PLAINTIFF	DEFENDANT
YODLEE, INC.	PLAID TECHNOLOGIES INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1.	USP No. 6,199,077	03/06/2001	Yodlee, Inc., formerly known as Yodlee.com, Inc.
2.	USP No. 6,317,783	11/13/2001	Yodlee, Inc., formerly known as Yodlee.com, Inc.
3.	USP No. 6,510,451	01/21/2003	Yodlee, Inc.
4.	USP No. 7,263,548	08/28/2007	Yodlee, Inc.
5.	USP No. 7,424,520	09/09/2008	Yodlee, Inc.
6.	USP No. 7,752,535	07/06/2010	Yodlee, Inc., formerly known as Yodlee.com, Inc..
7.	USP No. 8,266,515	09/11/2012	Yodlee, Inc., formerly known as Yodlee.com, Inc..

In the above-entitled case, the following patent(s) / trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1.		
2		

In the above-entitled case, the following decision has been rendered or judgment issued:

DECISION / JUDGMENT		
CLERK	(BY) DEPUTY CLERK	DATE

Copy 1 - Upon initiation of action, mail this copy to Director
Copy 2 – Upon filing document adding patent(s), mail this copy to Director
Copy 3 – Upon termination of action, mail this copy to Director
Copy 4 – Case file copy.

UNITED STATES DISTRICT COURT

for the

District of Delaware

YODLEE, INC.,

Plaintiff(s)

v.

PLAID TECHNOLOGIES INC.,

Defendant(s)

14-1445

Civil Action No.

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)* PLAID TECHNOLOGIES INC.,
~~c/o Corporation Service Company~~
2711 Centerville Road, Suite 400
Wilmington, DE 19808

A lawsuit has been filed against you.

Within 21 days after service of this summons on you (not counting the day you received it) — or 60 days if you are the United States or a United States agency, or an officer or employee of the United States described in Fed. R. Civ. P. 12 (a)(2) or (3) — you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are: Robert M. Oakes / Tel: (302) 652-5070
Fish & Richardson P.C.
222 Delaware Ave., 17th Floor
Wilmington, DE 19801
Email: oakes@fr.com

If you fail to respond, judgment by default will be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

CLERK OF COURT

Date: DEC 2 2014

Signature of Clerk or Deputy Clerk

Civil Action No.

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____

was received by me on *(date)* _____.

❒ I personally served the summons on the individual at *(place)* _____

_____ on *(date)* _____ ; or

❒ I left the summons at the individual's residence or usual place of abode with *(name)* _____

_____, a person of suitable age and discretion who resides there,

on *(date)* _____, and mailed a copy to the individual's last known address; or

❒ I served the summons on *(name of individual)* _____, who is

designated by law to accept service of process on behalf of *(name of organization)* _____

_____ on *(date)* _____ ; or

❒ I returned the summons unexecuted because _____ ; or

❒ Other *(specify)*:

My fees are $ _____ for travel and $ _____ for services, for a total of $ 0.00 .

I declare under penalty of perjury that this information is true.

Date: _____

_____

Server's signature

_____

Printed name and title

_____

Server's address

Additional information regarding attempted service, etc:

UNITED STATES DISTRICT COURT

for the

District of Delaware

_____ *Plaintiff*	)	
v.	)	Civil Action No.
_____ *Defendant*	)	

NOTICE, CONSENT, AND REFERENCE OF A CIVIL ACTION TO A MAGISTRATE JUDGE

Notice of a magistrate judge's availability. A United States magistrate judge of this court is available to conduct all proceedings in this civil action (including a jury or nonjury trial) and to order the entry of a final judgment. The judgment may then be appealed directly to the United States court of appeals like any other judgment of this court. A magistrate judge may exercise this authority only if all parties voluntarily consent.

You may consent to have your case referred to a magistrate judge, or you may withhold your consent without adverse substantive consequences. The name of any party withholding consent will not be revealed to any judge who may otherwise be involved with your case.

Consent to a magistrate judge's authority. The following parties consent to have a United States magistrate judge conduct all proceedings in this case including trial, the entry of final judgment, and all post-trial proceedings.

Parties' printed names	*Signatures of parties or attorneys*	*Dates*
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Reference Order

IT IS ORDERED: This case is referred to a United States magistrate judge to conduct all proceedings and order the entry of a final judgment in accordance with 28 U.S.C. § 636(c) and Fed. R. Civ. P. 73.

Date: _____

_____
District Judge's signature

_____
Printed name and title

Note: Return this form to the clerk of court only if you are consenting to the exercise of jurisdiction by a United States magistrate judge. Do not return this form to a judge.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

YODLEE, INC., Plaintiff, v. PLAID TECHNOLOGIES INC., Defendant.	C. A. No. _____ **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Yodlee Inc. ("Yodlee") for its complaint against Plaid Technologies Inc. ("Plaid" or "Defendant") requesting damages and other relief, and alleging as follows:

NATURE OF THE ACTION

1. This is an action for infringement of United States Patent No. 6,199,077 (the "'077 patent"), United States Patent No. 6,317,783 (the "'783 patent"), United States Patent No. 6,510,451 (the "'451 patent"), United States Patent No. 7,263,548 (the "'548 patent"), United States Patent No. 7,424,520 (the "'520 patent"), United States Patent No. 7,752,535 (the "'535 patent"), and United States Patent No. 8,266,515 (the "'515 patent") (collectively, "Asserted Patents") under 35 U.S.C. §§ 271, *et seq.*

THE PARTIES

2. Plaintiff Yodlee is a corporation organized and existing under the laws of the State of Delaware with a principal place of business at 3600 Bridge Parkway, Suite 200, Redwood City, California 94065. Yodlee develops software and services that allow users to view all financial and other personal accounts in one place. Yodlee also develops applications to

help consumers manage their finances online through features such as personal financial management, bill payment, expense tracking, and investment management.

3. Upon information and belief, Defendant Plaid is a corporation organized and existing under the laws of the State of Delaware with a principal place of business at 25 Maiden Lane, San Francisco, California 94108. According to its website, Plaid offers a competing software application programming interface ("API") that allows users and developers to interact with financial institutions.

4. Upon information and belief, the officers of Defendant Plaid formerly operated under the name CopperDog Inc. ("CopperDog"), which was also a corporation organized and existing under the laws of the State of Delaware with a principal place of business at 4230 Stoney Brook Rd, Clemmons, NC 27012.

JURISDICTION AND VENUE

5. This action arises under the patent laws of the United States of America, United States Code, Title 35, Section 1, *et seq.* This Court has subject matter jurisdiction over the action pursuant to 28 U.S.C. §§ 1331 and 1338.

6. Venue is proper in the District of Delaware under 28 U.S.C. § 1391(b) and 28 U.S.C. § 1400(b).

7. This Court has personal jurisdiction over Plaid because Plaid is incorporated in the State of Delaware and has purposefully availed itself of the privilege of conducting activities within this State and District.

BACKGROUND

8. Plaintiff Yodlee was founded in 1999. Over the past fifteen years, it has become the leading provider of account aggregation services and personal financial management

applications through software it developed from the ground up. More than 750 organizations in over 10 countries use Yodlee's services and applications, including 9 of the 15 largest banks in the United States. Yodlee has over 16 million paid users and reaches more than 100 million end users through its network of financial institutions. In October 2014, Yodlee completed its initial public offering.

9. According to its website, Defendant Plaid considers itself to be "the API for banking data." The API gives developers the ability to integrate with banking institutions and access and authorize personal user accounts at those institutions.

10. On February 11, 2012, Zach Perret, co-founder of Defendant Plaid and president of CopperDog, signed a nondisclosure agreement ("NDA") with Yodlee. The NDA was a proactive measure taken prior to granting CopperDog access to Yodlee's confidential technology. By signing the agreement, Zach Perret and his company CopperDog agreed to protect the secrecy of Yodlee's confidential information and technology and not use that confidential information and technology for unauthorized purposes.

11. On April 5, 2012, Zach Perret signed a 30-day evaluation license agreement ("Evaluation Agreement") giving him, William Hockey, another co-founder of Defendant Plaid and the technical contact at CopperDog, and the company access to use and explore Yodlee's software development kit ("SDK"). Specifically, the Evaluation Agreement provided access to Yodlee's core technology in the form of C# source code, Java binary files, sample application codes, and development environments. The Evaluation Agreement also provided use of Yodlee's aggregation services to pull real user account data from financial institutions.

12. On April 6, 2012, Zach Perret was provided login credentials to Yodlee's developer resources. The login credentials allowed downloading of a multitude of confidential,

and highly informative, technical documents including the "Yodlee Aggregation SDK FAQs," "Yodlee Aggregation SDK Quick Reference Guide," "Yodlee SDK Developers Guide v11.0," "Yodlee PersonalFinance SDK Implementation Guide v11.0," and application files.

13. According to its website, at around this time Defendant Plaid started operations, acquiring its first customer shortly thereafter. On July 20, 2012, Plaid became an official corporation of the State of Delaware.

14. On November 16, 2012, Zach Perret was provided another set of 30-day evaluation login credentials to Yodlee's developer resources.

15. On November 16, 2012, Defendant also received two pricing proposals from Yodlee that would grant Defendant a one-year license to use Yodlee's aggregation APIs. Along with those pricing proposals were hyperlinks to four documents containing Yodlee confidential technical and security information. Two of those documents, "Yodlee Categorization Engine Overview v11.0" and "Yodlee Data Model v11," contain notices that the technology presented in the documentation is "protected by one or more U.S. Patents or Patents Pending." Furthermore, it is highly likely that both of these documents were read by both co-founders of Defendant because both documents state that they should be read by the "Product Functional Lead" and "Technical Lead" of the licensee. Upon information and belief, in the case of Defendant, those people are Zach Perret and William Hockey, respectively.

16. On January 10, 2013, Defendant entered into a one-year services agreement ("Services Agreement") to begin fully licensing Yodlee's services. Pursuant to the Services Agreement, Defendant was required to pay Yodlee on January 21, 2013.

17. After three months of maintaining Defendant's user environment without payment, on April 9, 2013, Defendant was notified that the contract would be terminated if payment was not received by April 15, 2013.

18. On April 15, 2013, Defendant stated that it wanted to cancel the Services Agreement and avoid full payment. Defendant sent a payment amount for a portion of the total outstanding, and the Services Agreement was terminated.

19. Upon information and belief, Defendant has used the knowledge acquired through its prolonged use of Yodlee's technology, including Yodlee's technical documentation, developer resources, and aggregation platform, to develop competing software and services that also infringe the Asserted Patents. Upon information and belief, by leveraging its infringing software and services, Defendant has managed to raise at least $2.8 million in funding as of September 2013.

20. Upon information and belief, Defendant has sold and offered for sale and continues to sell and offer for sale use of its software and services in the United States, including in Delaware. Defendant instructs its customers on how to use and access its software and services from publicly available documentation on its website. Defendant encourages its customers to visit its developer page which provides code and support helpful to use and access its software and services.

21. Upon information and belief, Defendant has used and continues to use its software and services in the United States, including in Delaware, to provide account aggregation and personal financial management services to its customers.

22. Upon information and belief, Defendant has knowledge of the Asserted Patents by at least the date of this Complaint. Upon information and belief, at least Plaid founders Zach

Perret and William Hockey were aware since 2012 that Yodlee had issued and pending patents relating to its account aggregation and personal financial management technology.

PATENTS-IN-SUIT

23. The '077 patent, titled "Server-Side Web Summary Generation and Presentation," issued on March 6, 2001. A copy of the '077 patent is attached hereto as Exhibit A.

24. The '783 patent, titled "Apparatus and Methods for Automated Aggregation and Delivery of and Transactions Involving Electronic Personal Information or Data," issued on November 13, 2001. A copy of the '783 patent is attached hereto as Exhibit B.

25. The '451 patent, titled "System for Completing a Multi-Component Task Initiated by a Client Involving Web Sites without Requiring Interaction from the Client," issued on January 21, 2003. A copy of the '451 patent is attached hereto as Exhibit C.

26. The '548 patent, titled "Method and Apparatus for Restructuring of Personalized Data for Transmission from a Data Network to Connected and Portable Network Appliances," issued August 28, 2007. A copy of the '548 patent is attached hereto as Exhibit D.

27. The '520 patent, titled "Method and Apparatus for Restructuring of Personalized Data for Transmission from a Data Network to Connected and Portable Network Appliances," issued September 9, 2008. A copy of the '520 patent is attached hereto as Exhibit E.

28. The '535 patent, titled "Categorization of Summarized Information," issued July 6, 2010. A copy of the '535 patent is attached hereto as Exhibit F.

29. The '515 patent, titled "Categorization of Summarized Information," issued September 11, 2012. A copy of the '515 patent is attached hereto as Exhibit G.

30. The Asserted Patents have been assigned to Yodlee and Yodlee is the owner of all right, title, and interest in and to those patents, including the right to sue, enforce, and recover all damages, past and future, for all infringements.

31. Yodlee has incurred substantial effort and expenses to develop the technologies leading to the Asserted Patents.

COUNT I
PATENT INFRINGEMENT OF U.S. PATENT NO. 6,199,077

32. The allegations of paragraphs 1-31 are incorporated as though fully set forth herein.

33. Upon information and belief, Defendant had knowledge of the '077 patent at least as of the filing of this Complaint.

34. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '077 patent.

35. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '077 patent. Upon information and belief,

Defendant has acted and continues to act with specific intent to contribute to infringement of the '077 patent.

36. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '077 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '077 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

37. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

38. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

39. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT II
PATENT INFRINGEMENT OF U.S. PATENT NO. 6,317,783

40. The allegations of paragraphs 1-39 are incorporated as though fully set forth herein.

41. Upon information and belief, Defendant had knowledge of the '783 patent at least as of the filing of this Complaint.

42. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '783 patent.

43. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '783 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '783 patent.

44. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '783 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '783 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

45. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

46. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

47. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT III
PATENT INFRINGEMENT OF U.S. PATENT NO. 6,510,451

48. The allegations of paragraphs 1-47 are incorporated as though fully set forth herein.

49. Upon information and belief, Defendant had knowledge of the '451 patent at least as of the filing of this Complaint.

50. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that

Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '451 patent.

51. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '451 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '451 patent.

52. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '451 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '451 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

53. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

54. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

55. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT IV
PATENT INFRINGEMENT OF U.S. PATENT NO. 7,263,548

56. The allegations of paragraphs 1-55 are incorporated as though fully set forth herein.

57. Upon information and belief, Defendant had knowledge of the '548 patent at least as of the filing of this Complaint.

58. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '548 patent.

59. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '548 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '548 patent.

60. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '548 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '548 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

61. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

62. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

63. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT V
PATENT INFRINGEMENT OF U.S. PATENT NO. 7,424,520

64. The allegations of paragraphs 1-63 are incorporated as though fully set forth herein.

65. Upon information and belief, Defendant had knowledge of the '520 patent at least as of the filing of this Complaint.

66. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '520 patent.

67. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '520 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '520 patent.

68. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '520 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '520 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

69. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

70. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus,

Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

71. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT VI
PATENT INFRINGEMENT OF U.S. PATENT NO. 7,752,535

72. The allegations of paragraphs 1-71 are incorporated as though fully set forth herein.

73. Upon information and belief, Defendant had knowledge of the '535 patent at least as of the filing of this Complaint.

74. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology.

Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '535 patent.

75. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '535 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '535 patent.

76. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '535 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '535 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

77. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

78. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

79. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

COUNT VII
PATENT INFRINGEMENT OF U.S. PATENT NO. 8,266,515

80. The allegations of paragraphs 1-79 are incorporated as though fully set forth herein.

81. Upon information and belief, Defendant had knowledge of the '515 patent at least as of the filing of this Complaint.

82. Upon information and belief, various employees of Defendant, including at least founders Zach Perret and William Hockey, have been aware that Yodlee's aggregation and personal financial management technology was the subject of numerous patents since 2012. Upon information and belief, Defendant and at least its founders Zach Perret and William Hockey used their access to Yodlee's confidential services and product documentation through the NDA, Evaluation Agreement, and Services Agreement to learn how to implement the patented technology, and then proceeded to terminate their Services Agreement so that Defendant could offer competing software and services based upon the patented technology. Upon information and belief, Defendant has acted and continues to act with specific intent to cause infringement of the '515 patent.

83. Defendant's software and services are not staple articles of commerce and have no substantial uses other than to practice the '515 patent. Upon information and belief, Defendant has acted and continues to act with specific intent to contribute to infringement of the '515 patent.

84. Upon information and belief, Defendant has been and is now infringing, inducing infringement, and contributing to the infringement of the '515 patent by making, using, selling, and/or offering to sell, without authority, software and services covered by one or more claims of the '515 patent, and/or contributing to or inducing the same by third parties, all to the injury of Yodlee.

85. Defendant's acts of infringement have injured and damaged Yodlee, and such acts will continue to cause Yodlee to suffer damages.

86. Defendant's acts of infringement have been conducted with knowledge that the technology Defendant derived from Yodlee was protected by the Asserted Patents. Thus, Defendant acted with an objectively high likelihood that its services infringe Yodlee's valid patents, and that risk was known by Defendant at least by Defendant's review of Yodlee's technical documents, and by Defendant's use of the patented technology under the NDA, Evaluation Agreement, and Services Agreement. Defendant's acts of infringement have been, and continue to be, willful so as to warrant the enhancement of damages awarded as a result of its infringement.

87. Defendant's infringement has caused irreparable injury to Yodlee and will continue to cause irreparable injury until Defendant is enjoined from further infringement by this Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Yodlee prays for relief as follows:

(a) judgment that Defendant Plaid has infringed and is infringing the '077 patent, directly, contributorily, and by inducement;

(b) judgment that Defendant Plaid has infringed and is infringing the '783 patent, directly, contributorily, and by inducement;

(c) judgment that Defendant Plaid has infringed and is infringing the '451 patent, directly, contributorily, and by inducement;

(d) judgment that Defendant Plaid has infringed and is infringing the '548 patent, directly, contributorily, and by inducement;

(e) judgment that Defendant Plaid has infringed and is infringing the '520 patent, directly, contributorily, and by inducement;

(f) judgment that Defendant Plaid has infringed and is infringing the '535 patent, directly, contributorily, and by inducement;

(g) judgment that Defendant Plaid has infringed and is infringing the '515 patent, directly, contributorily, and by inducement;

(h) judgment that Defendant's infringement of the '077, '783, '451, '548, '520, '535, and '515 patents was and continues to be willful;

(i) a preliminary injunction and a permanent injunction preventing Defendant and its officers, directors, agents, servants, employees, attorneys, licensees, successors, assigns, and customers, and those in active concert or participation with any of them, from making, using, offering to sell, or selling in the United States or importing into the United States any software or services that infringe any claim of the '077, '783, '451, '548, '520, '535, and '515 patents, or contributing to or inducing the same by others;

(j) judgment against Defendant for money damages sufficient to compensate Yodlee for Defendant's infringement of the '077, '783, '451, '548, '520, '535, and '515 patents in an amount to be determined at trial;

(k) that any such money judgment be trebled as a result of the willful nature of Defendant's infringement;

(l) an accounting for infringing sales not presented at trial and an award by the Court of additional damages for any such infringing sales;

(m) that this Court declare this case an exceptional case pursuant to 35 U.S.C. § 285;

(n) costs and reasonable attorneys' fees incurred in connection with this action pursuant to 35 U.S.C § 285; and

(o) such other and further relief as this Court finds just and proper.

DEMAND FOR JURY TRIAL

Plaintiff Yodlee requests trial by jury on all issues so triable.

Dated: December 1, 2014

FISH & RICHARDSON P.C.

By: */s/ Robert M. Oakes*

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Attorneys for Plaintiff
YODLEE, INC.

Exhibit A

US006199077B1

(12) **United States Patent**
Inala et al.

(10) **Patent No.: US 6,199,077 B1**
(45) **Date of Patent: Mar. 6, 2001**

(54) **SERVER-SIDE WEB SUMMARY GENERATION AND PRESENTATION**

(75) Inventors: **Suman Kumar Inala**, Santa Clara; **P Venkat Rangan**, San Diego; **Ramakrishna Satyavolu**, Santa Clara, all of CA (US)

(73) Assignee: **Yodlee.com, Inc.**, Sunnyvale, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/323,598**

(22) Filed: **Jun. 1, 1999**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/208,740, filed on Dec. 8, 1998.

(51) **Int. Cl.**[7] **G06F 17/21**

(52) **U.S. Cl.** **707/501**; 709/202; 709/218; 713/202; 704/1

(58) **Field of Search** 707/501, 513, 707/1, 3, 4, 5, 9–10; 713/201–202; 705/26–27; 709/202, 218; 704/1

(56) **References Cited**

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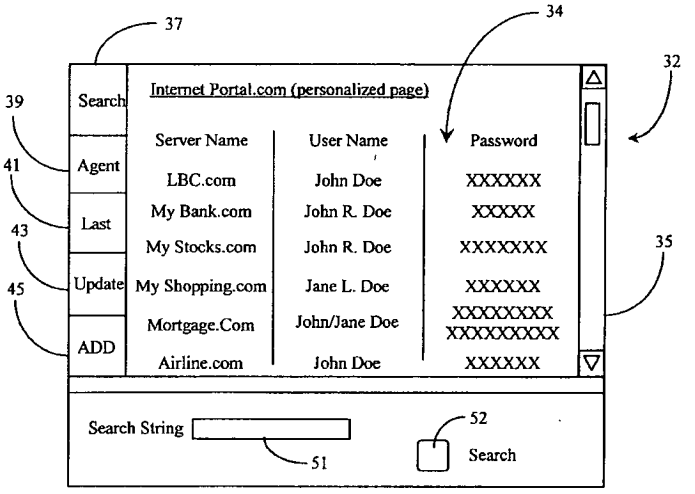
(57) **ABSTRACT**

A portal server includes a software agent configured to do summary searches for subscribers based on Internet destinations provided by the subscribers, to retrieve information from such destinations based on pre-programmed site information, and to download the summary information to the subscriber. The destinations and the nature of the information to be retrieved is pre-programmed. There is further a configuration and intitiation interface for a subscriber to set up and start a summary search. In some cases the summary searches are configured for individual clients as templates stored and retrieved at the Internet-connected server. Also in some cases retrieved information is immediately sent to the subscriber, and in other situations such information is saved at the portal to be retrieved by a subscriber at a later time. In preferred embodiments of the invention autologins are accomplished for a subscriber at Internet destinations by use of pre-stored configuration information.

12 Claims, 6 Drawing Sheets



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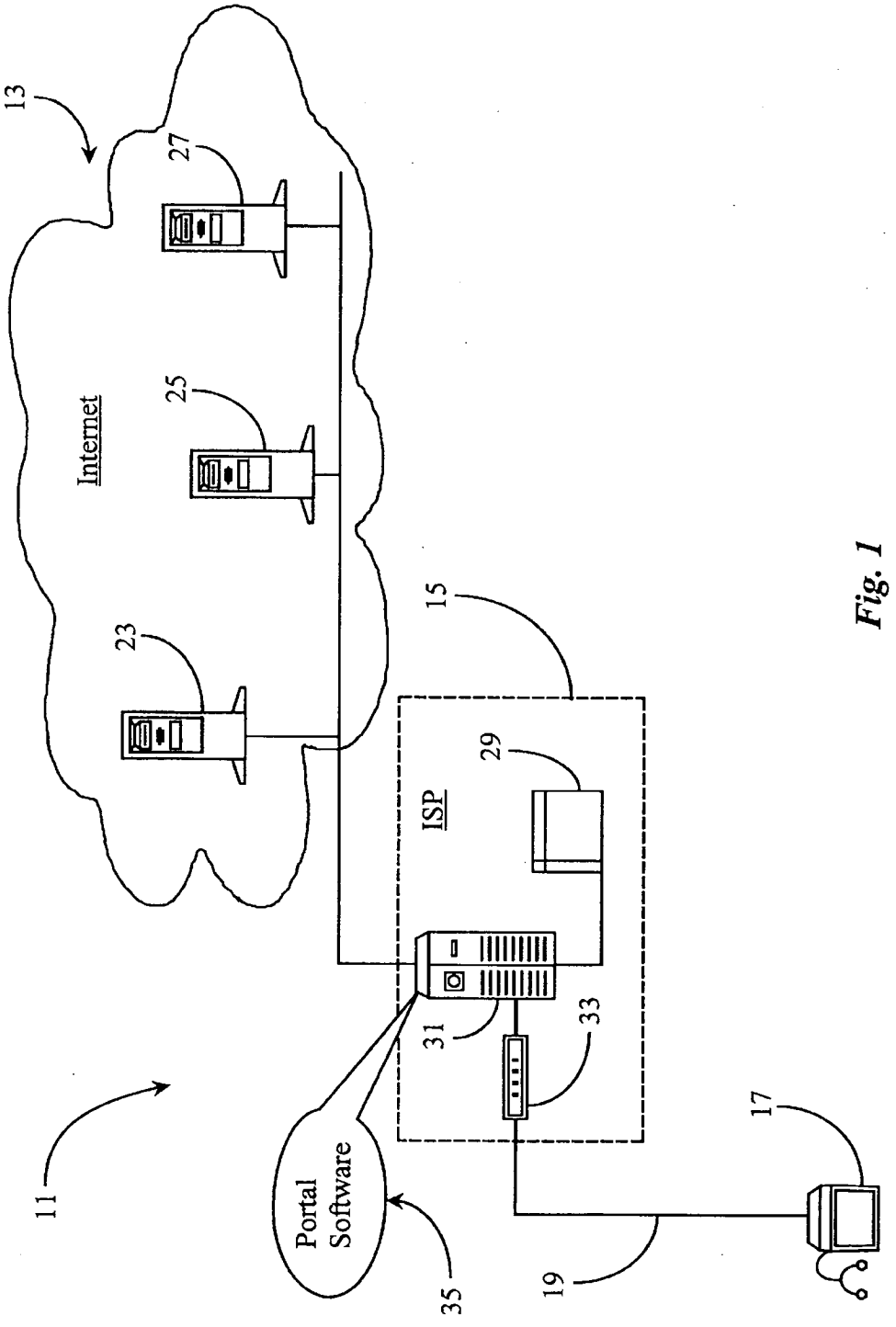

Fig. 1

Ex. 1002 Page 187

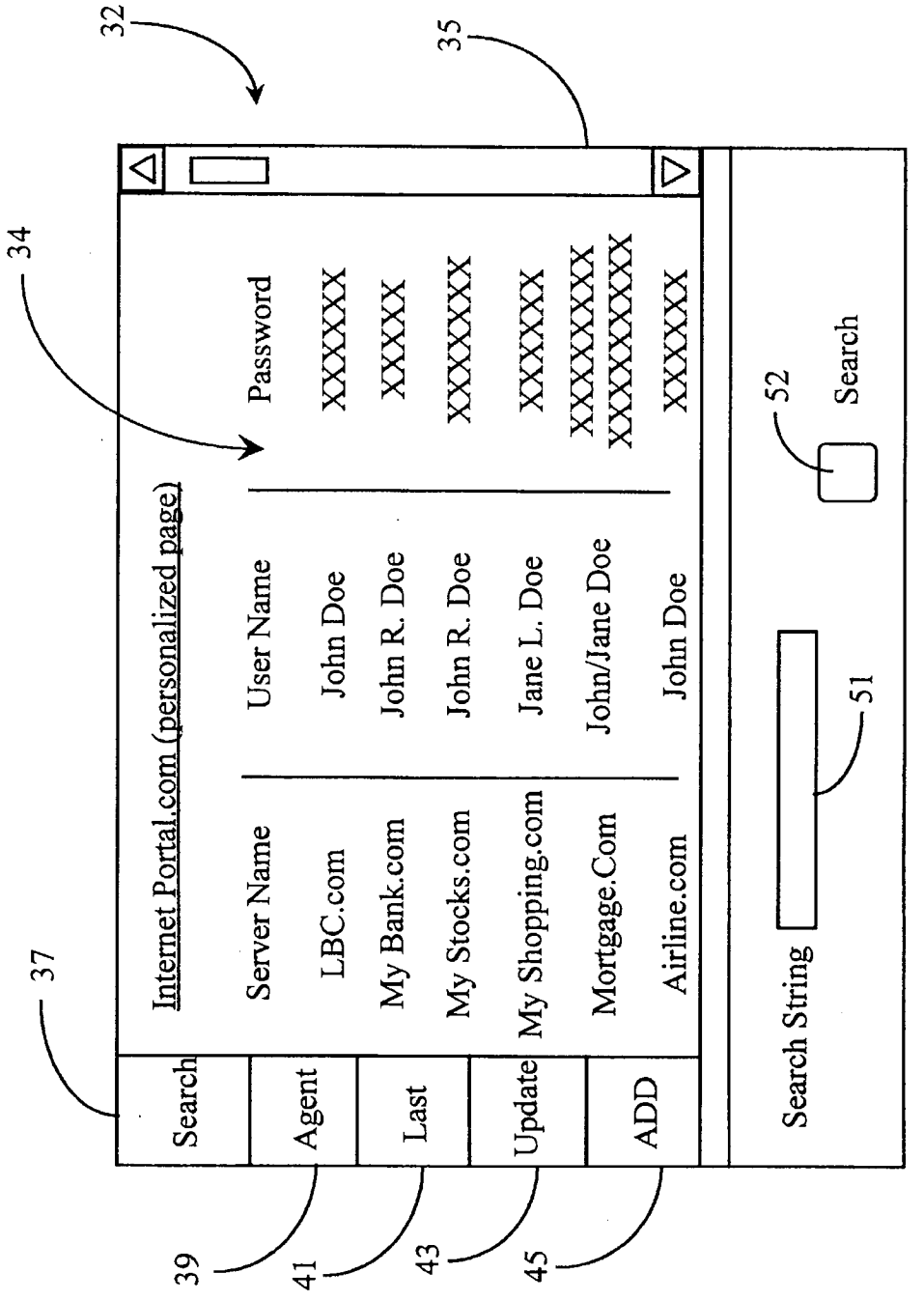

Fig. 2

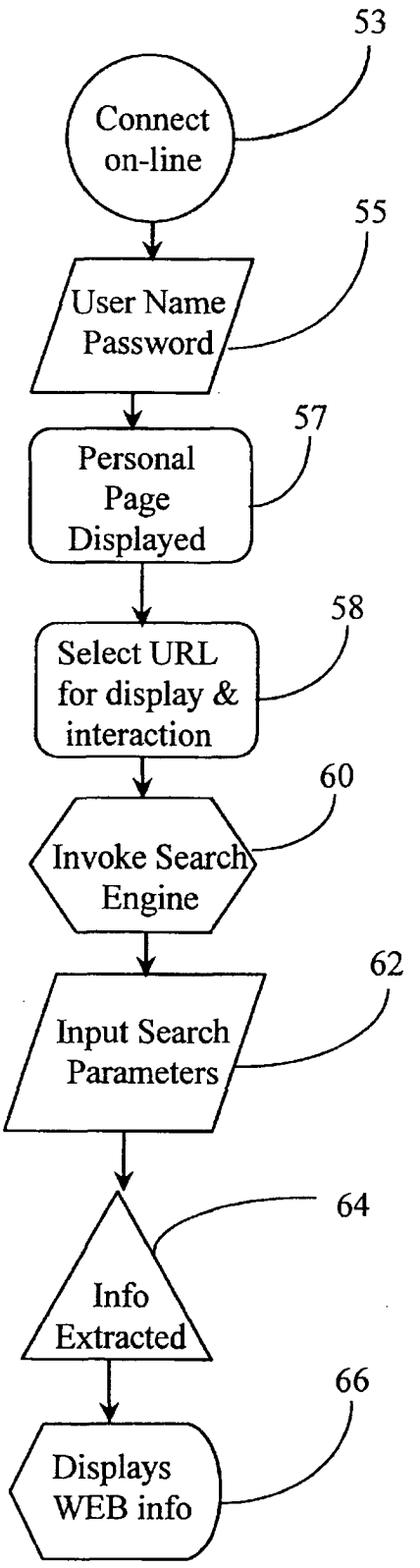
53
Connect on-line
55
User Name Password
57
Personal Page Displayed
58
Select URL for display & interaction
60
Invoke Search Engine
62
Input Search Parameters
64
Info Extracted
66
Displays WEB info

Fig. 3

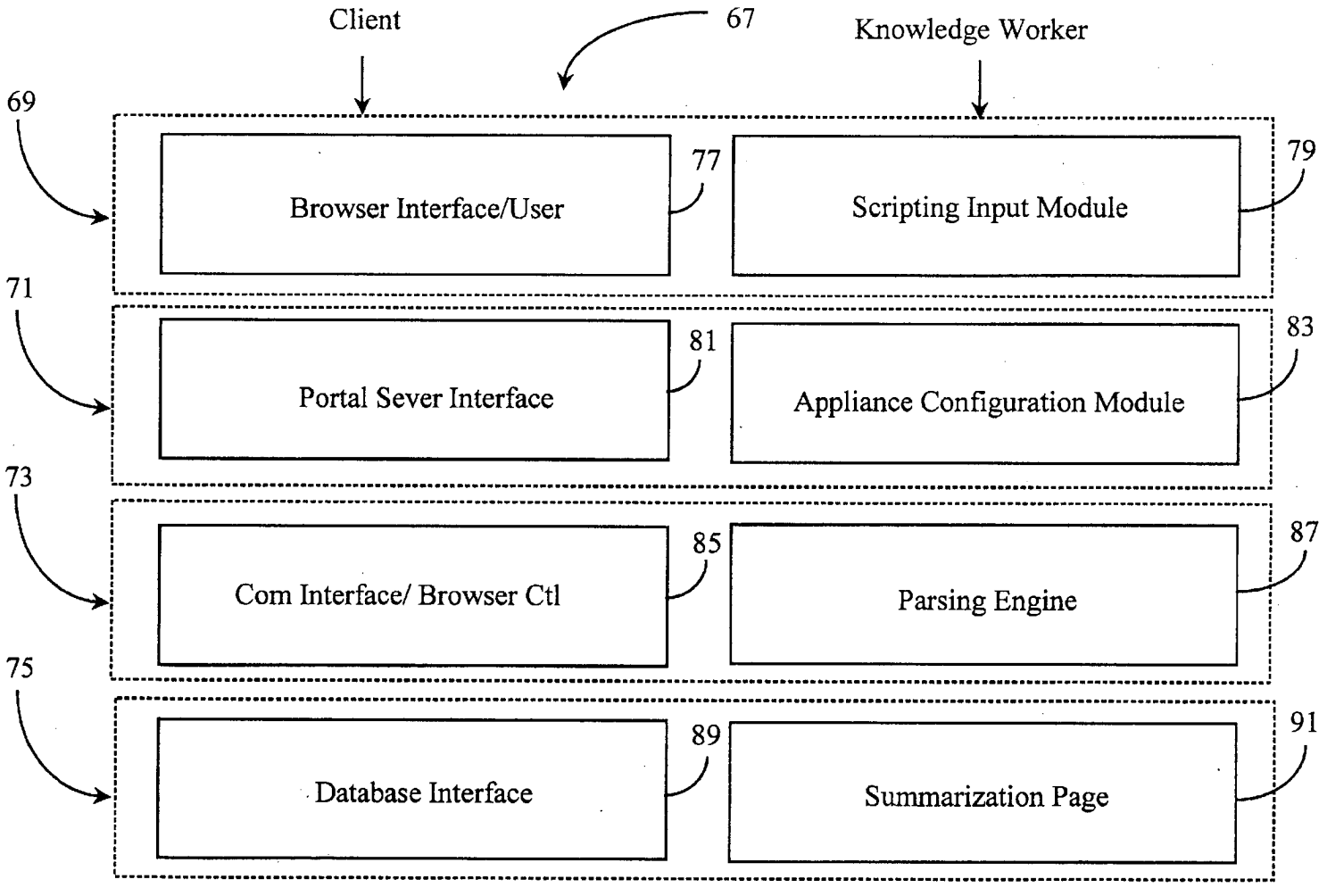

Fig. 4

Case 1:14-cv-01445-UNA Document 1-1 Filed 12/01/14 Page 6 of 18 PageID #: 27

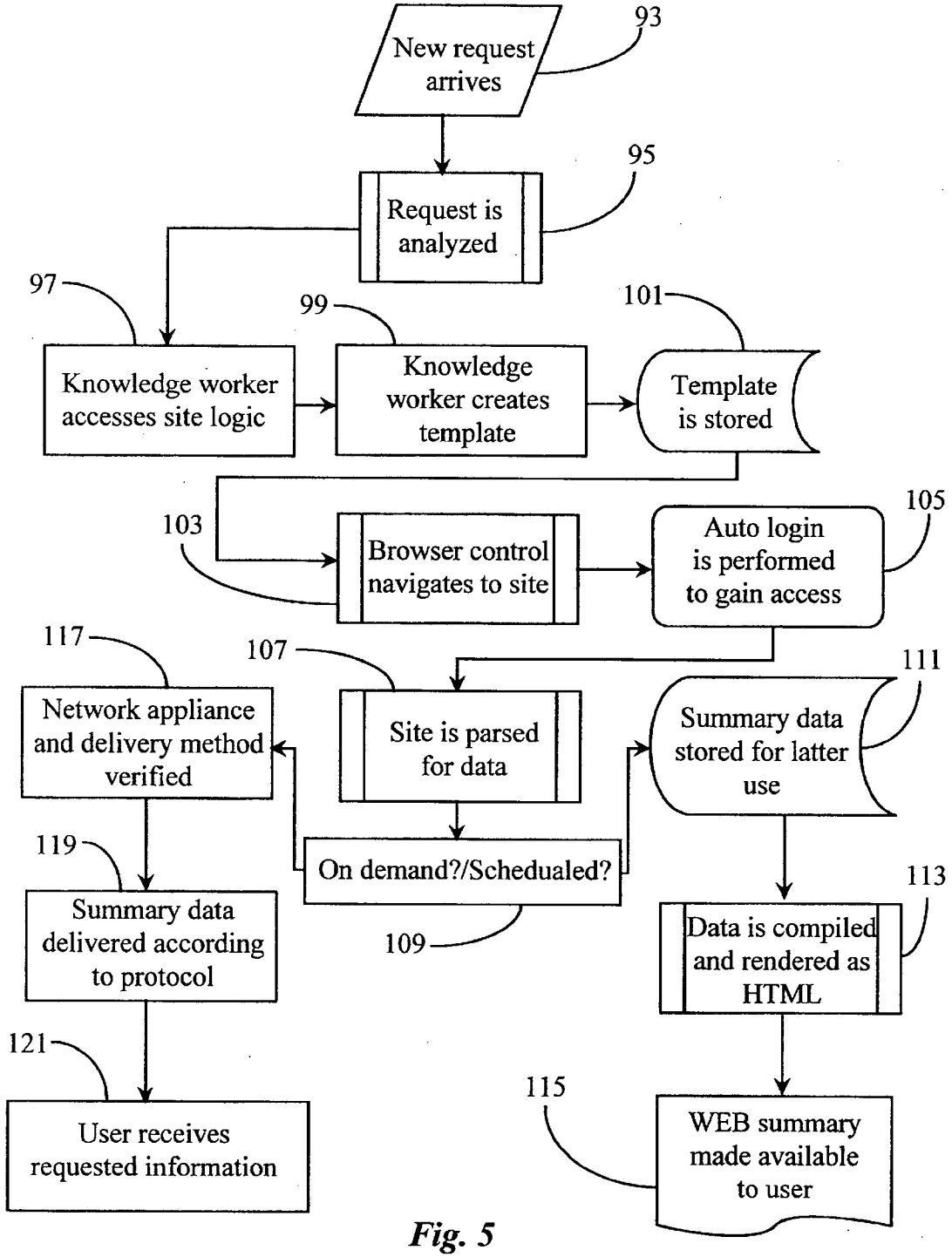
New request arrives
93
Request is analyzed
95
97
99
101
Knowledge worker accesses site logic
Knowledge worker creates template
Template is stored
103
Browser control navigates to site
Auto login is performed to gain access
105
117
107
111
Network appliance and delivery method verified
Site is parsed for data
Summary data stored for latter use
119
On demand?/Schedualed?
113
Summary data delivered according to protocol
109
Data is compiled and rendered as HTML
121
115
User receives requested information
WEB summary made available to user

Fig. 5

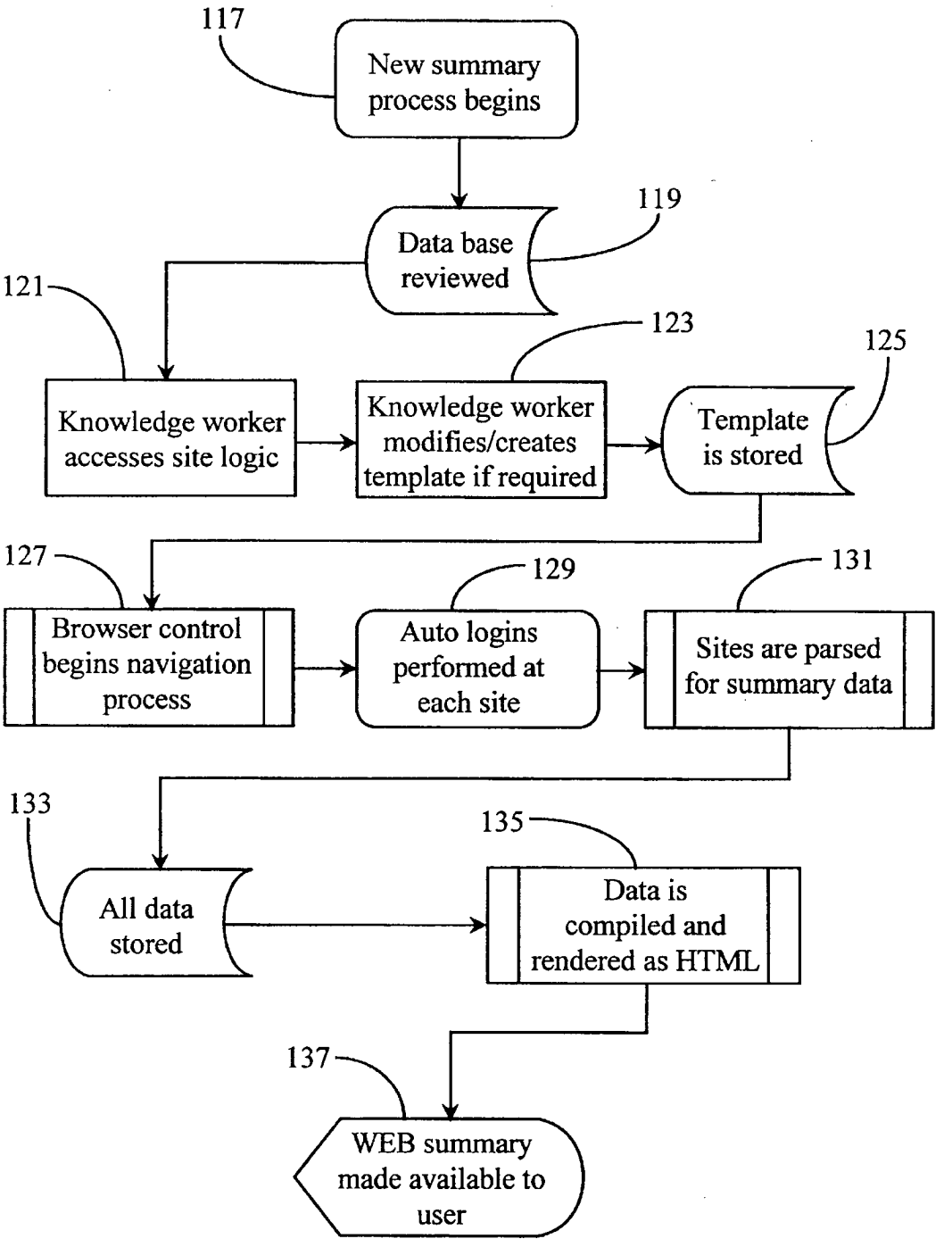
117
New summary process begins
119
Data base reviewed
121
123
125
Knowledge worker accesses site logic
Knowledge worker modifies/creates template if required
Template is stored
127
129
131
Browser control begins navigation process
Auto logins performed at each site
Sites are parsed for summary data
133
135
All data stored
Data is compiled and rendered as HTML
137
WEB summary made available to user

Fig. 6

SERVER-SIDE WEB SUMMARY GENERATION AND PRESENTATION

CROSS-REFERENCE TO RELATED DOCUMENTS

The present invention is a continuation in part (CIP) to patent application Ser. No. 09/208,740 entitled "Method and Apparatus for Providing and Maintaining a User-Interactive Portal System Accessible via Internet or other Switched-Packet-Network" filed on Dec. 8, 1998,pending, disclosure of which is incorporated herein in its entirety herein by reference.

FIELD OF THE INVENTION

The present invention is in the field of Internet navigation including various communication means and connection technologies and pertains more particularly to methods and apparatus, including software, for gathering summary information from users or enterprise-selected WEB sites and presenting the information as HTML to the user using either a push or pull technology.

BACKGROUND OF THE INVENTION

The information network known as the World Wide Web (WWW), which is a subset of the well-known Internet, is arguably the most complete source of publicly accessible information available. Anyone with a suitable Internet appliance such as a personal computer with a standard Internet connection may access (go on-line) and navigate to information pages (termed web pages) stored on Internet-connected servers for the purpose of garnering information and initiating transactions with hosts of such servers and pages.

Many companies offer various subscription services accessible via the Internet. For example, many people now do their banking, stock trading, shopping, and so forth from the comfort of their own homes via Internet access. Typically, a user, through subscription, has access to personalized and secure WEB pages for such functions. By typing in a user name and a password or other personal identification code, a user may obtain information, initiate transactions, buy stock, and accomplish a myriad of other tasks.

One problem that is encountered by an individual who has several or many such subscriptions to Internet-brokered services is that there are invariably many passwords and/or log-in codes to be used. Often a same password or code cannot be used for every service, as the password or code may already be taken by another user. A user may not wish to supply a code unique to the user such as perhaps a social security number because of security issues, including quality of security, that may vary from service to service. Additionally, many users at their own volition may choose different passwords for different sites so as to have increased security, which in fact also increases the number of passwords a user may have.

Another issue that can plague a user who has many passworded subscriptions is the fact that they must bookmark many WEB pages in a computer cache so that they may quickly find and access the various services. For example, in order to reserve and pay for airline travel, a user must connect to the Internet, go to his/her book-marks file and select an airline page. The user then has to enter a user name and password, and follow on-screen instructions once the page is delivered. If the user wishes to purchase tickets

from the WEB site, and wishes to transfer funds from an on-line banking service, the user must also look for and select the personal bank or account page to initiate a funds transfer for the tickets. Different user names and passwords may be required to access these other pages, and things get quite complicated.

Although this preceding example is merely exemplary, it is generally known that much work related to finding WEB pages, logging in with passwords, and the like is required to successfully do business on the WEB.

A service known to the inventor and described in the related case listed under the cross-reference to related documents section provides a WEB service that allows a user to store all of his password protected pages in one location such that browsing and garnering information from them is much simplified. A feature of the above service allows a user to program certain tasks into the system such that requested tasks are executed by an agent (software) based on user instruction. The service stores user password and log-in information and uses the information to log-in to the user's sites, thus enabling the user to navigate without having to manually input log-in or password codes to gain access to the links.

The above-described service uses a server to present a user-personalized application that may be displayed as an interactive home page that contains all of his listed sites (hyperlinks) for easy navigation. The application lists the user's URL's in the form of hyperlinks such that a user may click on a hyperlink and navigate to the page wherein login, if required, is automatic, and transparent to the user.

The application described above also includes a software agent that may be programmed to perform scheduled tasks for the user including returning specific summaries and updates about user-account pages. A search function is provided and adapted to cooperate with the software agent to search user-entered URL's for specific content if such pages are cached somewhere in their presentable form such as at the portal server, or on the client's machine.

In addition to the features described above, it is desirable that the software agent in conjunction with the search function be enabled to navigate to any URL or group of URL's, provided as input by a user or otherwise deemed appropriate by the service provider, for the purpose of providing summary information regarding updated content for each URL, which may be presented as an HTML information-page to the user.

What is clearly needed is a method and apparatus that can independently navigate to user-supplied or known URL's, login with the appropriate password information at each URL (if required), and return requested summary information to a user in the form of a human and machine-readable HTML document. Such a system would provide an effective summarization service wherein important information may be presented to a user without requiring that the user invoke hyperlinks at his personal portal home page.

SUMMARY OF THE INVENTION

In a preferred embodiment of the present invention an Internet Portal is provided, comprising an Internet-connected server; and a portal software executing on the server, including a summary software agent. The Portal maintains a list of Internet destinations specific for a subscriber, and the summary software agent accesses the Internet destinations, retrieves information according to pre-programmed criteria, and summarizes the retrieved information for delivery to the subscriber.

In one embodiment the Portal further comprises a configuration and intitiation interface for a subscriber to set up and start a summary search, and summary searches may be configured for individual clients as templates stored and retrieved at the Internet-connected server. In some cases summary information is stored to be later downloaded at request of the subscriber, and in others the information is immediately pushed to the client. Also in some embodiments autologins are performed for the subscriber at each Internet site according to a data stored for the subscriber at the Portal.

Methods for practicing the invention in several embodiments are provided as well in the descriptions that follow, and for the first time a system is enabled allowing subscribers to quickly access multiple WEB sites without lengthy log-in procedures, and to also summarize and download the data resulting from a summary search.

BRIEF DESCRIPTION OF THE DRAWINGS FIGURES

FIG. **1** is an overview of an Internet portal system and network according to an embodiment of the present invention.

FIG. **2** is an exemplary plan view of a personalized Portal home page application as it may be seen on a display monitor according to an embodiment of the present invention.

FIG. **3** is a flow diagram illustrating user interaction with the Internet portal of FIG. **1**.

FIG. **4** is a block diagram illustrating a summarization software agent and capabilities thereof according to an embodiment of the present invention.

FIG. **5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** operating in a user-defined mode.

FIG. **6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** in a User-independent smart mode with minimum user input.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to a preferred embodiment of the present invention, a unique Internet portal is provided and adapted to provide unique services to users who have obtained access via an Internet or other network connection from an Internet-capable appliance. Such an interface provides users with a method for storing many personal WEB pages and further provides search function and certain task-performing functions. The methods and apparatus of the present invention are taught in enabling detail below.

FIG. **1** is an overview of an Internet portal system **11** and Internet network **13** according to an embodiment of the present invention. Portal system **11**, in this embodiment, operates as an ISP in addition to a unique network portal, but may, in other embodiments be implemented as a stand-alone Internet server. In yet other embodiments the service and apparatus described herein may also be provided by such as a search and listing service (AltaVista™, Yahoo™) or by any other enterprise hosting a WEB-connected server.

Internet **13** is representative of a preferred use of the present invention, but should not be considered limiting, as the invention could apply in other networks and combinations of networks.

ISP **15** in this embodiment comprises a server **31**, a modem bank **33**, represented here by a single modem, and a mass storage repository **29** for storing digital data. The modem bank is a convenience, as connection to the server could be by another type of network link. ISP **15**, as is typical in the art, provides Internet access services for individual subscribers. In addition to well-known Internet access services, ISP **15** also provides a unique subscription service as an Internet portal for the purpose of storing many WEB pages or destinations along with any passwords and or personal codes associated with those pages, in a manner described in more detail below. This unique portal service is provided by execution of Portal Software **35**, which is termed by the inventors the Password-All suite. The software of the invention is referred to herein both as the Portal Software, and as the Password-all software suite. Also, in much of the description below, the apparatus of the invention is referred to by the Password-All terminology, such as the *Password-All Server or Password-All Portal.*

ISP **15** is connected to Internet **13** as shown. Other equipment known in the art to be present and connected to a network such as Internet **13**, for example, IP data routers, data switches, gateway routers, and the like, are not illustrated here but may be assumed to be present. Access to ISP **15** is through a connection-oriented telephone system as is known in the art, or through any other Internet/WEB access connection, such as through a cable modem, special network connection (e.g. T1), ISDN, and so forth. Such connection is illustrated via access line **19** from Internet appliance **17** through modem bank **33**.

In a preferred embodiment a user has access to Internet Password-All Portal services by a user name and password as is well known in the art, which provides an individualized WEB page to the subscriber. In another embodiment wherein a user has other individuals that use his or her Internet account, then an additional password or code unique to the user may be required before access to portal **31** is granted. Such personalized Portal WEB pages may be stored in repository **29**, which may be any convenient form of mass storage.

Three Internet servers **23**, **25**, and **27**, are shown in Internet **13**, and represent Internet servers hosted by various enterprises and subscribed to by a user operating appliance **17**. For example, server **23** may be a bank server wherein interactive on-line banking and account managing may be performed. Server **25** may be an investment server wherein investment accounts may be created and managed. Server **27** may be an airline or travel server wherein flights may be booked, tickets may be purchased, and so on. In this example, all three servers are secure servers requiring user ID and password for access, but the invention is not necessarily limited to just secure services.

In a preferred embodiment of the present invention, a subscribing user operating an Internet-capable appliance, such as appliance **17**, connects to Password-All Portal system **11** hosted by ISP **15**, and thereby gains access to a personalized, interactive WEB page, which in turn provides access to any one of a number of servers on Internet **13** such as servers **23**, **25**, and **27**, without being required to enter additional passwords or codes. In a preferred embodiment the software that enables this service is termed Password-All by the inventors. Password-All may be considered to be a software suite executing on the unique server, and in some instances also on the user's station (client). Additional interactivity provided by portal software **35** allows a connected user to search his listed pages for information associated with keywords, text strings, or the like, and allows a user to program user-defined tasks involving access and interaction with one or more Internet-connected servers such

as servers **23**, **25**, and **27** according to a pre-defined time schedule. These functions are taught in enabling detail below.

FIG. **2** is an illustration of a personalized portal page as may be seen on a display monitor according to an embodiment of the present invention, provided by Password-All Portal software **35** executing on server **31**, in response to secure access by a subscriber. Page **32** presents an interactive listing **34** of user-subscribed or member WEB pages, identified in this example by URL, but which may also be identified by any convenient pseudonym, preferably descriptive, along with user name and typically encrypted password information for each page. Listed in a first column under destination, are exemplary destinations LBC.com, My Bank.com, My Stocks.com, My shopping.com, Mortgage.com, and Airline.com. These are but a few of many exemplary destinations that may be present and listed as such on page **33**. In order to view additional listings listed but not immediately viewable from within application **33**, a scroll bar **35** is provided and adapted to allow a user to scroll up or down the list to enable viewing as is known in the art.

Items listed in list **34** in this example may be considered destinations on such as servers **23**, **25**, and **27** of FIG. **1**. Typically the URL associated with an item on this list will not take a user to a server, per se, but to a page stored on a server. User names and password data associated with each item in list **34** are illustrated in respective columns labeled user name, and password, to the right of the column labeled destination. Each listing, or at least a portion of each listing, is a hyperlink invoking, when selected, the URL to that destination. In some instances a particular service may have more than one associated URL. For example, My Bank.com may have more than one URL associated for such as different accounts or businesses associated also with a single subscriber. In this case there may be a sub-listing for different destinations associated with a single higher-level listing. This expedient is not shown, but given this teaching the mechanism will be apparent to those with skill in the art.

In some embodiments one page **33** may be shared by more than one user, such as a husband and wife sharing a common account and subscription. An instance of this is illustrated herein with respect to the server labeled Mortgage.com wherein both a John and a Jane Doe are listed together under the column labeled user name. In another embodiment, a network of individuals, perhaps business owners, authorized co-workers, investment parties, or the like may share one application. In this way, system **11** may be adapted for private individuals as well as business uses.

After gaining access to application **33** which is served via Internet portal server **31** of FIG. **1**, a user may scroll, highlight, and select any URL in his or her list **34** for the purpose of navigation to that particular destination for further interaction. Application **33** already has each password and user name listed for each URL. It is not necessary, however, that the password and user name be displayed for a user or users. These may well be stored transparently in a user's profile, and invoked as needed as a user makes selections. Therefore, a user is spared the need of entering passwords and user names for any destinations enabled by list **34**. Of course, each list **34** is built, configured and maintained by a subscribing user or users, and an editing facility is also provided wherein a user may edit and update listings, including changing URL's adding and deleting listings, and the like.

In another aspect of the invention new listings for a user's profile, such as a new passthrough to a bank or other enterprise page, may be added semi-automatically as follows: Typically, when a user opens a new account with an enterprise through interaction with a WEB page hosted by the enterprise, the user is required to provide certain information, which will typically include such as the user's ID, address, e-mail account, and so forth, and typically a new user name and password to access the account. In this process the user will be interacting with the enterprise's page from his/her browser. A Password-All plug-in is provided wherein, after entering the required information for the new enterprise, the user may activate a pre-determined signal (right click, key stroke, etc.), and the Password-All suite will then enter a new passthrough in the user's Password. All profile at the Password-All Portal server.

In a related method for new entries, the enterprise hosting the Password-All Portal may, by agreement with other enterprises, provide log-in and sign-up services at the Password-All Portal, with most action transparent to the user. For example, there may be, at the Password-All Portal, a selectable browser list of cooperating enterprises, such as banks, security services, and the like, and a user having a Password-All Portal subscription and profile may select among such cooperating enterprises and open new accounts, which will simultaneously and automatically be added to the Password-All Portal page for the user and to the server hosted by the cooperating enterprise. There may be some interactivity required for different accounts, but in the main, much information from the user's profile may be used directly without being re-entered.

The inventors have anticipated that many potential users may well be suspicious of providing passwords and user names to an enterprise hosting a Password-All Portal Server executing a service like Password-All according to embodiments of the present invention. To accommodate this problem, in preferred embodiments, it is not necessary that the user provide the cleartext password to Password. All. Instead, an encrypted version of each password is provided. When a user links to his passthrough page in Password-All at the Password-All Portal server, when he/she invokes a hyperlink, the encrypted password is returned to the user's system, which then, by virtue of the kept encryption key or master password, invokes the true and necessary password for connection to the selected destination. It is thus not necessary that cleartext passwords be stored at the Password-All Portal server, where they may be vulnerable to attack from outside sources, or to perceived misuse in other ways as well.

In a related safety measure, in a preferred embodiment of the invention, a user's complete profile is never stored on a single server, but is distributed over two or more, preferably more, servers, so any problem with any one server will minimize the overall effect for any particular user.

Password-All, as described above, allows a user to access a complete list of the user's usual cyberspace destinations, complete with necessary log-on data, stored in an encrypted fashion, so a user may simply select a destination (a hyperlink) in the Password-All list, and the user's browser then invokes the URL for the selected destination. In an added feature, Password-All may display banner ads and other types of advertisement during the navigation time between a hyperlink being invoked and the time the destination WEB page is displayed.

In yet another embodiment of the invention, a user/subscriber need not access the Password-All page to enjoy the advantages of the unique features provided. In this variation, a Plug-In is provided for the subscriber's WEB

browser. If the subscriber navigates by use of the local browser to a WEB page requiring a secure log-in, such as his/her on-line banking destination, when the subscriber is presented with an input window for ID and Password, the plug in may be activated by a predetermined user input, such as a hot key or right click of the mouse device. The plug-in then accesses, transparently, the Password-All page (which may be cached at the client), and automatically accesses and provides the needed data for log-on.

In yet another aspect of the invention a search option **37** allows a user to search list **34** for specific URL's based on typed input such as keywords or the like. In some cases, the number of URL's stored in list **34** can be extensive making a search function such as function **37** an attractive option. A criteria dialog box **51** illustrated as logically separated from and below list **34** is provided and adapted to accept input for search option **37** as is known in the art. In one embodiment, search option **37** may bring up a second window wherein a dialog box such as box **51** could be located.

In another aspect of the invention the search function may also be configured in a window invoked from window **33**, and caused to search all or selected ones of listed destinations, and to return results in a manner that may be, at least to some extent, configured by a user. For example, a dialog box may be presented wherein a user may enter a search criteria, and select among all of the listed destinations. The search will then be access each of the selected destinations in turn, and the result may be presented to the user as each instance of the criteria is found, or results may be listed in a manner to be accessed after the search.

Preferably the search function is a part of the Password-All Portal software, available for all users, and may be accessed by hyperlinks in user's personal pages. In some embodiments users may create highly individualized search functions that may be stored in a manner to be usable only by the user who creates such a function.

In many aspects of the present invention, knowledge of specific WEB pages, and certain types of WEB pages, is highly desirable. In many embodiments characteristics of destination WEB pages are researched by persons (facilitators) maintaining and enhancing Password-All Portal software **35**, and many characteristics may be provided in configuration modules for users to accomplish specific tasks. In most cases these characteristics are invoked and incorporated transparent to the user.

In yet another aspect of the present invention, the Password-All suite is structured to provide periodic reports to a user, in a manner to be structured and timed by the user, through the user's profile. For example, reports of changes in account balances in bank accounts, stock purchases, stock values, total airline travel purchases, frequent-flier miles, and the like may be summarized and provided to the users in many different ways. Because the Password-All Portal server with the Password-All software site handles a broad variety of transactional traffic for a user, there is an opportunity to summarize and collect and process statistics in many useful ways. In preferred embodiments of the invention such reports may be furnished and implemented in a number of different ways, including being displayed on the user's secure personal WEB page on the Password-All Portal.

In addition to the ability of performing tasks as described above, task results including reports, and hard documents such as airline tickets may be sent over the Internet or other data packet-networks to user-defined destinations such as fax machines, connected computer nodes, e-mail servers, and other Internet-connected appliances. All tasks may be set-up and caused to run according to user-defined schedules while the user is doing something else or is otherwise not engaged with the scheduled task.

In another embodiment of the present invention, recognizing the increasing use of the Internet for fiscal transactions, such as purchasing goods and services, a facility is provided in a user's profile to automatically track transactions made at various destinations, and to authorize payment either on a transaction-by-transaction basis, or after a session, using access to the user's bank accounts, all of which may be pre-programmed and authorized by the user.

Other functions or options illustrated as part of application **35** include a last URL option **41**, an update function **43**, and an add function **45**. Function **41** allows a user to immediately navigate to a last visited URL. Update function **43** provides a means of updating URL's for content and new address. An add function enables a user to add additional URL's to list **34**. Similarly, function **45** may also provide a means to delete entries. Other ways to add accounts are described above. It should be noted that the services provided by the unique Password-All Portal in embodiments of the present invention, and by the Password-All software suite are not limited to destinations requiring passwords and user names. The Password-All Portal and software in many embodiments may also be used to manage all of a user's bookmarks, including editing of bookmarks and the like. In this aspect, bookmarks will typically be presented in indexed, grouped, and hierarchical ways.

There are editing features provided with Password-All for adding, acquiring, deleting, and otherwise managing bookmarks. As a convenience, in many embodiments of the invention, bookmarks may be downloaded from a user's Password-All site, and loaded onto the same user's local browser. In this manner, additions and improvements in the bookmark set for a user may be used without the necessity of going to Password-All. Further, bookmarks may be uploaded from a user's local PC to his/her home page on the Password-All site by use of one or more Password-All plug-ins.

It will be apparent to the skilled artisan, given the teaching herein, that the functionality provided in various embodiments of the invention is especially applicable to Internet-capable appliances that may be limited in input capability. For example, a set-top box in a WEB TV application may well be without a keyboard for entering IDs and Passwords and the like. In practice of the present invention keyboard entry is minimized or eliminated. The same comments apply to many other sorts of Internet appliances.

In preferred embodiments of the invention, once a subscriber-user is in Password-All, only an ability to point-and-click is needed for all navigation. To get into the Password-All site, using a limited apparatus, such as an appliance without a keyboard or keypad, a Smartcard or embedded password may be used, or some other type of authentication.

It will be apparent to one with skill in the art that an interactive application such as application **33** may be provided in a form other than a WEB page without departing from the spirit and scope of the present invention. For example, an application such as application **33** may be provided as a downloadable module or program that may be set-up and configured off-line and made operational when on-line.

FIG. **3** is a flow diagram illustrating user interaction with the Internet Password-All Portal of FIG. **1**. The following

process steps illustrated, according to an embodiment of the present invention, are intended to illustrate exemplary user-steps and automated software processes that may be initiated and invoked during interaction with an Internet portal of the present invention such as portal **31** of FIG. **1**. In step **53** a user connects to the Internet or another previously described switched-packet network via a compatible appliance such as Internet appliance **17** of FIG. **1**.

At step **55**, a user enters a user-name and password, which, in one embodiment, may simply be his ISP user name and password. In another embodiment, a second password or code would be required to access an Internet portal such as portal server **31** of FIG. **1** after logging onto the Internet through the ISP. In some cases, having a special arrangement with the ISP, there may be one password for both Internet access through the ISP and for Password-All. At step **57** a personal WEB page such as page **32** of FIG. **2** is displayed via Internet portal server **31**. At minimum, the personalized WEB page will contain all user configured URL's, and may also be enhanced by a search function, among other possibilities.

In step **58** a user will, minimally, select a URL from his or her bookmarked destinations, and as is known by hyperlink technology, the transparent URL will be invoked, and the user will navigate to that destination for the purpose of normal user interaction. In this action, the Password-All Portal software transparently logs the user on to the destination page, if such log-on is needed.

At step **60** the user invokes a search engine by clicking on an option such as described option **37** of FIG. **2**. At step **62**, the user inputs search parameters into a provided text field such as text field **51** of FIG. **2**. After inputting such parameters, the user starts the search by a button such as button **52**. The search engine extracts information in step **64**. Such information may be, in one option, of the form of URL's fitting the description provided by search parameters. A searched list of URL's may be presented in a separate generated page in step **66** after which a user may select which URL to navigate to. In an optional search function, the user may provide search criteria, and search any or all of the possible destinations for the criteria.

In another embodiment wherein WEB pages are cached in their presentable form, information extracted in step **64** may include any information contained in any of the stored pages such as text, pictures, interactive content, or the like. In this case, one displayed result page may provide generated links to search results that include the URL associated with the results. Perhaps by clicking on a text or graphic result, the associated WEB page will be displayed for the user with the result highlighted and in view with regards to the display window.

Enhanced Agent for WEB Summaries

In another aspect of the present invention, a software agent, termed a gatherer by the inventors, is adapted to gather and return summary information about URL's according to user request or enterprise discretion. This is accomplished in embodiments of the present invention by a unique scripting and language parsing method provided by the inventor wherein human knowledge workers associated with the service provide written scripts to such a gatherer according to subscriber or enterprise directives. Such a software gatherer, and capabilities thereof, is described in enabling detail below.

Referring now to FIG. **1**, there is illustrated an exemplary architecture representing a portal service-network which, in this case is hosted by ISP **15**. Portal software **35** in this embodiment executes on portal server **31** set-up at the ISP location. Mass repository **29** is used for storing subscriber information such as passwords, login names, and the like. Internet servers **23**, **25**, and **27** represent servers that are adapted to serve WEB pages of enterprises patronized by a subscriber to the portal service such as one operating Internet appliance **17**.

The main purpose of portal software **35** as described above with reference to FIG. **2**, is to provide an interactive application that lists all of the subscriber's WEB sites in the form of hyperlinks. When a user invokes a hyperlink from his personal list, software **35** uses the subscriber's personal information to provide an automatic and transparent login function for the subscriber while jumping the subscriber to the subject destination.

Referring again to FIG. **2**, an interactive list **34** containing user-entered hyperlinks and a set of interactive tools is displayed to a subscriber by portal software **35** of FIG. **1**. One of the tools available to a subscriber interacting with list **34** is agent (software) **39**. Agent **39** may be programmed to perform certain tasks such as obtaining account information, executing simple transactions, returning user-requested notification information about upcoming events, and so on. Search function **37** and update function **43** may be integrated with agent **39** as required to aid in functionality.

It is described in the above disclosure that agent **39** may, in some embodiments, search for and return certain summary information contained on user-subscribed WEB pages, such as account summaries, order tracking information and certain other information according to user-defined parameters. This feature may be programmed by a user to work on a periodic time schedule, or on demand.

In the following disclosure, enhancements are provided to agent **39**. Such enhancements, described in detail below, may be integrated into agent **39** of portal software **35** (FIGS. **1** and **2**); and may be provided as a separate agent or gatherer to run with portal software **35**; or may, in some embodiments, be provided as a standalone service that is separate from portal software **35**.

FIG. **4** is a block diagram illustrating a summarization software agent **67** and various capabilities and layers thereof according to an embodiment of the present invention. Summarization agent **67**, hereinafter termed gatherer **67**, is a programmable and interactive software application adapted to run on a network server. Gatherer **67** may, in one embodiment, be integrated with portal software **35** of FIG. **1** and be provided in the form of a software module separate from agent **39** (FIG. **2**). In another embodiment, gatherer **67** may be a part of agent **39** as an enhancement to the function of that agent as previously described. In still another embodiment, gatherer **67** may be provided as a parent or client-side application controlled by a separate service from the portal service described above.

In this exemplary embodiment gatherer **67** is a multi-featured software application having a variety of sub-modules and interface modules incorporated therein to provide enhanced function. Gatherer **67** has a client/service interface layer **69** adapted to enable directive input from both a client (user) and a knowledge worker or workers associated with the service. A browser interface **77** is provided in layer **69**, and adapted to provide access to application **67** from a browser running on a client's PC or other Internet or network appliance. Interface **77** facilitates bi-directional communication with a user's browser application (not shown) for the purpose of allowing the user to input summary requests into gatherer **67** and receive sum-

mary results. Interface **77** supports all existing network communication protocols such as may be known in the art, and may be adapted to support future protocols.

Layer **69** also comprises a unique input scripting module **79** that is adapted to allow a human knowledge worker to create and supply directive scripts containing the site logic needed by gatherer **67** to find and retrieve data from a WEB site. In this case, gatherer **67** executes and runs on a network server such as server **31** of FIG. **1**. However, this is not required in order to practice the present invention.

It is assumed in this example that gatherer **67** is part of the portal software suite **35** running on server **31** of FIG. **1**. Gatherer **67** may be provided as several dedicated agents, or as one multi-functional agent without departing from the spirit and scope of the present invention. For example, one gatherer **67** may be scripted and programmed to execute a single user request with additional gatherers **67** called upon to perform additional user-requests. Alternatively, one gatherer **67** may be dedicated and assigned to each individual user and adapted to handle all requests from that user.

Interface layer **69** facilitates exchange of information from both a client and a knowledge worker. A client operating a WEB browser with an appropriate plug-in is enabled to communicate and interact with gatherer **67**. For example, a user may enter a request to return a summary of pricing for all apartments renting for under $1000.00 per month located in a given area (defined by the user) from apartments.com (one of user's registered WEB sites). The just mentioned request would be categorized as either a periodic request, or a one time (on demand) request. The communicated request initiates a service action wherein a knowledge worker associated with the service uses module **79** to set-up gatherer **67** to perform it's function. Module **79** is typically executed from a network-connected PC operated by the knowledge worker.

According to an embodiment of the present invention, a unique scripting method facilitated by module **79** is provided to enable gatherer **67** to obtain the goal information requested by a user. For example, the above mentioned example of WEB-site apartments.com has a specific HTML (hyper-text-markup-language) logic that it uses to create its site and post its information. Such site logic is relatively standard fare for a majority of different sites hosted by different entities. Using this knowledge, a knowledge worker creates a site-specific script or template for gatherer **67** to follow. Such a template contains descriptions and locations of the appropriate fields used, for example, at apartments.com. Apartment description, location, deposit information, rental information, agent contact information, and other related fields are matched in terms of location and label description on the template created with module **79**. Completed templates are stored in a database contained in a storage facility such as, perhaps, repository **29** of FIG. **1**. Such templates may be reused and may be updated (edited) with new data.

In one embodiment, one script may contain site logics for a plurality of WEB pages, and instructions for specific navigational instruction and password or login information may be contained therein and executed serially, such as one site at a time. It is important to note that the knowledge worker or workers may perform much of their scripting via automatic controls such as by object linking and embedding (OLE) and a minor portion of scripting may be performed manually in an appropriate computer language, many of which are known in the art).

Gatherer **67** also has a process layer **71** adapted for internal information gathering and parameter configuration. An optional portal server interface **81** is provided and adapted to allow gatherer **67** to provide updated information to a user's list of hyperlinks and also to obtain data from portal server **31** if required. For example, required hyperlinks may be mirrored from a user's home page to a scripting template for navigational purposes. In an embodiment wherein gatherer **67** is part of a standalone service, a convention for providing user login information may be supplied at the client's end when a request is made. For example, an encrypted password may be supplied by a client plug-in and gatherer **67** may temporarily borrow the user's encryption key when auto login is performed.

An appliance configuration module **83** is provided and adapted to allow a user to define and configure an Internet appliance to communicate with the service and receive summary information. Such appliances may include but are not limited to palm top PC's, lap top PC's, cellular telephones, WEB TV's, and so on. Typically, a user will be presented a configuration WEB page from a network server that displays in his browser window on his desktop PC. The page contains an interface for communicating device parameters and communication protocol types to module **83**. In this way, a user may configure a preferred device for receipt of summary information. Device parameters and communication protocols inherent to such a device are incorporated into the scripting of the site template and are used as instructions for WEB summary delivery.

A navigation layer **73** is provided and adapted to perform the function of external site navigation and data gathering for gatherer **67**. To this end, a communication interface/browser control module **85** is provided and adapted to function as a WEB browser to access WEB sites containing WEB data. Control **85** receives it's instruction from the scripted template created by the knowledge worker.

A parsing engine **87** is provided and adapted to parse individual WEB sites according to a template created via scripting module **79**. Parsing engine **87** may be a PERL engine, an IE HTML engine, or any other or combination of known parsing engines. The template (not shown) tells control **85** and parsing engine **87** where to go and what fields at the destination site to look for to access desired data. Once the data fields are located, parsing engine **87** gathers current data in the appropriate field, and returns that data to the service for further processing such as data conversion, compression and storage, and the like.

Because WEB sites use tools that use consistent logic in setting up their sites, this logic may be used by the summarization service to instruct control **83** and parsing engine **87**. The inventor provides herein an exemplary script logic for navigating to and garnishing data from Amazon™.com. The hyperlinks and/or actual URLs required for navigation are not shown, but may be assumed to be included in the template script. In this example, a company name Yodlee (known to the inventors) is used in the script for naming object holders and object containers, which are in this case Active X™ conventions. In another embodiment, Java™ script or another object linking control may be used. The scripted template logic example is as follows:

```
# Site amazon.orders.x - shows status of orders from Amazon
login( 7 );
get( "/exec/obidos/order-list/" );
my @tables = get_tables_containing_text( "Orders:" );
my $order_list = new Yodlee::ObjectHolder( 'orders' );
```

-continued

```
$order_list->source( 'amazon' );
$order_list->link_info( get_link_info( ) );
my @href_list;
my @container_list;
foreach my $table ( @tables ) {
        my @rows = get_table_rows( );
foreach my $i ( 0 . . $#rows ) {
        select_row( $i );
        my $text = get_text( $rows[ $i ] );
        next if $text =~ /Orders:|Status/;
        my @items = get_row_items( );
        next unless @items >= 4;
        my( $order_num, $date, $status );
        select_cell( 1 );
        $order_num = get_cell_text( );
        my $href = get_url_of_first_href( get_cell( ) );
        select_cell( 2 );
        $date = get_cell_text( );
        select_cell( 3 );
        $status = get_cell_text( );
        next unless defined $order_num and defined $date and defined
$status;
        my $order = new Yodlee::Container( 'orders' );
        $order->order_number( $order_num );
        $order->date( $date );
        $order->status( $status );
        $order_list->push_object( $order );
        if( defined $href ) {
          push( @href_list, $href );
          push( @container_list, $order );
foreach my $i ( 0 . . $#href_list ) {
        get( $href_list[ $i ] );
        @tables = get_tables_containing_text( "Items Ordered:" );
foreach my $table ( @tables ) {
        my @rows = get_table_rows( );
foreach my $j ( 0 . . $#rows ) {
        select_row( $j );
        my $href = get_url_of_first_href( get_row( ) );
        next unless defined $href;
        my @child_list = get_children( get_row( ), 'a' );
        next unless defined $child_list[ 0 ];
        my $text = get_text( $child_list[ 0 ] );
        $container_list[ i ]->description( $text );
      }
    }
}
result( $order_list );
```

The above example is a script that instructs control **85** and parser **87** to navigate to and obtain data from Amazon™.com, specifically that data that reflects the user's current order status. Scripts may also be written to obtain virtually any type of text information available from any site. For example, a user may wish to obtain the New York Times headlines, the top ten performing stocks, a comparative list of flights from San Francisco to New York, etc. In one embodiment, metadata may be associated with and used in-place of the actual scripted language for the purpose of reducing complication in the case of many scripts on one template.

A data processing layer **75** is provided and adapted to store, process, and present returned data to users according to enterprise rules and client direction. A database interface module **89** is provided and adapted to provide access for gatherer **67** to a mass repository such as repository **29** of FIG. **1**, for the purpose of storing and retrieving summary data, templates, presentation directives, and so on. Gatherer agent **67** may also access data through interface **89** such as profile information, user account and URL information, stored site logics and so on. Data scanned from the WEB is stored in a canonical format in a database such as repository **29**, or in another connected storage facility. All stored data is, of course, associated with an individual who requested it, or for whom the data is made available according to enterprise discretion.

A summarization page module **91** is provided and adapted to organize and serve a WEB summary page to a user. Module **91**, in some embodiments, may immediately push a WEB summary to a user, or module **91** may store such summarized pages for a user to access via a pull method, in which case a notification may be sent to the user alerting him of the summary page availability. Summarization module **91** includes an HTML renderer that is able to format data into HTML format for WEB page display. In this way, e-mail messages and the like may be presented as HTML text on a user's summarization page. Moreover, any summary data from any site may include an embedded hyperlink to that site. In this way, a user looking at an e-mail text in HTML may click on it and launch the appropriate e-mail program. Other sites will, by default, be linked through the summary page.

Many users will access their summary data through a WEB page as described above, however, this is not required in order to practice the present invention. In some embodiments, users will want their summary information formatted and delivered to one of a variety of Internet-capable appliances such as a palm top or, perhaps a cell phone. To this end, the renderer is capable of formatting and presenting the summary data into a number of formats specific to alternative devices. Examples of different known formats include, but are not limited to XML, plain text, VoxML, HDML, audio, video, and so on.

In a preferred embodiment of the present invention, gather **67** is flexible in such a way as it may act according to enterprise rules, client directives, or a combination of the two. For example, if a user makes a request for summary data about a user/subscribed WEB page to be periodically executed and presented in the form of a HTML document, then gather **67** would automatically access and analyze the required internal information and user provided information to formulate a directive. Using scripting module **79**, a knowledge worker provides a template (if one is not already created for that site) that contains the "where to go" and "what to get" information according to site logic, user input, and known information.

Alternatively, if a user requests a summary about data on one of his sites such as, perhaps, current interest rates and re-finance costs at his mortgage site, the service may at it's own discretion provide an additional unsolicited summary from an alternate mortgage site for comparison. This type of summarization would be designed to enhance a user's position based on his profile information. In this case, updated data about latest interest rates, stock performances, car prices, airline ticket discounts, and so on would be stored by the service for comparative purposes. If a user request for a summary can be equaled or bettered in terms of any advantage to the user, such summary data may be included.

In many cases, created templates may be re-used unless a WEB site changes it's site logic parameters, in which case, the new logic must be accessed and any existing templates must be updated, or a new template may be created for the site. The templates contain site-specific script obtained from the site and stored by the knowledge workers. In one embodiment, companies hosting WEB pages automatically provide their site logics and any logic updates to the service by virtue of an agreement between the service and the WEB hosts.

In an alternative embodiment gatherer **67** may be implemented as a client application installed on a user's PC. In

this embodiment, a user would not be required to supply log-in or password codes. Summarization scripts may be sent to the client software and templates may be automatically created with the appropriate scripts using log-in and password information encrypted and stored locally on the user's machine.

In addition to providing WEB summary information, gatherer **67** may also be used to provide such as automatic registration to new sites, and for updating old registration information to existing sites. For example, if a user whishes to subscribe, or register at a new site, only the identification of the site is required from the user as long as his pertinate information has not changed. If a new password or the like is required, gatherer **67** through control module **73** may present login or password codes from a list of alternative codes provided by a user. In another embodiment, a database (not shown) containing a wealth of password options may be accessed by gatherer **67** for the purpose of trying different passwords until one is accepted by the site. Once a password or log-in code is accepted, it may be sent to a user and stored in his password list and at the network level.

It will be apparent to one with skill in the art that a software application such as gatherer **67** may be implemented in many separate locations connected in a data network. For example, a plurality of gatherer applications may be distributed over many separate servers linked to one or more mass repositories. Client applications include but are not limited to a WEB-browser plug-in for communicating to the service. Plug-in extensions may also be afforded to proxy servers so that auto-login and data access may still be performed transparent to a user.

In another embodiment, plug-ins enabling communication with gatherer **67** may be provided and configured to run on other network devices for the purpose of enabling such a device to initiate a request and get a response without the need for a desktop computer.

In most embodiments a user operating a desktop PC will order a one time or periodic summary related to some or all of his subscribed WEB sites. A logical flow of an exemplary request/response interaction is provided below.

FIG. **5** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** operating in a user-defined mode. In step **93**, a user has initiated a new request for a summary (summary order). It is assumed for the purpose of discussion, that the request of step **93** involves a site wherein no template has been created. In step **95**, the request is received and analyzed. A knowledge worker will likely perform this step. The new request may be posted to the user's portal home page, sent directly to gatherer **67**, or even communicated through e-mail or other media to the service.

In step **97** a knowledge worker accesses particular site logic associated with the request URLs. For example, if the request involves a plurality of URLs, then all site logics for those URLs are accessed. Logic may be available in a repository such as repository **29** of FIG. **1** if they were obtained at the time of user registration to a particular URL, or sent in by WEB-site hosts shortly after registration. If it is a completely new URL, then the logic must be obtained from the site. In most cases however, the logic will be known by virtue of a plurality of users accessing common URLs. Therefore cross-linking in a database of logic/user associations may be performed to access a logic for a site that is new to one particular user, but not new to another.

In step **99**, the knowledge worker creates a template by virtue of scripting module **79** (FIG. **4**) containing all site logic, URLs, log-in and password information, and the user request information. As described previously, templates may be re-used for a same request. In most cases, scripting may be mostly automated with minimum manual input performed by the knowledge worker. In many cases, an existing template will match a new request exactly, and may be re-used. In that case steps **97**, **99**, and **101** would not be required.

In step **101** the template is stored and associated with the requesting user. The stored template may now be retrieved at a scheduled time for performing the summary gathering. At step **103**, a browser control such as module **85** of FIG. **4** is activated to access the stored template and navigate to specified URLs for the purpose of gathering summary data. If a timing function is attributed to the template stored in step **101**, then the template may self execute and call up the browser function. In another embodiment, the knowledge worker may notify the browser control to get the template for it's next task. In some embodiments, a plurality of controls may be used with one template as previously described.

In step **105**, automatic log-in is performed, if required, to gain access to each specified URL. In step **107**, a specified WEB-page is navigated to and parsed for requested data according to the logic on the template. If there are a plurality of WEB -pages to parse, then this step is repeated for the number of pages. A variety of parsing engines may be used for this process such as an IE™ parser, or a PERL™ parser. Only the requested data is kept in step **107**.

A request may be an on-demand request requiring immediate return, or a scheduled request wherein data may be posted. At step **109**, such logic is confirmed. If the data is to be presented according to a periodic schedule, then summary data parsed in step **107** is stored for latter use in step **111**. In step **113**, the summary data is rendered as HTML if not already formatted, and displayed in the form of a summary WEB-page in step **115**. The summary page may be posted for access by a user at a time convenient to the user (pull), or may be pushed as a WEB-page to the user and be made to automatically display on the user's PC. Notification of summary page availability may also be sent to a user to alert him of completion of order.

If the summary data is from a one-time on-demand request and required immediately by a user, then a network appliance and data delivery method (configured by the user) is confirmed, and the data is rendered in the appropriate format for delivery and display in step **117**. In step **119**, the summary data is delivered according to protocol to a user's designated appliance. In step **121** a user receives requested information in the appropriate format.

It will be apparent to one with skill in the art that there may be more or fewer logical steps as well as added sub-steps than are illustrated in this example. For example, step **105** may in other embodiments include sub-steps such as getting an encryption key from a user. In still another embodiment, part of a request may be rendered as HTML as in step **113** while certain other portions of the same request data might be rendered in another format and delivered via alternative methods. There are many possibilities.

The method and apparatus of the present invention may be used to present summaries to users without user input. Process logic such as this is detailed below.

FIG. **6** is a logical flow chart illustrating an exemplary summarization process performed by the software agent of FIG. **4** in a User-independent smart mode with minimum or no user input. In step **117** an enterprise-initiated summary

process begins. In this case, the enterprise may be assisting a user in finding a better deal or, perhaps presenting the individual with summaries from and links to alternative pages not yet subscribed to by a user.

In step **119**, a database containing user information and parameters is accessed and reviewed. Certain information specific to a user may be required to initiate an enterprise-sponsored summary report. At step **121**, the knowledge worker accesses the site logic specific to the specified target site or sites for summarization. In step **123**, the knowledge worker modifies an existing user template, or creates a new one if necessary. At step **125** the template is stored in a repository such as repository **29** and associated with the user.

As described in FIG. **5**, the template either self-executes according to a timed function and invokes a browser control such as control **85** (FIG. **4**), or is accessed by control **85** as a result of task notification. In step **127**, the browser control begins navigation. Auto logins are performed, if required, in step **129** to gain access to selected sites. If the WEB pages are new to a user, and the user has no registration with the WEB site, then through agreement, or other convention, the service may be provided access to such sites. Such an agreement may be made, for example, if the host of the WEB site realizes a possibility of gaining a new customer if the customer likes the summary information presented. In many other situations, no password or login information is required to obtain general information that is not personal to a client.

In step **131**, all sites are parsed for summary data and stored in canonical fashion in step **133**. At step **135**, the data is compiled and rendered as HTML for presentation on a summary page. In step **137**, a WEB summary containing all of the data is made available to a user and the user is notified of it's existence.

Providing certain information not requested by a user may aid in enhancing a user's organization of is current business on the WEB. Moreover, unsolicited WEB summaries may provide better opportunities than the current options in the user's profile. Of course, assisting a user in this manner will require that the enterprise (service) have access to the user's profile and existing account and service information with various WEB sites on the user's list. A user may forbid use of a user's personal information, in which case, no enterprise-initiated summaries would be performed unless they are conducted strictly in an offer mode instead of a comparative mode.

The method and apparatus also may be practiced in a language and platform independent manner, and be implemented over a variety of scalable server architectures.

The method and apparatus of the present invention may be practiced via private individuals on the Internet, businesses operating on a WAN connected to the Internet, businesses operating via private WAN, and so on. There are many customizable situations.

The present invention as taught herein and above should be afforded the broadest of scope. The spirit and scope of the present invention is limited only by the claims that follow.

What is claimed is:

1. An Internet Portal, comprising:

an Internet-connected server;

a list of addresses of Internet sites associated with a specific person, which sites store information specific to the person; and

a software suite executing on the server, the software suite including a set of gathering spitware agents, with at least one gatherer agent dedicated to each of the Internet sites;

wherein the Portal accomplishes a gathering cycle by accessing individual ones of the Internet sites, authenticating too each site accessed as the person, and the gathering agent dedicated to each site accessed extracts data from that site.

2. The Portal of claim **1** further comprising a configuration and initiation interface for the person to set up and start a gathering cycle.

3. The Portal of claim **1** wherein the data gathered by the gathering agents is summarized and/or aggregated at the portal to be provided to the person.

4. The Portal of claim **1** wherein the data gathered by the path agents is data specific to the person.

5. The Portal of claim **1** wherein the portal stores user names and passwords for the person for each Internet site visited and uses the stored user games and passwords to authenticate to each site as the person.

6. The Portal of claim **1** wherein the gathering agents comprise a parsing process in searching the accessed sites for data.

7. In an Internet Portal system, a method for gathering data specific to a person from a plurality of Internet sites storing data specific to that person, the method comprising the steps of:

(a) initiating a gathering cycle accessing individual ones of the plurality of sites;

(b) authenticating to the sites as the person; and

(c) executing a software gathering agent at each site accessed to gather data from the site, the gathering agent dedicated to each site accessed.

8. The method of claim **7** wherein the Portal further comprises a configuration and initiation interface, and further comprising a step for the person to configure and initiate a gathering cycle through the interface.

9. The method of claim **7** further comprising a step for summarizing at the Portal the data gathered by the gathering agents, the resulting summary to be provided to the person.

10. The method of claim **7** wherein the data gathered by the gathering agents is specific to the person.

11. The method of claim **7** wherein in step (a) the portal stores user names and passwords for the person for each Internet site visited, and uses the stored user names and passwords to authenticate to each site as the person.

12. The method of claim **7** wherein in step (c) the gathering agents comprise a parsing process in searching the accessed sites for data.

* * * * *