METHOD AND APPARATUS FOR SECURE ACCESS PAYMENT AND IDENTIFICATION

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a is a continuation of and also claims priority under 35 U.S.C. §120 to co-pending U.S. Patent Application Serial No. 14/814,740 filed July 31, 2015, entitled METHOD AND APPARATUS FOR SECURE ACCESS PAYMENT AND IDENTIFICATION, which is a continuation of and also claims priority under 35 U.S.C. §120 to 14/027,860, filed September 16, 2013, entitled METHOD AND APPARATUS FOR SECURE ACCESS PAYMENT AND IDENTIFICATION, issued at Patent No. 9,100,826 ,which application is a continuation of and also claims priority under 35 U.S.C. §120 to U.S. Patent Application Serial No. 13/621,609, filed September 17, 2012, entitled METHOD AND APPARATUS FOR SECURE ACCESS PAYMENT AND IDENTIFICATION, issued at Patent No. 8538881, which application is a continuation of and also claims priority under 35 U.S.C. §120 to U.S. Patent Application Serial No. 13/168,556, filed June 24, 2011, entitled METHOD, SYSTEM AND APPARATUS FOR SECURE ACCESS PAYMENT AND IDENTIFICATION, issued at Patent No. 8271397, which application is a continuation of and also claims priority under 35 U.S.C. §120 to U.S. Patent Application Serial No. 11/677,490, filed February 21, 2007, entitled METHOD, SYSTEM AND APPARATUS FOR SECURE ACCESS PAYMENT AND IDENTIFICATION, issued at Patent No. 8,001,055, which claims priority under 35 U.S.C. §119(e) to each of the following U.S. provisional patent applications: serial no. 60/775,046 entitled "METHOD AND APPARATUS FOR EMULATING A MAGNETIC STRIPE READABLE CARD," filed February 21, 2006; serial no. 60/812,279 entitled "UNIVERSAL SECURE REGISTRY," filed June 9, 2006; and serial no. 60/859,235 entitled "UNIVERSAL SECURE REGISTRY," filed November 15, 2006 each of which applications is hereby incorporated herein by reference in their entirety.

BACKGROUND OF INVENTION

1. Field of Invention

Embodiments of the invention generally relate to systems, methods, and apparatus for authenticating identity or verifying the identity of individuals and other entities seeking access to certain privileges and for selectively granting privileges and providing other services in response to such identifications/verifications. In addition, embodiments of the invention relate generally to systems and methods for obtaining information from and/or transmitting information to a user device and, in particular, to systems, methods, and apparatus that provide for contactless information transmission.

2. Discussion of Related Art

Control of access to secure systems presents a problem related to the identification of a person. An individual may be provided access to the secure system after their identity is authorized. Generally, access control to secure computer networks is presently provided by an authentication scheme implemented, at least partly, in software located on a device being employed to access the secure computer network and on a server within the secure computer network. For example, if a corporation chooses to provide access control for their computer network, they may purchase authentication software that includes server-side software installed on a server in their computer system and corresponding client-side software that is installed on the devices that are used by employees to access the system. The devices may include desktop computers, laptop computers, and handheld computers (e.g., PDAs and the like).

In practice, the preceding approach has a number of disadvantages including both the difficulty and cost of maintaining the authentication system and the difficulty and cost of maintaining the security of the authentication system. More specifically, the software resides in the corporation's computers where it may be subject to tampering/unauthorized use by company employees. That is, the information technology team that manages the authentication system has access to the private keys associated with each of the authorized users. As a result, these individuals have an opportunity to compromise the security of the system. Further, any modification and/or upgrade to the authentication system software is likely to require an update to at least the server-side software and may also require an update of the software located on each user/client device. In addition, where the company's computer systems are geographically distributed, software upgrades/updates may be required on a plurality of geographically distributed servers.

There is also a need, especially in this post September 11 environment, for secure and valid identification of an individual before allowing the individual access to highly secure areas. For example, an FBI agent or an air marshal may need to identify themselves to airport security or a gate agent, without compromising security. Typically such identification may comprise the air marshal or FBI agent showing identification indicia to appropriate personnel.

However, there are inherent flaws in this process that allow for security to be compromised, including falsification of identification information and failure of the airport security or other personnel to recognize the situation. Of course this process could be automated, for example, by equipping airport personnel or security with access to a database and requiring the FBI agent or air marshal to appropriately identify themselves to the database, for example, by again providing identification which airport personnel can then enter into the database to verify the identity of the person seeking access to a secure area. However, this process also has the inherent flaws in it as described above. In addition, there may be times when airport security or personnel may not be able to communicate with the database to check the identity of the person seeking access, for example, when they are not near a computer terminal with access to a database or are carrying a hand-held device that does not have an appropriate wireless signal to access the database. In addition, there is a need to ensure that if such a hand-held device ends up the wrong hands, that security is not compromised.

Further, both commercial (e.g., banking networks) and non-commercial (e.g., security systems) information systems often rely on magnetic card readers to collect information specific to a user (e.g., a security code, a credit card number, etc.) from a user device (e.g., a transaction card). Credit card purchases made in person provide an example of the most common transaction-type that relies on a user device, the credit or debit card, which is read by a magnetic card reader. User devices that rely on magnetic-stripe based technology magnetically store information (e.g., binary information) in the magnetic stripe. The magnetic stripe reader provides an interface to a larger computerized network that receives the user's information to determine, for example, whether to authorize a transaction, to allow the user access to a secure area, etc.

Recently, such devices have seen technological advances that increase their capabilities and improve their security. For example, such devices may now include embedded processors, integral biometric sensors that sense one or more biometric feature (e.g., a fingerprint) of the user, and magnetic stripe emulators. As one result, such devices may provide greater security by dynamically generating the necessary information, for example, generating the credit card number at the time of a transaction. Improved security can also be provided by such devices because more sophisticated authentication schemes can be implemented with the devices.

In addition, user devices such as transaction cards may now also provide for one or more modes of information transmission other than transmission via a magnetic stripe/card reader combination. For example, user devices that may transmit information optically or via radio frequency ("RF") signal transmission to a compatible system interface are now available. Further, the architecture of a user device that includes a processor is generally compatible with both the improved security features described above and the contactless transmission modes such as optical and RF signal transmission. As a result of the improved security and greater functionality of some current user devices, there is a desire to replace magnetic-stripe based user devices with devices that include forms of information transmission other than the reading of a magnetic-stripe.

There is, however, a substantial installed base of interfaces (for example, at points of sale, at automatic teller machines ("ATM"), and the like) that include magnetic card readers which are not equipped to receive information from a user device in any other format other than from a magnetic stripe. As a result of the cost to replace or retrofit the installed base, efforts to more-widely introduce user devices that do not employ magnetic stripe devices have not been developed. Because of the potential to substantially reduce fraud, however, the further implementation of such devices is of great interest to financial institutions among others. RF devices that transmit information wirelessly are expected to become much more prevalent and at some point, the predominant form of information transmission for user authentication based on a hand-held device, for example, credit card, debit card, drivers license, passport, social security card, personal identification, etc. Thus, new and improved methods for transitioning from a purely magnetic based form of communication to a wireless form of communication are desired.

One current approach that is intended to "transform" a smart card for use with a magnetic stripe card reader employs a "bridge" device. The bridge device requires that the smart card be inserted within it. The bridge device includes a slot for receiving the smart card, a key pad whereby the user may enter information (e.g., a PIN number), and a credit card sized extension member. Operation of the bridge device requires that the smart card be inserted within it and that an electrical contact surface of the smart card engage a similar surface within the bridge device before the bridge device (i.e., the extension member) can be used with a magnetic card reader. Thus, the contactless nature of more advanced information transmission systems is lost with the bridge device because it does not support wireless signal transmission.

Accordingly, there is a desire for one or more devices, systems and methods for accomplishing any of the herein mentioned objectives.

SUMMARY OF INVENTION

There is thus a need for an identification system that will enable a person to be accurately identified ("identification" sometimes being used hereinafter to mean either identified or verified) and/or authenticated without compromising security, to gain access to secure systems and/or areas. Likewise, there is a need for an identification system that will enable a person to be identified universally without requiring the person to carry multiple forms of identification.

Accordingly, this invention relates, in one embodiment, to an information system that may be used as a universal identification system and/or used to selectively provide information about a person to authorized users. Transactions to and from a secure database may take place using a public key/private key security system to enable users of the system and the system itself to encrypt transaction information during the transactions. Additionally, the private key/public key security system may be used to allow users to validate their identity. For example, in one embodiment, a smart card such as the SecurID^{TM} card from RSA Security, Inc. may be provided with the user's private key and the USR system's public key to enable the card to encrypt messages being sent to the USR system and to decrypt messages from the USR system 10.

The system or database of the invention may be used to identify the person in many situations, and thus may take the place of multiple conventional forms of identification. Additionally, the system may enable the user's identity to be confirmed or verified without providing any identifying information about the person to the entity requiring identification. This can be advantageous where the person suspects that providing identifying information may subject the identifying information to usurpation.

Access to the system may be by smart card, such as a SecurID^{TM} card, or any other secure access device. The technology enabling the user to present their identity information may be physically embodied as a separate identification device such as a smart ID card, or may be incorporated into another electronic device, such as a cell phone, pager, wrist watch, computer, personal digital assistant such as a Palm Pilot^{TM}, key fob, or other commonly available electronic device. The identity of the user possessing the identifying device may be verified at the point of use via any combination of a memorized PIN number or code, biometric identification such as a fingerprint, voice print, signature, iris or facial scan, or DNA analysis, or any other method of identifying the person possessing the device. If desired, the identifying device may also be provided with a picture of the person authorized to use the device to enhance security.

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