

Method and system for facilitating cash transaction using a mobile device

TECHNICAL FIELD

[001] The following discloses a method and system that allows using a mobile device to facilitate a cash transaction at an electronic terminal.

BACKGROUND

[002] Automated Teller Machines (ATMs) are commonplace nowadays and provide a quick and convenient way to withdraw or deposit cash into bank accounts. This cash transaction service is also available at other electronic devices, such as Point Of Sales (POS) terminals at selected merchant and convenience stores.

[003] These ATMs are connected to the backend infrastructure of their respective acquiring switch and network, and are therefore dependent on the connectivity to these systems to perform their daily transactions. However, such infrastructure needed to support the sheer numbers of ATMs in the world today unavoidably incur high maintenance costs.

[004] There is thus a need to provide a solution that allows the ATMs and other electronic terminals capable of providing similar cash transaction services to be less dependent on conventional network connectivity to backend infrastructure. Other desirable features and characteristics will become apparent from the subsequent detailed description and the appended claims, taken in conjunction with the accompanying drawings and this background of the disclosure.

SUMMARY OF THE INVENTION

[005] According to a first aspect, there is provided a method of using a mobile device to facilitate a cash transaction at an electronic terminal, the method comprising: receiving, via an open loop computer network, a request from a mobile device to perform a cash transaction at an electronic terminal, the request including supporting data comprising identification details of the electronic terminal, and an account number for the cash transaction; sending the request to a payment network for seeking pre-authorisation from an issuer of the account number; obtaining a result of the sought pre-authorisation from the payment network; and responding, via the open loop computer network, to the request from the mobile device with the result of the sought pre-authorisation for relay as instructions to the electronic terminal.

[006] According to a second aspect, there is provided a mobile application server for communication with a mobile device used to facilitate a cash transaction at an electronic terminal, the mobile application server comprising: at least one processor; and at least one memory including computer program code; an input port coupled to the processor; an output port coupled to the processor the at least one memory and the computer program code configured to, with the at least one processor, cause the server at least to: receive, through the input port, a request from a mobile device to perform a cash transaction at an electronic terminal, the request being received from an open loop computer network and the request including supporting data comprising identification details of the electronic terminal, and an account number for the cash transaction; send the request to a payment network for seeking pre-authorisation from an issuer of the account number; obtain a result of the sought pre-authorisation from the payment network; and respond, via the open loop computer network, to the request from the mobile device with the result of the sought authorisation for relay as instructions to the electronic terminal, the response being sent through the output port.

[007] According to a third aspect, there is provided electronic terminal for facilitating a cash transaction through use of a mobile device, the electronic terminal comprising: at least one processor; at least one memory including computer program code; and a transceiver coupled to the processor; the at least one memory and the computer program code configured to, with the at least one processor, cause the electronic terminal at least to: receive, from the transceiver, a request from an open loop computer network to perform a cash transaction at an electronic terminal; transmit, through the transceiver, to the open loop computer network identification details of the electronic terminal; and receive, from the transceiver, instructions responsive to the request to perform the cash transaction.

[008] According to a fourth aspect, there is provided a non-transitory computer readable medium having stored thereon an application to facilitate a cash transaction at an electronic terminal, the application causing a mobile device to perform steps comprising: receiving, when the mobile device is placed in data communication with an electronic terminal, identification details of the electronic terminal from the electronic terminal; sending, via an open loop computer network to a mobile application server, a request to perform a cash transaction at the electronic terminal, the request including supporting data comprising identification details of the electronic terminal, and an account number for the cash transaction; receiving, via the open loop computer network from the mobile application server, instructions responsive

to the request to perform the cash transaction; and relaying the instructions to the electronic terminal.

[009] According to a fifth aspect, there is provided a non-transitory computer readable medium having stored thereon an application for communication with a mobile device used to facilitate a cash transaction at an electronic terminal, the application causing the mobile application server to perform steps comprising: receiving, via an open loop computer network, a request to perform a cash transaction at an electronic terminal, the request including supporting data comprising identification details of the electronic terminal, and an account number for the cash transaction; sending the request to a payment network for seeking authorisation from an issuer of the account number; obtaining a result of the sought authorisation from the payment network; and responding, via the open loop computer network, to the request from the mobile device with the result of the sought authorisation for relay as instructions to the electronic terminal.

[010] According to a sixth aspect, there is provided a non-transitory computer readable medium having stored thereon an application for communication with a mobile device used to facilitate a cash transaction at an electronic terminal, the application causing the electronic terminal to perform steps comprising: receiving, from a transceiver of the electronic terminal, a request from an open loop computer network to perform a cash transaction at an electronic terminal; transmitting, through the transceiver, to the open loop computer network identification details of the electronic terminal; and receiving, from the transceiver, instructions responsive to the request to perform the cash transaction.

BRIEF DESCRIPTION OF THE DRAWINGS

[011] The accompanying figures, where like reference numerals refer to identical or functionally similar elements throughout the separate views and which together with the detailed description below are incorporated in and form part of the specification, serve to illustrate various embodiments and to explain various principles and advantages in accordance with a present embodiment, by way of non-limiting example only.

[012] Embodiments of the invention are described hereinafter with reference to the following drawings, in which:

[013] Figure 1 shows a schematic of a system in which a mobile device is used to facilitate a cash transaction at an electronic terminal.

[014] Figure 2 shows a schematic of a computing device used to realise the mobile application server and the electronic terminal of Figure 1.

[015] Figure 3 shows a flow chart of a method for facilitating a cash transaction using a mobile device.

DETAILED DESCRIPTION

[016] Embodiments of the present invention will be described, by way of example only, with reference to the drawings. Like reference numerals and characters in the drawings refer to like elements or equivalents.

[017] Some portions of the description which follows are explicitly or implicitly presented in terms of algorithms and functional or symbolic representations of operations on data within a computer memory. These algorithmic descriptions and functional or symbolic representations are the means used by those skilled in the data processing arts to convey most effectively the substance of their work to others skilled in the art. An algorithm is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. The steps are those requiring physical manipulations of physical quantities, such as electrical, magnetic or optical signals capable of being stored, transferred, combined, compared, and otherwise manipulated.

[018] Unless specifically stated otherwise, and as apparent from the following, it will be appreciated that throughout the present specification, discussions utilizing terms such as “scanning”, “calculating”, “determining”, “replacing”, “generating”, “initializing”, “outputting”, or the like, refer to the action and processes of a computer system, or similar electronic device, that manipulates and transforms data represented as physical quantities within the computer system into other data similarly represented as physical quantities within the computer system or other information storage, transmission or display devices.

[019] The present specification also discloses apparatus for performing the operations of the methods. Such apparatus may be specially constructed for the required purposes, or may comprise a computer or other computing device selectively activated or reconfigured by a computer program stored therein. The algorithms and displays presented herein are not inherently related to any particular computer or other apparatus. Various machines may be used with programs in accordance with the teachings herein. Alternatively, the construction of more specialized apparatus to perform the required method steps may be appropriate. The structure of a computer will appear from the description below.

[020] In addition, the present specification also implicitly discloses a computer program, in that it would be apparent to the person skilled in the art that the individual steps of the method described herein may be put into effect by computer code. The computer program is not intended to be limited to any particular programming language and implementation thereof. It will be appreciated that a variety of programming languages and coding thereof may be used to implement the teachings of the disclosure contained herein. Moreover, the computer program is not intended to be limited to any particular control flow. There are many other variants of the computer program, which can use different control flows without departing from the spirit or scope of the invention.

[021] Furthermore, one or more of the steps of the computer program may be performed in parallel rather than sequentially. Such a computer program may be stored on any computer readable medium. The computer readable medium may include storage devices such as magnetic or optical disks, memory chips, or other storage devices suitable for interfacing with a computer. The computer readable medium may also include a hard-wired medium such as exemplified in the Internet system, or wireless medium such as exemplified in the GSM mobile telephone system. The computer program when loaded and executed on a computer effectively results in an apparatus that implements the steps of the preferred method.

[022] Figure 1 shows a schematic of a system 100 in which a mobile device is used to facilitate a cash transaction at an electronic terminal. The interaction between the mobile device and the electronic terminal in system 100 is enabled by utilising a payment protocol such as the proprietary MasterCard® Paypass Technology. Paypass allows a mobile device with near field communication (NFC) capability to facilitate contactless payment, such that a financial transaction can be performed by placing the Paypass-enabled mobile device in close proximity to any Paypass-enabled payment terminal. Accordingly, the electronic terminal in system 100 is also Paypass-enabled, so that data communication with a Paypass-enabled mobile device is possible when said mobile device is placed in close proximity to the electronic terminal. Through a series of data exchanges between the mobile device and the electronic terminal which will be described in the paragraphs below, a cash withdrawal from or cash deposit to the electronic terminal can be performed.

[023] The system 100 comprises an issuer 112 that issues an account number used to fund a cash transaction facilitated by a mobile device 102, an

electronic terminal 104, a mobile application server 106 that communicates with the mobile device 102 via an open loop computer network 114, an acquirer 108 and a payment network server 110.

[024] The electronic terminal 104 is a computing device which interfaces with the mobile device 102 to perform a cash transaction, such as an automatic teller machine (ATM). The electronic terminal 104 has a unique identification number assigned by an acquirer 108 that manages the terminal. The identification number is necessary for determining the acquirer that manages the electronic terminal 104, such that a request to perform a cash transaction at the electronic terminal 104 is routed to the correct acquirer. The electronic terminal 104 is Paypass-enabled so that it can recognise and interact with the mobile device 102 when the mobile device 102 is placed in close proximity to a transceiver of the electronic terminal 104. Before the electronic terminal 104 can perform the various functions required to facilitate the cash transaction mechanism supported by the system 100, an application that enables these functions is downloaded from an application repository and installed into the electronic terminal 104. When the mobile device 102 is in close proximity to the transceiver of the electronic terminal 104, the electronic terminal 104 sends 120 data containing information regarding its identification details to the mobile device 102. Subsequently, an instruction received 122 from the transceiver when the mobile device 102 is in close proximity for a second time will determine whether or not the electronic terminal 104 performs the requested cash transaction.

[025] The mobile device 102 may be, for example, a mobile terminal such as a laptop computer, smartphone, smartwatch or a tablet with an advanced mobile operating system, such as Windows of Microsoft Corporation, iOS of Apple Inc. or Android of Google Inc. The operating system may host one or more mobile applications, including one that is specifically designed to interface with the electronic terminal 104 via Paypass technology, and communicate with a mobile application server 106 via an open loop computer network 114 (eg: the internet). When the mobile device 102 is first placed in proximity to the transceiver of the electronic terminal 104, data containing identification details of the terminal is received 120 from the transceiver. Using the abovementioned mobile application installed on the mobile device 102, further details of the requested cash transaction can be input, for example an account number used to fund the cash transaction, a secured PIN number of the account number and the amount of cash to withdraw from or deposit to the electronic terminal 104. This information, together with the

identification details received 120 from the transceiver of the electronic terminal 104, are sent 124 to the mobile application server 106 via the open loop computer network 114, for seeking authorisation from an issuer 112 of the account number to perform the cash transaction. The instruction resulting from approval or rejection of the cash transaction request is then received 138 via the open loop computer network 114 from the mobile network server 106 and relayed 122 to the electronic terminal 104.

[026] The mobile application server 106 is a single computing device or a network of interconnected computing devices which operate together to support communication between the mobile device 102 and the acquirer 108. The mobile application server 106 exchanges data with the mobile device 102 via the open loop computer network 114, and with the acquirer 108 via a secured https link. The https link is a dedicated connection between the mobile application server 106 and an acquirer that allows data transfers at high speeds. Being a dedicated connection, the correct acquirer must be identified before the mobile application server 106 can determine which https link to use. Therefore, the mobile application server will determine, based on the terminal ID number data contained in the cash transaction request received 124 from the mobile device 102 via the open loop computer network 124, the acquirer 108 which manages the electronic terminal 104. The transaction request is then relayed 126 via the correct https link to the acquirer 108. The same https link is used by the mobile application server 106 to receive 136 the outcome of the cash transaction request.

[027] The acquirer 108 is a financial institution that manages the electronic terminal 104. When the acquirer 108 receives 126 a cash transaction request from the mobile application server 106, it identifies the payment network server 110 utilised by the issuer 112 of the account number used to fund the transaction, said account number data received with the transaction request. The acquirer 108 then relays 128 the transaction request to the payment network server 110 for pre-authorisation of the transaction. Thereafter, the instruction resulting from approval or rejection of the cash transaction request is received 134 from the payment network server 110, which the acquirer 108 forwards 136 to the mobile application server 106.

[028] The payment network server 110 is a single computing device or a network of interconnected computing devices which operate together to support electronic payment, such as a switch of the four party network used by MasterCard® or Visa®. Thus, the payment network server 110 serves as an intermediary between the

acquirer 108 and the issuer 112 of the account number used to initiate the transaction. In the system 100, the payment network server 110 receives 128 the cash transaction request and corresponding transaction data from the acquirer 108. The account number data that is received with the request is used by the payment network server 110 to identify the issuer 112 of the account that will be used to fund the transaction. Therefore, the payment network server 110 forwards 130 the request to the issuer 112 for pre-authorisation. The instruction resulting from the approval or rejection of the request is then received 132 from the issuer 112 by the payment network server 110 which is then routed 134 to the acquirer 108.

[029] The issuer 112 is a financial institution that issues credit or debit cards to consumers on behalf of card networks such as MasterCard® or Visa®. The issuer 112 maintains a bank account associated with the issued credit or debit card and processes credit or debit payments to and from the bank account. In the cash transaction facilitated by the system 100, the account number used to fund the transaction is issued by the issuer 112. Thus, the issuer 112 receives 130 the cash transaction request from the payment network server 110 for pre-authorisation from the issuer 112. The issuer 112 then verifies if there are sufficient funds or credits in the account to pay the transaction amount, if the transaction request is a cash withdrawal. If there is sufficient credit, a cash withdrawal approval is sent 132 to the payment network server 110 and the issuer 112 sets aside from the account an amount of funds corresponding to the required amount of cash to be withdrawn as indicated in the transaction request, for dispensing at the electronic terminal 104. On the other hand, if there is insufficient credit, a cash withdrawal rejection will be sent 132 to the payment network server 110. In a case of a cash deposit request, the approval of the request will be received 132 by the payment network server 110 accordingly. Pre-authorisation of the transaction request means that the request has been approved by the issuer 112 for subsequent execution by the electronic terminal 104.

[030] Before the mobile device 102 in system 100 of Figure 1 can be used to facilitate the cash transaction, the mobile device 102 needs to be configured such that the Paypass functionality is enabled, so that it can communicate and exchange data with the electronic terminal 104. An application that grants this functionality is downloaded from an application repository, such as the App Store or Google Play, and installed into the mobile device 102. Likewise, the electronic terminal 102 is also Paypass enabled by installing an application that grants this functionality.

[031] The cash transaction is initiated by placing the mobile device 102 in proximity with the transceiver of the electronic terminal 104. The electronic terminal 104 recognises the presence of mobile device 102 as a request to perform a cash transaction and sends 120, via NFC protocol, data indicating its unique ID number from the transceiver to the mobile device 102. Thereafter, other details of the transaction can be entered in the application of the mobile device 102, such as the amount of cash to withdraw or deposit, the account number which is used to fund the cash withdrawal or in which the cash deposit is to be credited to and the security PIN number of the account number. In an alternative embodiment, the interface in which these particulars are entered can also be provided by the electronic terminal 104. Once provision of the abovementioned information is complete, the data containing these information and a request for pre-authorisation from the account issuer to perform the cash transaction is transmitted 124 via the open loop computer network 114 to the mobile application server 106.

[032] Upon receiving 124 the data from the mobile device 102, the mobile application server 106 determines, from the received terminal ID data, the acquirer to which the received request should be forwarded (ie. the acquirer 108) and therefore sends 126 the request and transaction data to the acquirer 108. This forwarding is done via a secured and dedicated https link that directly connects the mobile application server 106 and the acquirer 108. The acquirer 108 then identifies from the received account number information the payment network server 110 that the request is to be forwarded to and hence forwards 128 the request to the identified payment network server 110.

[033] On receiving 128 the cash transaction request, the payment network server 110 establishes the issuer of the account number that is used to fund the requested cash transaction (ie: issuer 112), and routes 130 the request to the issuer 112 accordingly. Now the issuer 112 has to check, based on the account number information and requested transaction amount received with the pre-authorisation request, if there is sufficient credit in the account to fund the transaction (for example, if it is a cash withdrawal request). Having sufficient credit in the account to fund the requested cash withdrawal will typically result in an approval of the pre-authorisation request by the issuer 112. Upon the approval, the issuer 112 sets aside from the account the required amount of funds corresponding to the required amount of cash to be withdrawn as indicated in the transaction request, for dispensing at the electronic terminal 104. On the other hand, the request is not likely to be rejected if it is for a cash deposit. After the issuer 112 has reached a decision to approve or reject

the request, the outcome is routed 132 to the payment network server 110, and the same is forwarded 108 by the payment network server 110 back to the acquirer 108. The acquirer 108 sends 136 the received outcome to the mobile application server 106, via the dedicated https link. Likewise, the mobile application server 106 transmits 138 the received data through the open loop computer network 114 to the mobile device 102.

[034] When the mobile device 120 receives 138 the cash transaction request outcome from the mobile application server 106, there will be an instruction from the application of the mobile device 102 to place the mobile device 102 in close proximity to the transceiver of the electronic terminal 102, such that received cash transaction request outcome can be relayed 122 as instructions to the electronic terminal 104. If the issuer 112 has approved the transaction request, the electronic terminal 102 will dispense the amount of cash corresponding to the amount of funds set aside by the issuer 112 for the approved cash withdrawal request or accept the required amount of cash to be deposited if the request is for a cash deposit. Otherwise, the electronic terminal 104 will not perform the cash transaction and the interaction session with the mobile device 102 ends. Likewise, the interaction session will terminate after a set time if the electronic terminal 104 does not receive any response to the cash transaction request from the mobile device 102.

[035] An advantage that the system 100 provides is that the electronic terminal 104 can be completely offline (ie. not connected to the backend infrastructure to an acquiring switch or network of the acquirer 108), as communication with the acquirer 108 is facilitated by the mobile device 102.

[036] Figure 2 depicts an exemplary computing device 200, hereinafter interchangeably referred to as a computer system 200, where one or more such computing devices 200 may be used to implement the system 100 of Figure 1. The following description of the computing device 200 is provided by way of example only and is not intended to be limiting.

[037] As shown in Figure 2, the example computing device 200 includes a processor 204 for executing software routines. Although a single processor is shown for the sake of clarity, the computing device 200 may also include a multi-processor system. The processor 204 is connected to a communication infrastructure 206 for communication with other components of the computing device 200. The communication infrastructure 206 may include, for example, a communications bus, cross-bar, or network.

[038] The computing device 200 further includes a main memory 208, such as a random access memory (RAM), and a secondary memory 210. The secondary memory 210 may include, for example, a storage drive 212, which may be a hard disk drive, a solid state drive or a hybrid drive and/or a removable storage drive 214, which may include a magnetic tape drive, an optical disk drive, a solid state storage drive (such as a USB flash drive, a flash memory device, a solid state drive or a memory card), or the like. The removable storage drive 214 reads from and/or writes to a removable storage medium 244 in a well-known manner. The removable storage medium 244 may include magnetic tape, optical disk, non-volatile memory storage medium, or the like, which is read by and written to by removable storage drive 214. As will be appreciated by persons skilled in the relevant art(s), the removable storage medium 244 includes a computer readable storage medium having stored therein computer executable program code instructions and/or data.

[039] In an alternative implementation, the secondary memory 210 may additionally or alternatively include other similar means for allowing computer programs or other instructions to be loaded into the computing device 200. Such means can include, for example, a removable storage unit 222 and an interface 250. Examples of a removable storage unit 222 and interface 250 include a program cartridge and cartridge interface (such as that found in video game console devices), a removable memory chip (such as an EPROM or PROM) and associated socket, a removable solid state storage drive (such as a USB flash drive, a flash memory device, a solid state drive or a memory card), and other removable storage units 222 and interfaces 250 which allow software and data to be transferred from the removable storage unit 222 to the computer system 200.

[040] The computing device 200 also includes at least one communication interface 224. The communication interface 224 allows software and data to be transferred between computing device 200 and external devices via a communication path 226. In various embodiments of the inventions, the communication interface 224 permits data to be transferred between the computing device 200 and a data communication network, such as a public data or private data communication network. The communication interface 224 may be used to exchange data between different computing devices 200 which such computing devices 200 form part an interconnected computer network. Examples of a communication interface 224 can include a modem, a network interface (such as an Ethernet card), a communication port (such as a serial, parallel, printer, GPIB, IEEE 1394, RJ45, USB), an antenna with associated circuitry and the like. The communication interface 224 may be wired or may be wireless.

Software and data transferred via the communication interface 224 are in the form of signals which can be electronic, electromagnetic, optical or other signals capable of being received by communication interface 224. These signals are provided to the communication interface via the communication path 226.

[041] As shown in Figure 2, the computing device 200 further includes a display interface 202 which performs operations for rendering images to an associated display 230 and an audio interface 232 for performing operations for playing audio content via associated speaker(s) 234.

[042] As used herein, the term "computer program product" may refer, in part, to removable storage medium 244, removable storage unit 222, a hard disk installed in storage drive 212, or a carrier wave carrying software over communication path 226 (wireless link or cable) to communication interface 224. Computer readable storage media refers to any non-transitory, non-volatile tangible storage medium that provides recorded instructions and/or data to the computing device 200 for execution and/or processing. Examples of such storage media include magnetic tape, CD-ROM, DVD, Blu-ray™ Disc, a hard disk drive, a ROM or integrated circuit, a solid state storage drive (such as a USB flash drive, a flash memory device, a solid state drive or a memory card), a hybrid drive, a magneto-optical disk, or a computer readable card such as a PCMCIA card and the like, whether or not such devices are internal or external of the computing device 200. Examples of transitory or non-tangible computer readable transmission media that may also participate in the provision of software, application programs, instructions and/or data to the computing device 200 include radio or infra-red transmission channels as well as a network connection to another computer or networked device, and the Internet or Intranets including e-mail transmissions and information recorded on Websites and the like.

[043] The computer programs (also called computer program code) are stored in main memory 208 and/or secondary memory 210. Computer programs can also be received via the communication interface 224. Such computer programs, when executed, enable the computing device 200 to perform one or more features of embodiments discussed herein. In various embodiments, the computer programs, when executed, enable the processor 204 to perform features of the above-described embodiments. Accordingly, such computer programs represent controllers of the computer system 200.

[044] Software may be stored in a computer program product and loaded into the computing device 200 using the removable storage drive 214, the storage drive 212, or the interface 250. The computer program product may be a non-transitory

computer readable medium. Alternatively, the computer program product may be downloaded to the computer system 200 over the communications path 226. The software, when executed by the processor 204, causes the computing device 200 to perform functions of embodiments described herein.

[045] It is to be understood that the embodiment of Figure 2 is presented merely by way of example. Therefore, in some embodiments one or more features of the computing device 200 may be omitted. Also, in some embodiments, one or more features of the computing device 200 may be combined together. Additionally, in some embodiments, one or more features of the computing device 200 may be split into one or more component parts. The main memory 208 and/or the secondary memory 201 may serve(s) as the memory for the server 102; while the processor 204 may serve as the processor of the server 102.

[046] When used to realise the electronic terminal 104 of Figure 1, the processor 204 and computer program code stored in the memory 208 are configured to cause the electronic terminal 104 to receive, from the transceiver, a request from an open loop computer network 114 to perform a cash transaction at the electronic terminal 104. The electronic terminal 104 is further configured to transmit, through the transceiver, to the open loop computer network 114 identification details of the electronic terminal 104. The electronic terminal 104 is also further configured to receive, from the transceiver, instructions responsive to the request to perform the cash transaction.

[047] When used to realise the mobile application server 106 of Figure 1, the processor 204 and computer program code stored in the memory 208 are configured to cause the mobile application server 106 to receive, through an input port of the mobile application server 106, a request from a mobile device 102 to perform a cash transaction at an electronic terminal 104, the request being received from an open loop computer network 114 and the request including supporting data comprising identification details of the electronic terminal 104 and an account number for the cash transaction, The mobile application server 106 is also configured to send the request to a payment network server 110 for seeking pre-authorisation from an issuer 112 of the account number, and obtain a result of the sought pre-authorisation from the payment network server 110. The mobile application server 106 is further configured to respond, via the open loop computer network 114, to the request from the mobile device 102 with the result of the sought authorisation for relay as instructions to the electronic terminal 104, the response being sent through an output port of the mobile application server 106.

[048] The cash transaction may be a withdrawal from the account with the account number or a deposit into the account with the account number.

[049] The mobile application server 106 may also be configured to receive, through the input port, a monetary value of the withdrawal from the mobile device 102, wherein the response to the mobile device 102 comprises instructions to the electronic terminal 104 to dispense the monetary value of cash when the result of the sought authorisation is an approval of the request.

[050] The mobile application server 106 may be further configured to receive, through the input port, a monetary value of the deposit from the mobile device 102, wherein the response to the mobile device 102 comprises instructions to the electronic terminal 104 to obtain the monetary value of cash when the result of the sought authorisation is an approval of the request.

[051] The sending of the request and the obtaining of the result by the mobile application server 106 may be done over a reserved channel determined by the issuer 112 of the account number.

[052] The response to the mobile device 102 from the mobile application server 106 may further comprise prompting for the mobile device 102 to be placed in data communication with the electronic terminal 104.

[053] The request received by the mobile application server 106 from the mobile device 102 may be encrypted, whereby the mobile application server 106 may be further configured to decipher the encrypted request using a key.

[054] The mobile application server 106 may be further configured to, prior to receiving the encrypted request, receive the key from the payment network server 110.

[055] The receiving of the request from the mobile device 102 and the responding to the request from the mobile device 102 may occur through an application operating on the mobile device 102 and wherein the application may be configured to communicate with the electronic terminal 104.

[056] As mentioned above, the application which enables the mobile application server 106 to perform the various functions required to facilitate the system 100 of Figure 1 may be downloaded from an application repository. The application repository will have a non-transitory computer readable medium stored thereon the application for installation into the mobile application server 106 (i.e. the non-transitory computer readable medium stores the application in an uncompiled state). Upon installation, the application causes the mobile application server 106 to perform steps comprising a) receiving, via an open loop computer network 114, a request to perform a cash transaction at an electronic terminal, the request including supporting data

comprising identification details of the electronic terminal 104 and an account number for the cash transaction; b) sending the request to a payment network server 110 for seeking authorisation from an issuer 112 of the account number; c) obtaining a result of the sought authorisation from the payment network; and d) responding, via the open loop computer network 114, to the request from the mobile device 102 with the result of the sought authorisation for relay as instructions to the electronic terminal 104.

[057] As mentioned above, the application which enables the electronic terminal 104 to perform the various functions required to facilitate the system 100 of Figure 1 may be downloaded from an application repository. The application repository will have a non-transitory computer readable medium stored thereon the application for installation into the electronic terminal 104 (i.e. the non-transitory computer readable medium stores the application in an uncompiled state). Upon installation, the application causes the electronic terminal 104 to perform steps comprising a) receiving, from a transceiver of the electronic terminal 104, a request from an open loop computer network 114 to perform a cash transaction at an electronic terminal; b) transmitting, through the transceiver, to the open loop computer network 114 identification details of the electronic terminal 104; and c) receiving, from the transceiver, instructions responsive to the request to perform the cash transaction.

[058] As mentioned above, the application which enables the mobile device 102 to perform the various functions required to facilitate the system 100 of Figure 1 may be downloaded from an application repository. The application repository will have a non-transitory computer readable medium stored thereon the application for installation into the mobile device 102 (i.e. the non-transitory computer readable medium stores the application in an uncompiled state). Upon installation, the application causes the mobile device 102 to perform steps comprising a) receiving, when the mobile device 102 is placed in data communication with the electronic terminal 104, identification details of the electronic terminal 104 from the electronic terminal 104; b) sending, via an open loop computer network 114 to a mobile application server 106, a request to perform a cash transaction at the electronic terminal 104, the request including supporting data comprising identification details of the electronic terminal 104, and an account number for the cash transaction; c) receiving, via the open loop computer network 114 from the mobile application server 106, instructions responsive to the request to perform the cash transaction; and d) relaying the instructions to the electronic terminal 104.

[001] Figure 3 shows a flowchart depicting steps of a method 300 of using a mobile device to facilitate a cash transaction at an electronic terminal. The method 300 is performed by the system 100 of Figure 1.

[002] The method 300 comprises a first step 302 of receiving, via an open loop computer network 114, a request from a mobile device 102 to perform a cash transaction at an electronic terminal 104, the request including supporting data comprising identification details of the electronic terminal 104, and an account number for the cash transaction.

[003] A second step 304 involves sending the request to a payment network server 110 for seeking pre-authorisation from an issuer 112 of the account number.

[004] A third step 306 involves obtaining a result of the sought pre-authorisation from the payment network server 110.

[005] A fourth step 310 involves responding, via the open loop computer network 114, to the request from the mobile device 102 with the result of the sought pre-authorisation for relay as instructions to the electronic terminal 104.

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

CLAIMS

1. A method of using a mobile device to facilitate a cash transaction at an electronic terminal, the method comprising:

receiving, via an open loop computer network, a request from a mobile device to perform a cash transaction at an electronic terminal, the request including supporting data comprising

identification details of the electronic terminal, and

an account number for the cash transaction;

sending the request to a payment network for seeking pre-authorisation from an issuer of the account number;

obtaining a result of the sought pre-authorisation from the payment network; and

responding, via the open loop computer network, to the request from the mobile device with the result of the sought pre-authorisation for relay as instructions to the electronic terminal.

2. The method of claim 1, wherein the cash transaction is a withdrawal from the account with the account number or a deposit into the account with the account number.

3. The method of claim 2, further comprising receiving, from the mobile device, a monetary value of the withdrawal and wherein the response to the mobile device comprises instructions to the electronic terminal to dispense the monetary value of cash when the result of the sought authorisation is an approval of the request.

4. The method of claim 2, further comprising receiving, from the mobile device, a monetary value of the deposit and wherein the response to the mobile device comprises instructions to the electronic terminal to obtain the monetary value of cash when the result of the sought authorisation is an approval of the request.

5. The method of any one of the preceding claims, wherein the sending of the request and the obtaining of the result is done over a reserved channel determined by the issuer of the account number.

6. The method of any one of the preceding claims, wherein the response to the mobile device further comprises prompting for the mobile device to be placed in data communication with the electronic terminal.
7. The method of any one of the preceding claims, wherein the request received from the mobile device is encrypted, whereby the method further comprises deciphering the encrypted request using a key.
8. The method of any one of the preceding claims, wherein the receiving of the request from the mobile device and the responding to the request from the mobile device occur through an application operating on the mobile device and wherein the application is configured to communicate with the electronic terminal.
9. A mobile application server for communication with a mobile device used to facilitate a cash transaction at an electronic terminal, the mobile application server comprising:
 - at least one processor; and
 - at least one memory including computer program code;
 - an input port coupled to the processor;
 - an output port coupled to the processor
 the at least one memory and the computer program code configured to, with the at least one processor, cause the server at least to:
 - receive, through the input port, a request from a mobile device to perform a cash transaction at an electronic terminal, the request being received from an open loop computer network and the request including supporting data comprising
 - identification details of the electronic terminal, and
 - an account number for the cash transaction;
 - send the request to a payment network for seeking pre-authorisation from an issuer of the account number;
 - obtain a result of the sought pre-authorisation from the payment network; and
 - respond, via the open loop computer network, to the request from the mobile device with the result of the sought authorisation for relay as instructions to the electronic terminal, the response being sent through the output port.

10. The server of claim 9, wherein the cash transaction is a withdrawal from the account with the account number or a deposit into the account with the account number.

11. The server of claim 10, further configured to receive, through the input port, a monetary value of the withdrawal from the mobile device and wherein the response to the mobile device comprises instructions to the electronic terminal to dispense the monetary value of cash when the result of the sought authorisation is an approval of the request.

12. The server of claim 10, further configured to receive, through the input port, a monetary value of the deposit from the mobile device and wherein the response to the mobile device comprises instructions to the electronic terminal to obtain the monetary value of cash when the result of the sought authorisation is an approval of the request.

13. The server of claims 9 to 14, wherein the sending of the request and the obtaining of the result is done over a reserved channel determined by the issuer of the account number.

14. The server of claims 9 to 13, wherein the response to the mobile device further comprises prompting for the mobile device to be placed in data communication with the electronic terminal.

15. The server of claims 9 to 14, wherein the request received from the mobile device is encrypted, whereby the server is further configured to decipher the encrypted request using a key.

16. The server of claims 9 to 15, wherein the receiving of the request from the mobile device and the responding to the request from the mobile device occur through an application operating on the mobile device and wherein the application is configured to communicate with the electronic terminal.

17. An electronic terminal for facilitating a cash transaction through use of a mobile device, the electronic terminal comprising:

at least one processor;

at least one memory including computer program code; and

a transceiver coupled to the processor;

the at least one memory and the computer program code configured to, with the at least one processor, cause the electronic terminal at least to:

- receive, from the transceiver, a request from an open loop computer network to perform a cash transaction at an electronic terminal;
- transmit, through the transceiver, to the open loop computer network identification details of the electronic terminal; and
- receive, from the transceiver, instructions responsive to the request to perform the cash transaction.

18. A non-transitory computer readable medium having stored thereon an application to facilitate a cash transaction at an electronic terminal, the application causing a mobile device to perform steps comprising:

- receiving, when the mobile device is placed in data communication with an electronic terminal, identification details of the electronic terminal from the electronic terminal;

- sending, via an open loop computer network to a mobile application server, a request to perform a cash transaction at the electronic terminal, the request including supporting data comprising

- identification details of the electronic terminal, and

- an account number for the cash transaction;

- receiving, via the open loop computer network from the mobile application server, instructions responsive to the request to perform the cash transaction; and

- relaying the instructions to the electronic terminal.

19. A non-transitory computer readable medium having stored thereon an application for communication with a mobile device used to facilitate a cash transaction at an electronic terminal, the application causing the mobile application server to perform steps comprising:

- receiving, via an open loop computer network, a request to perform a cash transaction at an electronic terminal, the request including supporting data comprising

- identification details of the electronic terminal, and

- an account number for the cash transaction;

- sending the request to a payment network for seeking authorisation from an issuer of the account number;

- obtaining a result of the sought authorisation from the payment network; and

responding, via the open loop computer network, to the request from the mobile device with the result of the sought authorisation for relay as instructions to the electronic terminal.

20. A non-transitory computer readable medium having stored thereon an application for communication with a mobile device used to facilitate a cash transaction at an electronic terminal, the application causing the electronic terminal to perform steps comprising:

receiving, from a transceiver of the electronic terminal, a request from an open loop computer network to perform a cash transaction at an electronic terminal;

transmitting, through the transceiver, to the open loop computer network identification details of the electronic terminal; and

receiving, from the transceiver, instructions responsive to the request to perform the cash transaction.