US007837100B2

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

(10) **Patent No.: US 7,837,100 B2**
(45) **Date of Patent: Nov. 23, 2010**

(54) **SYSTEM, METHOD, AND COMPUTER PROGRAM PRODUCT FOR ISSUING AND USING DEBIT CARDS**

(75) Inventors: **David S. Bonalle**, New Rochelle, NY (US); **Emily A. Chong**, New York, NY (US); **I-Hsin Chuang**, Brooklyn, NY (US); **Lauren E. Dardick**, New York, NY (US); **Jennifer A. Elwood**, London (GB); **William J. Gray**, Peoria, AZ (US); **David J. Wong**, Oceanport, NJ (US)

(73) Assignee: **American Express Travel Related Services Company, Inc.**, New York, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 935 days.

(21) Appl. No.: **11/478,140**

(22) Filed: **Jun. 30, 2006**

(65) **Prior Publication Data**

US 2007/0175982 A1 Aug. 2, 2007

Related U.S. Application Data

(60) Provisional application No. 60/695,855, filed on Jul. 5, 2005.

(51) **Int. Cl.**
G06K 5/00 (2006.01)
G06K 7/01 (2006.01)

(52) **U.S. Cl.** **235/380**; 235/382

(58) **Field of Classification Search** 235/380, 235/382, 379, 383
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,038,552	A	3/2000	Fleischl et al.	
6,267,292	B1	7/2001	Walker et al.	
6,374,231	B1 *	4/2002	Bent et al.	705/36 R
6,578,761	B1	6/2003	Spector	
6,615,189	B1	9/2003	Phillips et al.	
6,681,988	B2	1/2004	Stack et al.	
6,757,664	B1	6/2004	Cardinal et al.	
6,786,400	B1	9/2004	Bucci	
6,892,187	B2	5/2005	Phillips et al.	
7,104,443	B1	9/2006	Paul et al.	
7,296,734	B2 *	11/2007	Pliha	235/379
2002/0016769	A1 *	2/2002	Barbara et al.	705/40
2007/0198404	A1 *	8/2007	Hirka et al.	705/39

OTHER PUBLICATIONS

http://www.debitman.com, "Debitman's mission is to help merchants reduce their interchange costs.", 2006 Debitman Card, Inc., Last viewed: Sep. 28, 2006.

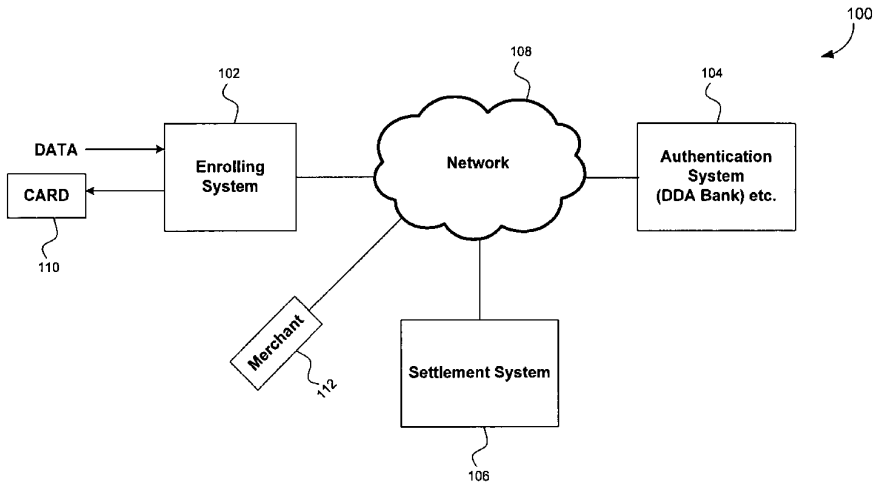
* cited by examiner

Primary Examiner—Thien M Le
(74) *Attorney, Agent, or Firm*—Snell & Wilmer L.L.P.

(57) **ABSTRACT**

A system, method, and computer program product are used to issue and track debit cards. A system comprises an enrolling system that verifies an enrollee, associates an enrollee's main and overdraft account, and issues a debit card, an authentication system that receives information regarding a requested transaction of a debit card and that receives information regarding the main and overdraft account associated with the debit card and accepts or rejects the requested transaction based thereon, and a settlement system that generates a periodic report of at least one of the transactions, the main account, and the overdraft account. The overdraft account can be a charge or credit account.

17 Claims, 13 Drawing Sheets



ASKELADDEN EXHIBIT 1001

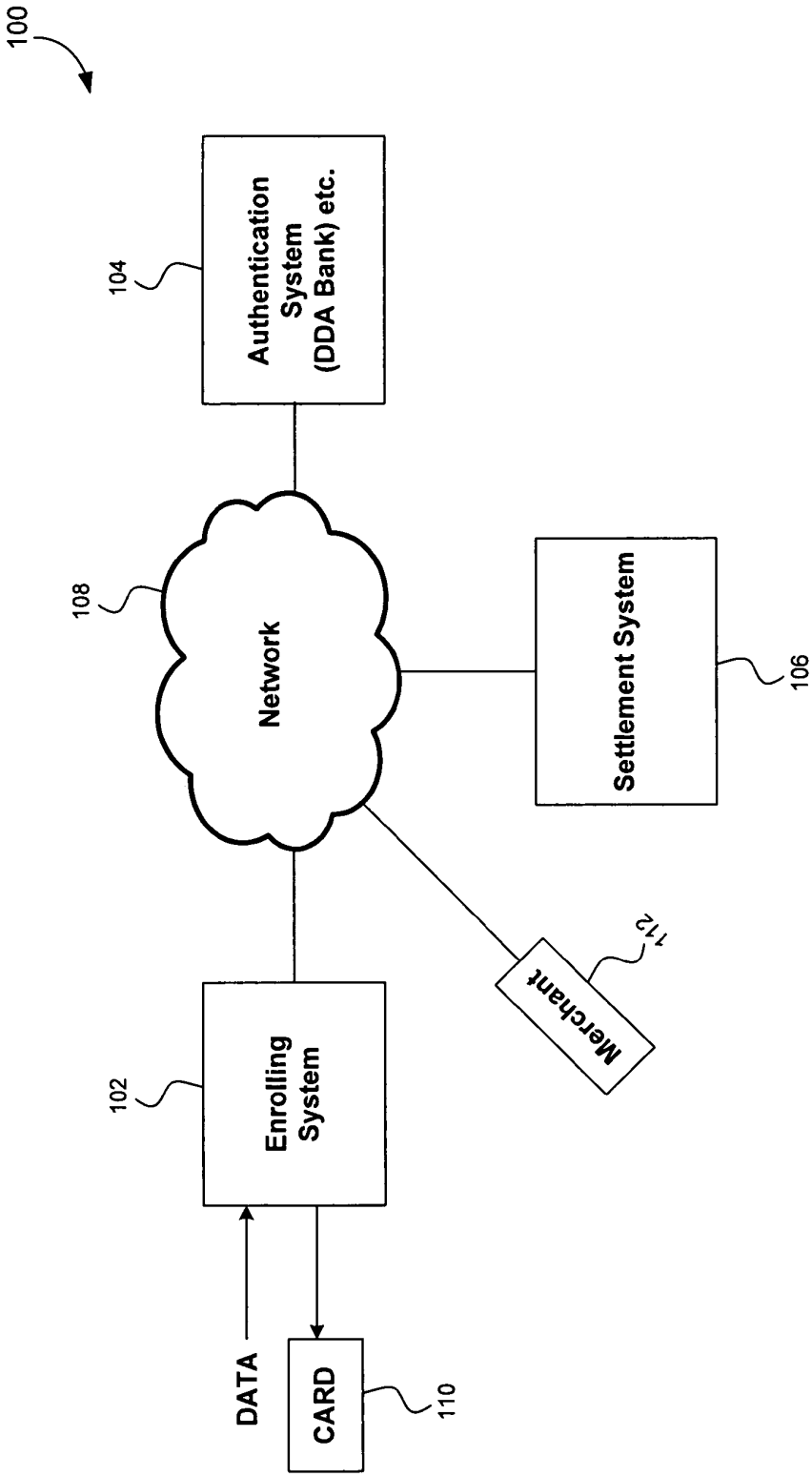

100
104
Authentication System (DDA Bank) etc.
108
Network
Settlement System
106
112
Merchant
102
Enrolling System
DATA
CARD
110

FIG. 1

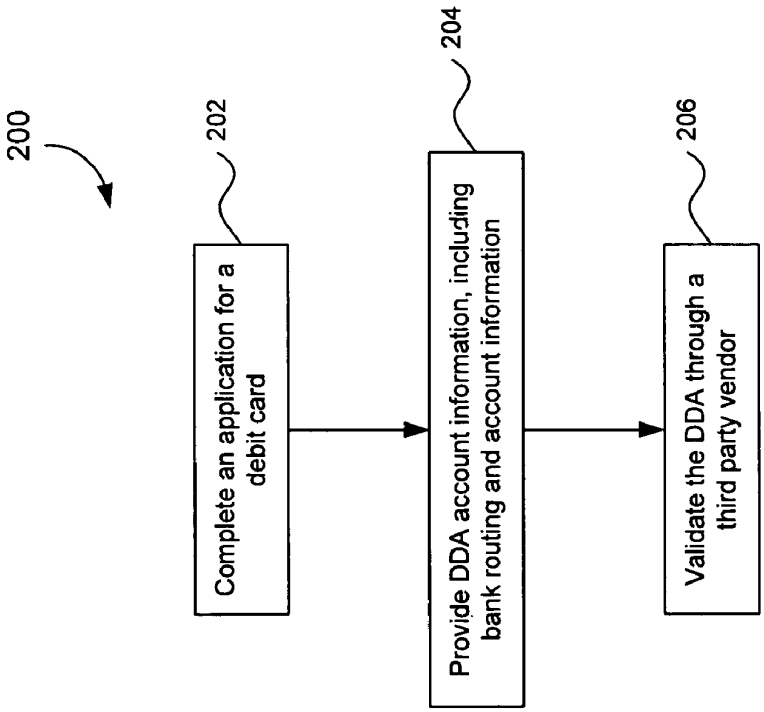

200
202
Complete an application for a debit card
204
Provide DDA account information, including bank routing and account information
206
Validate the DDA through a third party vendor

FIG. 2

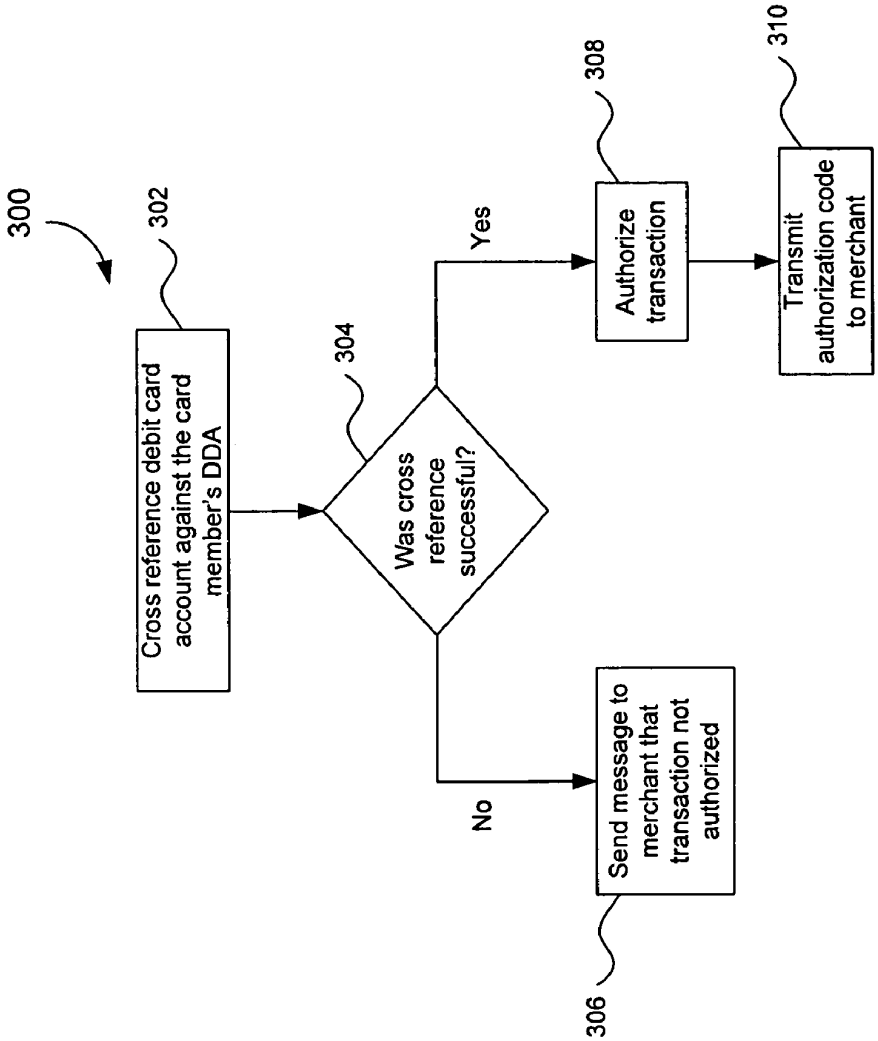

300
302
Cross reference debit card account against the card member's DDA
304
Was cross reference successful?
Yes
No
308
Authorize transaction
310
Transmit authorization code to merchant
306
Send message to merchant that transaction not authorized

FIG. 3

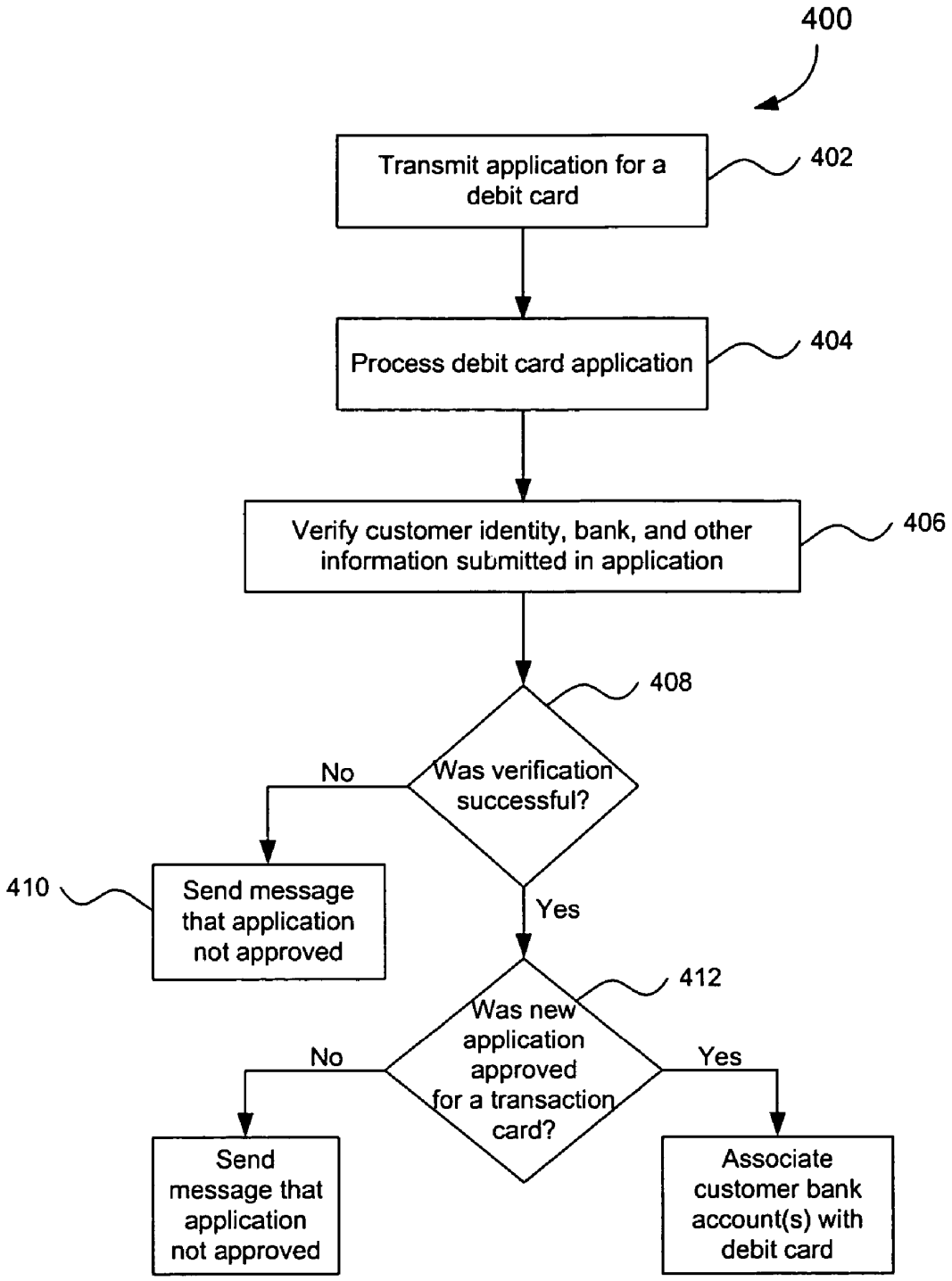

400
Transmit application for a debit card
402
Process debit card application
404
Verify customer identity, bank, and other information submitted in application
406
408
Was verification successful?
No
Send message that application not approved
410
Yes
412
Was new application approved for a transaction card?
No
Yes
Send message that application not approved
Associate customer bank account(s) with debit card

FIG. 4

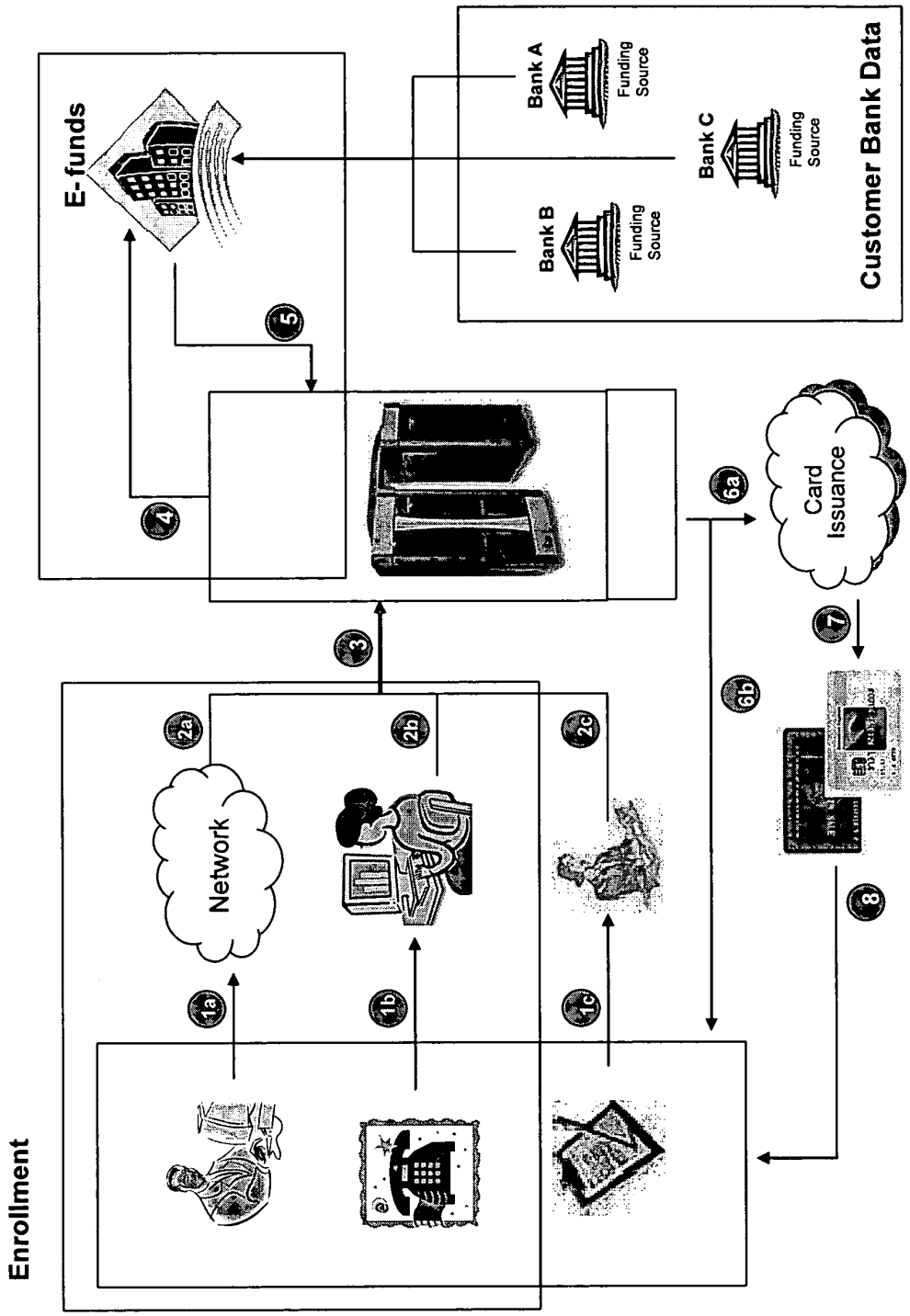

500
Enrollment
Network
E- funds
Bank A
Funding Source
Bank B
Funding Source
Bank C
Funding Source
Customer Bank Data
Card Issuance
1a
1b
1c
2a
2b
2c
3
4
5
6a
6b
7
8

FIG. 5

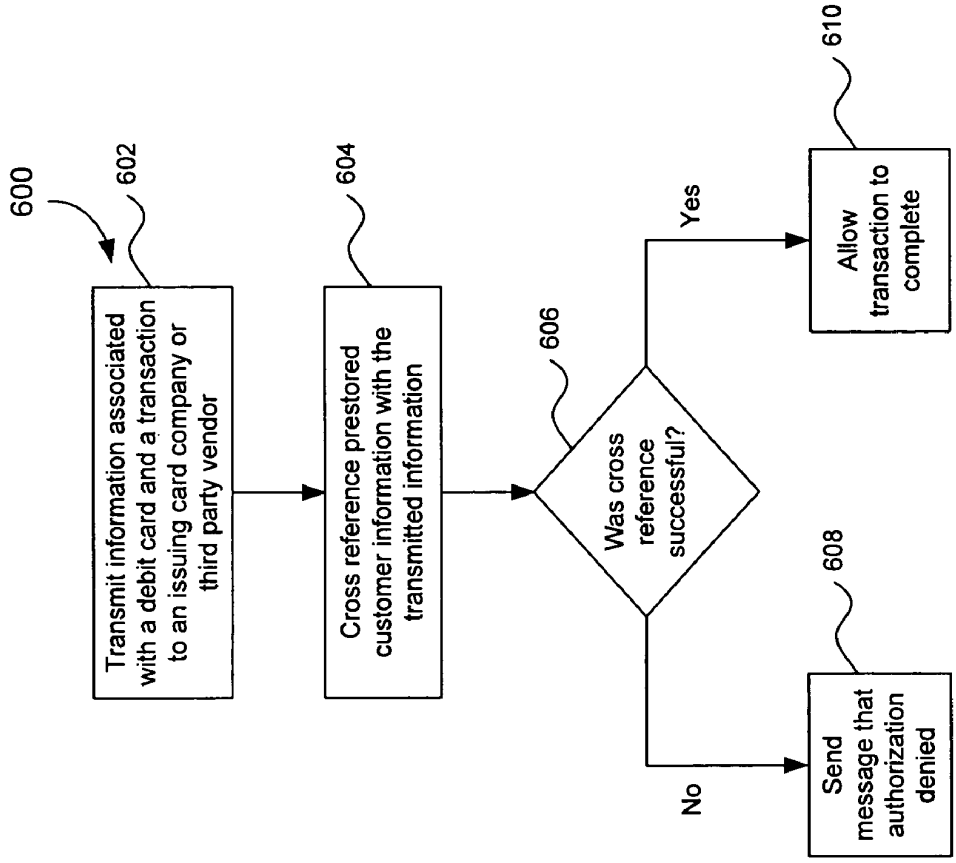

600
602
Transmit information associated with a debit card and a transaction to an issuing card company or third party vendor
604
Cross reference prestored customer information with the transmitted information
606
Was cross reference successful?
Yes
No
610
Allow transaction to complete
608
Send message that authorization denied

FIG. 6

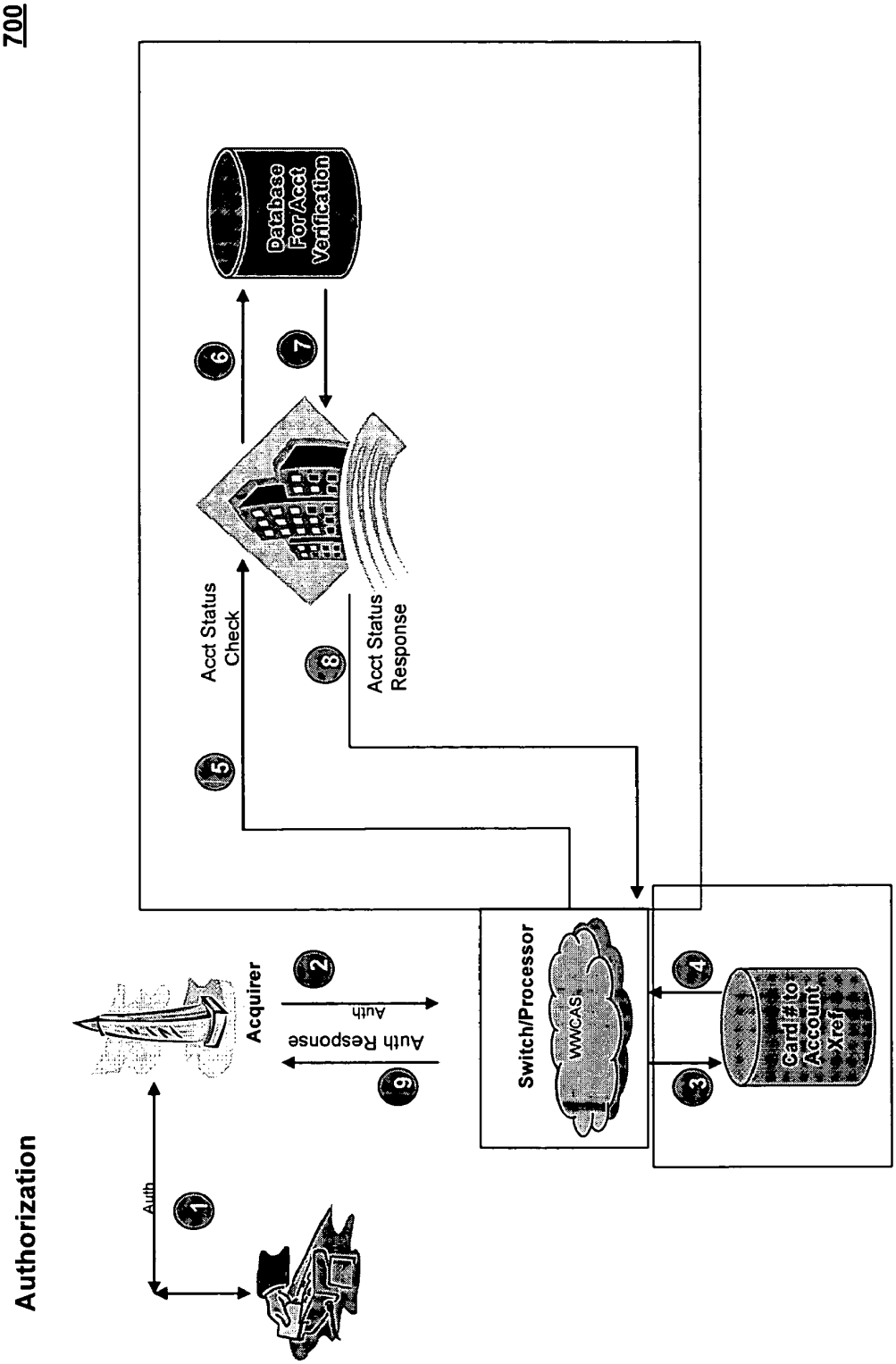

700
Authorization
Auth
1
Acquirer
2
Auth
Auth Response
9
Switch/Processor
WWCAS
3
4
Card # to Account Xref
5
Acct Status Check
6
7
Database For Acct Verification
8
Acct Status Response

FIG. 7

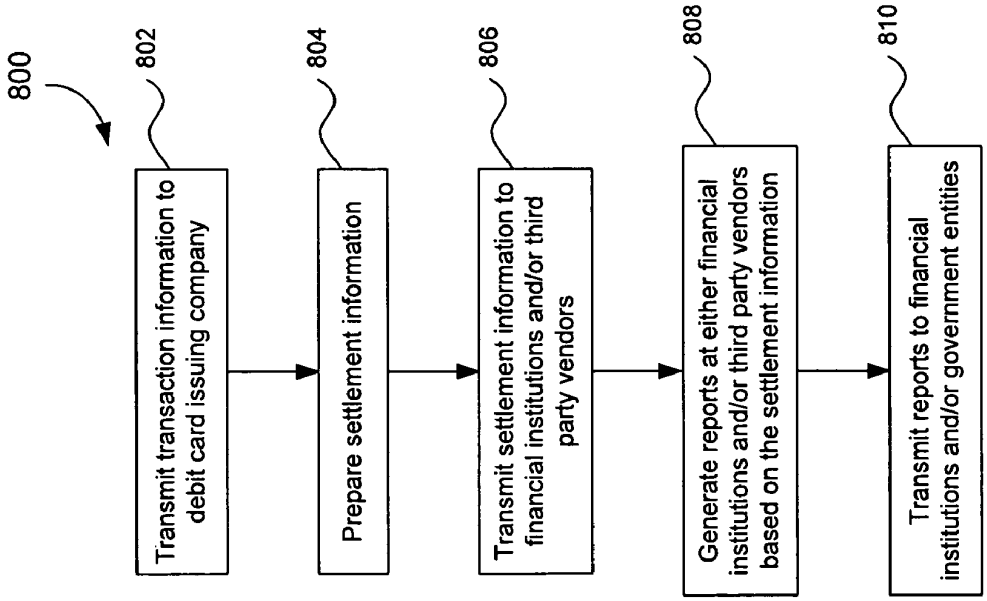

800
802
Transmit transaction information to debit card issuing company
804
Prepare settlement information
806
Transmit settlement information to financial institutions and/or third party vendors
808
Generate reports at either financial institutions and/or third party vendors based on the settlement information
810
Transmit reports to financial institutions and/or government entities

FIG. 8

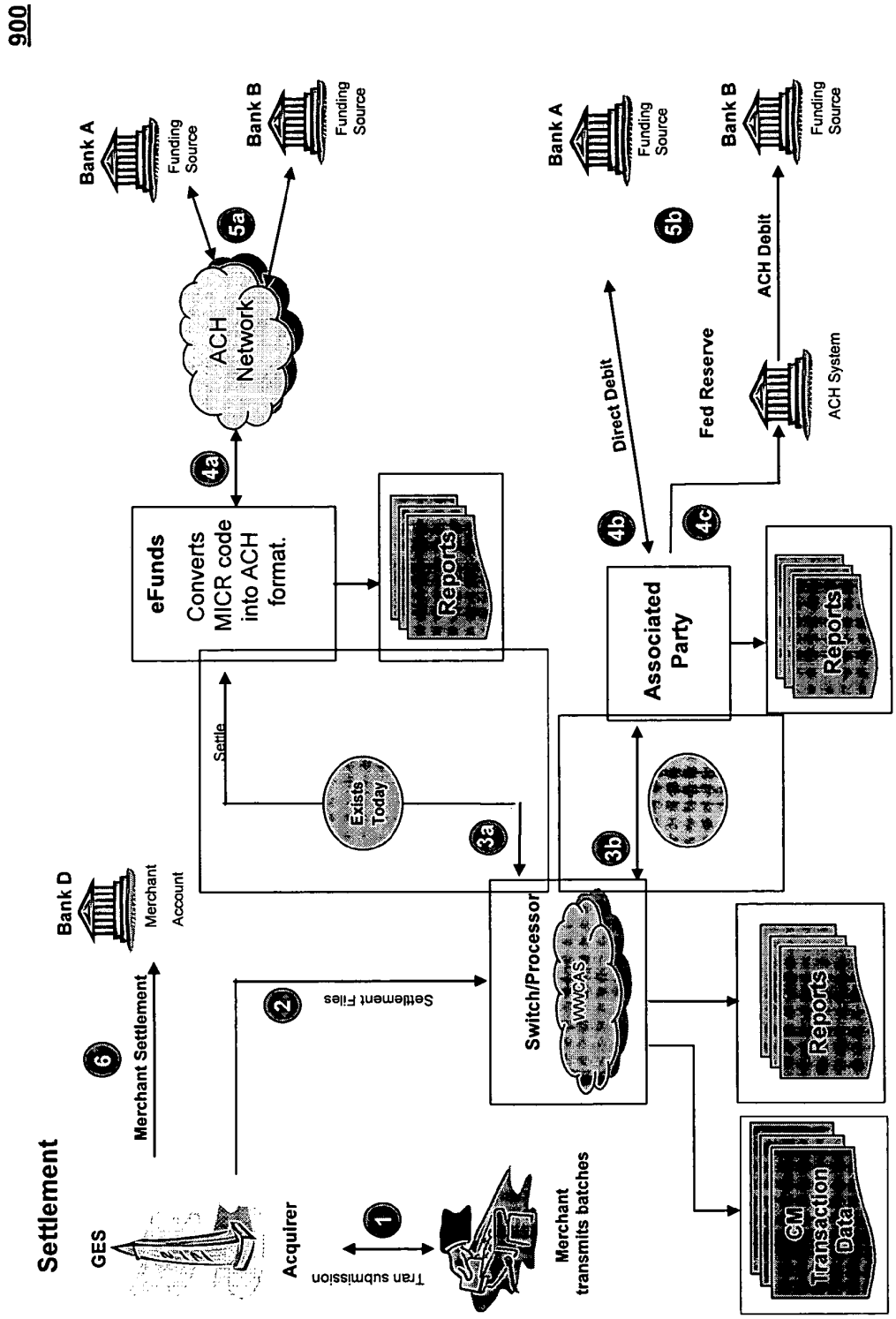

900
Settlement
GES
Merchant Settlement
6
Bank D
Merchant Account
Acquirer
Tran submission
1
Merchant transmits batches
2
Settlement Files
Switch/Processor
WWCAS
Settle
Exists Today
3a
3b
eFunds
Converts MICR code into ACH format.
4a
ACH Network
5a
Bank A
Funding Source
Bank B
Funding Source
Reports
Direct Debit
4b
Associated Party
Fed Reserve
4c
ACH System
ACH Debit
5b
Bank A
Funding Source
Bank B
Funding Source
Reports
Reports
CM Transaction Data

FIG. 9

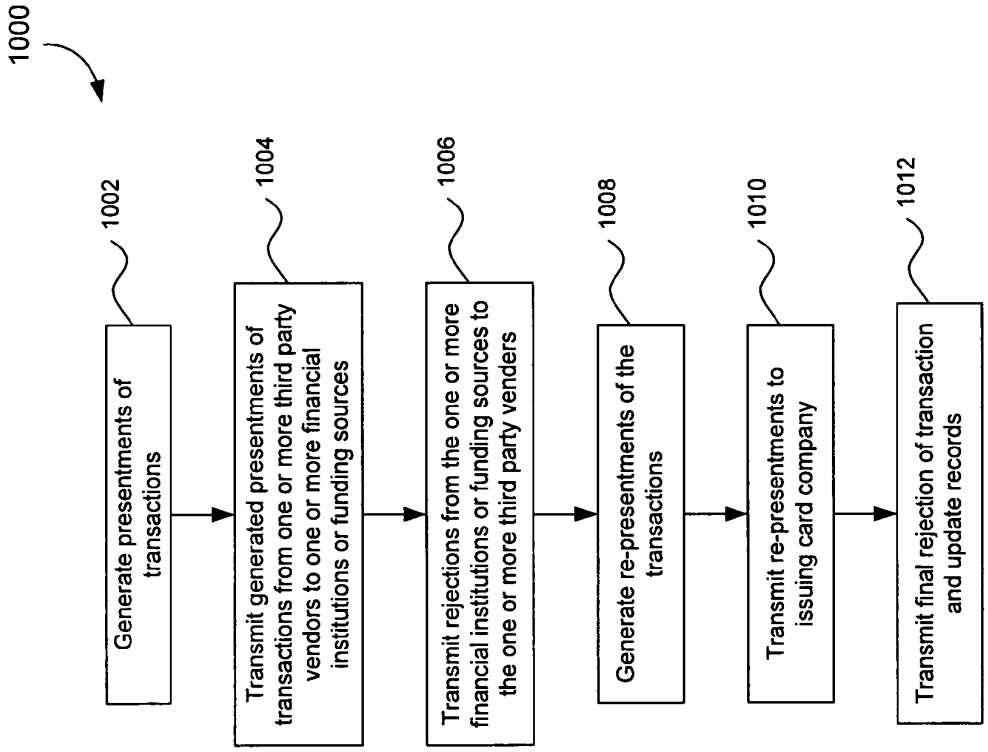

1000
1002
Generate presentments of transactions
1004
Transmit generated presentments of transactions from one or more third party vendors to one or more financial institutions or funding sources
1006
Transmit rejections from the one or more financial institutions or funding sources to the one or more third party venders
1008
Generate re-presentments of the transactions
1010
Transmit re-presentments to issuing card company
1012
Transmit final rejection of transaction and update records

FIG. 10

1100

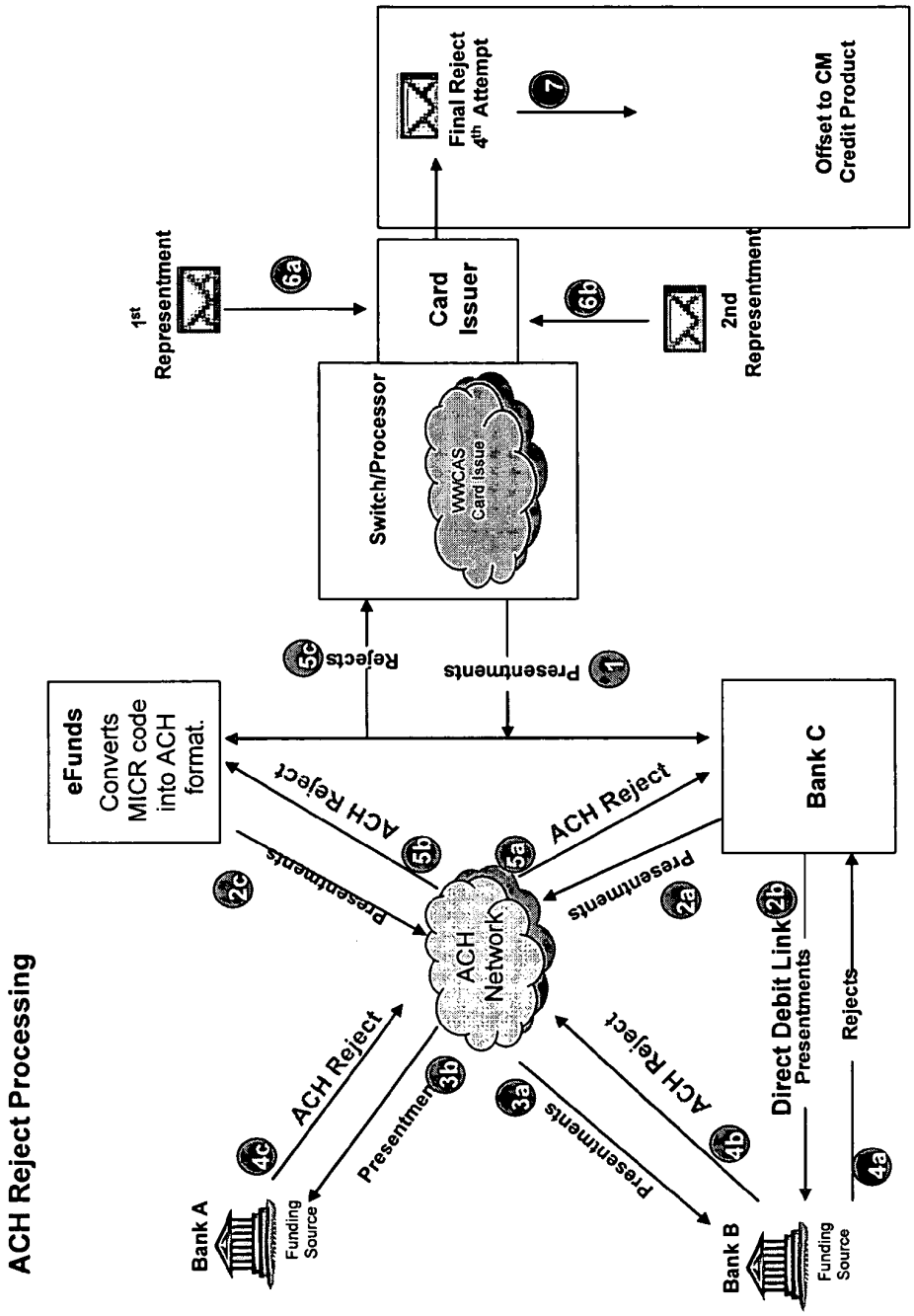

ACH Reject Processing
Bank A
Funding Source
Bank B
Funding Source
ACH Network
ACH Reject
ACH Reject
ACH Reject
Presentments
Presentments
Presentments
Presentments
Direct Debit Link
Presentments
Rejects
eFunds
Converts MICR code into ACH format.
Bank C
Rejects
Presentments
Switch/Processor
WWCAS Card Issue
Card Issuer
1st Representment
2nd Representment
Final Reject 4th Attempt
Offset to CM Credit Product
1
2a
2b
2c
3a
3b
4a
4b
4c
5a
5b
5c
6a
6b
7

FIG. 11

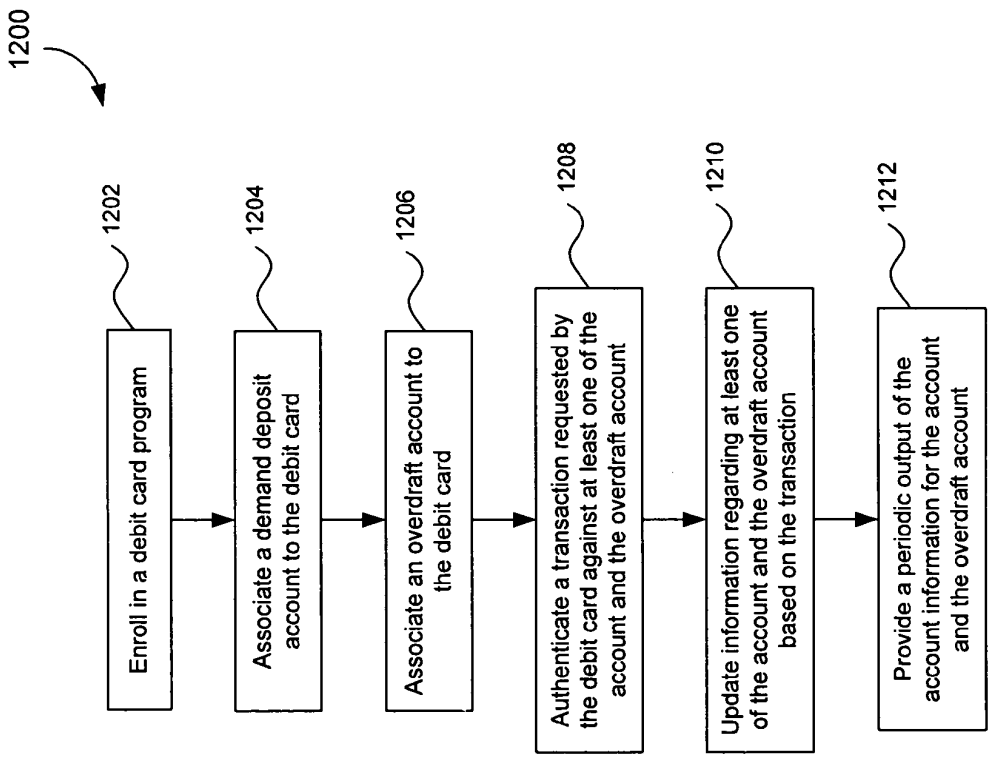

1200
1202
Enroll in a debit card program
1204
Associate a demand deposit account to the debit card
1206
Associate an overdraft account to the debit card
1208
Authenticate a transaction requested by the debit card against at least one of the account and the overdraft account
1210
Update information regarding at least one of the account and the overdraft account based on the transaction
1212
Provide a periodic output of the account information for the account and the overdraft account

FIG. 12

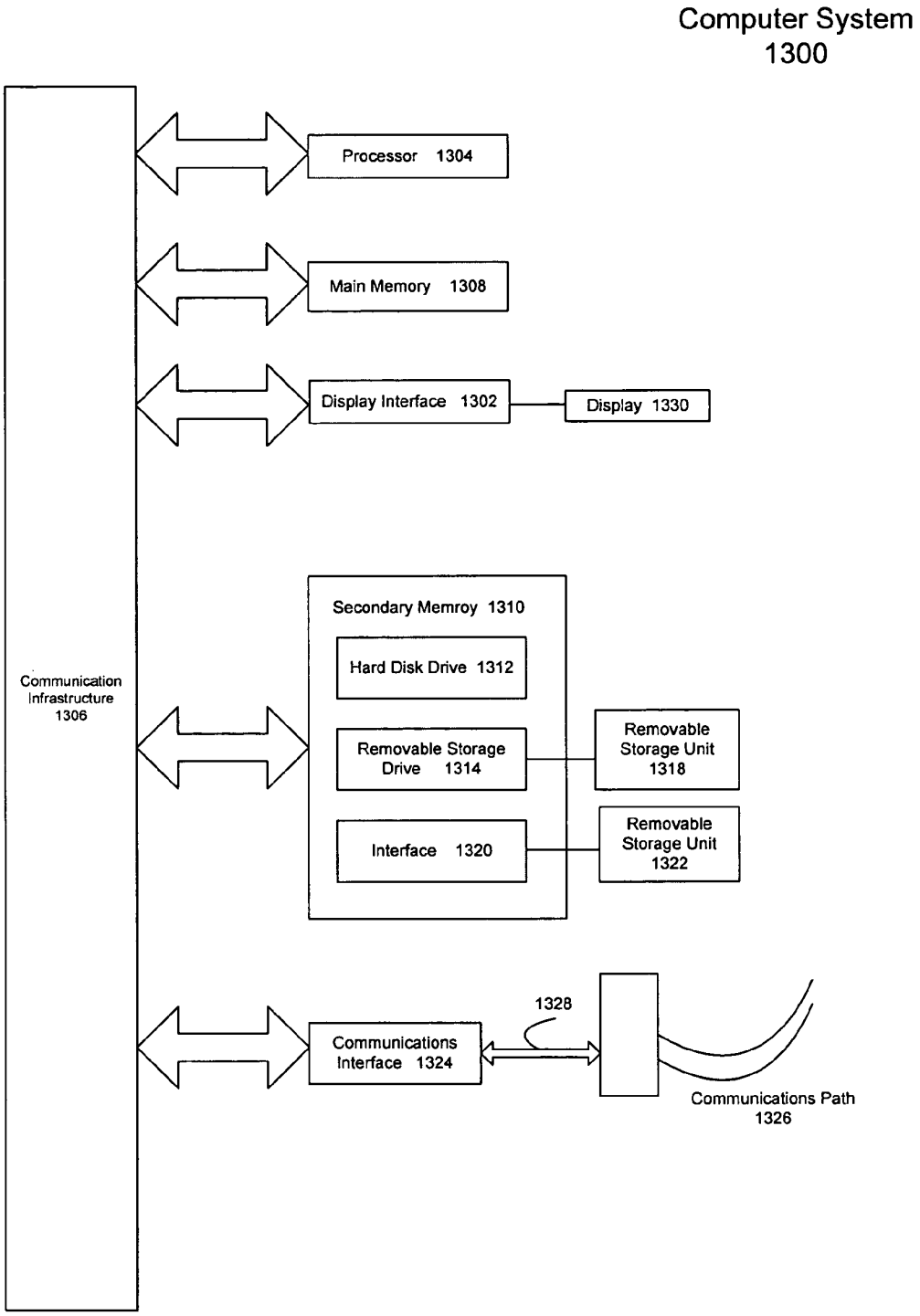

Computer System
1300
Processor 1304
Main Memory 1308
Display Interface 1302
Display 1330
Communication Infrastructure 1306
Secondary Memroy 1310
Hard Disk Drive 1312
Removable Storage Drive 1314
Interface 1320
Removable Storage Unit 1318
Removable Storage Unit 1322
1328
Communications Interface 1324
Communications Path 1326

FIG. 13

SYSTEM, METHOD, AND COMPUTER PROGRAM PRODUCT FOR ISSUING AND USING DEBIT CARDS

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Patent Application No. 60/695,855, filed Jul. 5, 2005, which is incorporated by reference herein in its entirety.

BACKGROUND

1. Field of the Invention

The present invention generally relates to debit cards.

2. Related Art

In the market today, more people are opting for prepaid cards (e.g., debit cards, stored value cards, etc.) as a means of limiting or monitoring their spending, rather than using more traditional credit or charge cards which can carry interest charges if the total amount charged on such cards are not repaid within a specified period of time (e.g., 30 days). Unfortunately, a credit and charge card account company may not be able to enter into this market because they do not operate a bank which offers demand deposit account services. Thus, it is not unexpected to find that banks which issue charge and credit cards appear to be dominating the prepaid card market.

Given the foregoing, what is needed is a system, method and computer program product for allowing companies that do not have the ability to offer consumers banking-type deposit accounts to issue pre-paid/debit-type cards to their customers.

BRIEF DESCRIPTION

The present invention meets the above-identified needs by providing a system, method and computer program product for allowing debit cards to be issued to customers by companies who do not have traditional bank-type operations, and thus do not offer, or do not widely offer, demand deposit accounts.

In one embodiment, a method is provided comprising: enrolling in a debit card program, associating an account to the debit card, associating an overdraft account (e.g., a charge or credit card) to the debit card, authenticating a transaction requested by the debit card against at least one of the account or the overdraft account, updating information regarding at least one of the account or the overdraft account based on the transaction, and providing a periodic output of the account information for the account and the overdraft account.

In another embodiment, a system comprises an enrolling system, an authentication system, and a settlement system. The enrolling system verifies an enrollee, associates an enrollee's main and overdraft account, and issues a debit card. The authentication system receives information regarding a requested transaction of a debit card, receives information regarding the main and overdraft account associated with the debit card, and accepts or rejects the requested transaction based thereon. The settlement system generates a periodic report of at least one of the transactions, the main account, and the overdraft account. The overdraft account can be a charge or credit account.

Further features and advantages of the present invention as well as the structure and operation of various embodiments of the present invention are described in detail below with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and advantages of the present invention will become more apparent from the detailed description set forth below when taken in conjunction with the drawings. The left-most digit of a reference number identifies the drawing in which the reference number first appears.

FIG. **1** is a system diagram.

FIG. **2** shows a flowchart depicting a debit card application method.

FIG. **3** shows a flowchart depicting a transaction processing method.

FIG. **4** shows a flowchart depicting an enrollment method.

FIG. **5** pictorially shows an enrollment process.

FIG. **6** shows a flowchart depicting a transaction authorization method.

FIG. **7** pictorially shows a transaction authorization process.

FIG. **8** shows a flowchart depicting a settlement method.

FIG. **9** pictorially shows a settlement process.

FIG. **10** shows a flowchart depicting a transaction rejection method.

FIG. **11** pictorially shows a transaction rejection process.

FIG. **12** shows a flowchart depicting an overall method.

FIG. **13** is a block diagram of a sample computer system that can be used in the implementation of one or more embodiments of the present invention.

DETAILED DESCRIPTION

Some acronyms used throughout this description are shown in the Table 1 below.

TABLE 1

DDA	Demand Deposit Account (e.g., checking account)
ACH	Automated Clearing House (e.g., electronic funds transfer system that handles settlement of transactions to DDAs - sample application: direct deposit of paychecks)
CCSG	Consumer Card Services Group (e.g., of the issuer)
TCPS	Travelers Check and Prepaid Services (e.g., an issuer business unit that issues travelers checks and prepaid products (e.g., gift cards))
Reg. Z	Federal Reserve System Regulation Z (Truth in Lending - governs issuance of credit cards)
Reg. E	Federal Reserve System Regulation E (Electronic Fund Transfers - governs issuance of debit cards)
BAU	Business as Usual (e.g., status quo)
CAS	Card Authorization System (e.g., an issuer system that authorizes point of sale transactions)
CMs (CM)	Card Member (i.e., the debit card issuer's customer)
TSC Rep	Telephone Service Center (e.g. customer service representative - also know as CSR)
GES	Global Establishment Services (e.g., an issuer business unit that establishes and maintains relationships with merchants for card acceptance)
WWCAS	Worldwide Card Authorization System (see CAS)
Xref	Cross Reference

TABLE 1-continued

NSF	Non Sufficient Funds (e.g., bounced check)
MICR (code)	Magnetic Ink Character Recognition (the numbers at the bottom of a paper check that define a DDA number and bank routing information)
OICR	Optical Ink Character Recognition

I. Overview and Terminology

The embodiment(s) described, and references in the specification to "one embodiment", "an embodiment", "an example embodiment", etc., indicate that the embodiment(s) described may include a particular feature, structure, or characteristic, but every embodiment may not necessarily include the particular feature, structure, or characteristic. Moreover, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it is understood that it is within the knowledge of one skilled in the art to effect such feature, structure, or characteristic in connection with other embodiments whether or not explicitly described.

The present invention is directed to a system, method and computer program product for issuing a debit-type card product in situations where the issuer does not offer, or does not widely offer, demand deposit accounts to consumers.

The debit product may be a debit card that will allow an issuer to launch a product targeting debit card users. Customers will be issued a new card product that will enable them to make purchases at all merchants that accept the issuer's other more traditional charge and/or credit cards. In one example, at the conclusion of each day purchases made on this product will be deducted from a card member specified DDA via ACH. The issuer will transmit an itemized list of transactions along with the purchase amounts via ACH to the linked DDA for inclusion in detailed statement by the DDA bank. Should transactions sent via ACH to the linked DDA be rejected due to non-sufficient funds, those purchases will be transferred to the customer's existing credit or charge account previously associated with the debit card. Transferred purchases may accrue interest and/or be charged a convenience fee under the terms of the agreement of the customer's credit/charge account with the issuer. The issuer will ensure on a periodic or per transaction basis that the customer's linked DDA is in good standing. The issuer will contract with external vendors, such as, for example, eFunds Corporation of Scottsdale, Ariz., to validate the DDA and ensure that the account is in good standing.

Additionally, or alternatively, in order to verify funds availability, the issuer may utilize data extracted from the online banking services of the customer's DDA. The card member must provide consent and the appropriate username and password to sign into the online banking services of the linked DDA for the purposes of obtaining available balance and transaction history. Purchases transacted on the debit card will be interrogated against the balance of the linked DDA. If the DDA balance exceeds the value of the card member purchase, the transaction will be approved. The transaction value deducted from the available balance may be provided to the card member to indicate their "line of credit." The DDA balance may also be provided to the customer as part of an ATM cash withdrawal transaction conducted with the debit card of the present invention. In one example, the issuer can use an external vendor, such as, for example, Yodlee, Inc., of Redwood City, Calif., to provide account aggregation services that could facilitate the extraction of customer data from non-issuer bank accounts.

Additionally, or alternatively, the debit card can be initially targeted at the issuer's existing card members. The existing credit/charge relationship may be utilized as a line of credit for all transactions that are rejected or returned by the card member's DDA during periodic (e.g., daily) "ACH sweeps."

In one example, customers of the debit card product will accrue points towards a loyalty program, such as the American Express Membership Rewards, Delta SkyMiles, Hilton HHonors, Starwood Points, Discover Cashback Bonus, or the like. Points accrued via this product may be aggregated to an existing loyalty program account. In lieu of points, the issuer may offer cash back on purchases as an incentive.

In one example, this product can be open to all customers with established DDAs, including asset managed investment and retirement accounts.

The terms "member," "card member," "user," "end user", "consumer", "customer," "participant," etc., and/or the plural form of these terms are used interchangeably throughout herein to refer to those persons or entities capable of accessing, using, being affected by and/or benefiting from the tool that the present invention provides for searching credit reports using only a partial social security number and other identifying information.

Furthermore, the terms "business" or "merchant" may be used interchangeably with each other and shall mean any person, entity, distributor system, software and/or hardware that is a provider, broker and/or any other entity in the distribution chain of goods or services. For example, a merchant may be a grocery store, a retail store, a travel agency, a service provider, an on-line merchant or the like.

Transaction Accounts and Instrument

A "transaction account" as used herein refers to an account associated with an open account or a closed account system (as described below). The transaction account may exist in a physical or non-physical embodiment. For example, a transaction account may be distributed in non-physical embodiments such as an account number, frequent-flyer account, and telephone calling account or the like. Furthermore, a physical embodiment of a transaction account may be distributed as a financial instrument.

A financial transaction instrument may be traditional plastic transaction cards, titanium-containing, or other metal-containing, transaction cards, clear and/or translucent transaction cards, foldable or otherwise unconventionally-sized transaction cards, radio-frequency enabled transaction cards, or other types of transaction cards, such as credit, charge, debit, pre-paid or stored-value cards, or any other like financial transaction instrument. A financial transaction instrument may also have electronic functionality provided by a network of electronic circuitry that is printed or otherwise incorporated onto or within the transaction instrument (and typically referred to as a "smart card"), or be a fob having a transponder and an RFID reader.

Open Versus Closed Cards

"Open cards" are financial transaction cards that are generally accepted at different merchants. Examples of open cards include the American Express®, Visa®, MasterCard® and Discover® cards, which may be used at many different retailers and other businesses. In contrast, "closed cards" are financial transaction cards that may be restricted to use in a particular store, a particular chain of stores or a collection of affiliated stores. One example of a closed card is a pre-paid

gift card that may only be purchased at, and only be accepted at, a clothing retailer, such as The Gap® store.

Stored Value Cards

Stored value cards are forms of transaction instruments associated with transaction accounts, wherein the stored value cards provide cash equivalent value that may be used within an existing payment/transaction infrastructure. Stored value cards are frequently referred to as gift, pre-paid or cash cards, in that money is deposited in the account associated with the card before use of the card is allowed. For example, if a customer deposits ten dollars of value into the account associated with the stored value card, the card may only be used for payments up to ten dollars.

Use of Transaction Accounts

With regard to use of a transaction account, users may communicate with merchants in person (e.g., at the box office), telephonically, or electronically (e.g., from a user computer via the Internet). During the interaction, the merchant may offer goods and/or services to the user. The merchant may also offer the user the option of paying for the goods and/or services using any number of available transaction accounts. Furthermore, the transaction accounts may be used by the merchant as a form of identification of the user. The merchant may have a computing unit implemented in the form of a computer-server, although other implementations are possible.

In general, transaction accounts may be used for transactions between the user and merchant through any suitable communication means, such as, for example, a telephone network, intranet, the global, public Internet, a point of interaction device (e.g., a point of sale (POS) device, personal digital assistant (PDA), mobile telephone, kiosk, etc.), online communications, off-line communications, wireless communications, and/or the like.

Account and Merchant Numbers

An "account," "account number" or "account code", as used herein, may include any device, code, number, letter, symbol, digital certificate, smart chip, digital signal, analog signal, biometric or other identifier/indicia suitably configured to allow a consumer to access, interact with or communicate with a financial transaction system. The account number may optionally be located on or associated with any financial transaction instrument (e.g., rewards, charge, credit, debit, prepaid, telephone, embossed, smart, magnetic stripe, bar code, transponder or radio frequency card).

The account number may be distributed and stored in any form of plastic, electronic, magnetic, radio frequency (RF), wireless, audio and/or optical device capable of transmitting or downloading data from itself to a second device. A customer account number may be, for example, a sixteen-digit credit card number. Each credit card issuer has its own numbering system, such as the fifteen-digit numbering system used by American Express Company of New York, N.Y. Each issuer's credit card numbers comply with that company's standardized format such that an issuer using a sixteen-digit format will generally use four spaced sets of numbers in the form of:

$$N_1N_2N_3N_4\ N_5N_6N_7N_8\ N_9N_{10}N_{11}N_{12}\ N_{13}N_{14}N_{15}N_{16}$$

The first five to seven digits are reserved for processing purposes and identify the issuing institution, card type, etc. In this example, the last (sixteenth) digit is typically used as a sum check for the sixteen-digit number. The intermediary eight-to-ten digits are used to uniquely identify the customer, card holder or card member.

A merchant account number may be, for example, any number or alpha-numeric characters that identifies a particular merchant for purposes of card acceptance, account reconciliation, reporting and the like.

RFID and Transmission of Magnetic Stripe Data

It should be noted that the transfer of information in accordance with the present invention, may be done in a format recognizable by a merchant system or account issuer. In that regard, by way of example, the information may be transmitted from an RFID device to an RFID reader or from the RFID reader to the merchant system in magnetic stripe or multi-track magnetic stripe format.

Because of the proliferation of devices using magnetic stripe format, the standards for coding information in magnetic stripe format were standardized by the International Organization for Standardization in ISO/IEC 7811-n (characteristics for identification cards) which are incorporated herein by reference. The ISO/IEC 7811 standards specify the conditions for conformance, physical characteristics for the card (warpage and surface distortions) and the magnetic stripe area (location, height and surface profile, roughness, adhesion, wear and resistance to chemicals), the signal amplitude performance characteristics of the magnetic stripe, the encoding specification including technique (MFM), angle of recording, bit density, flux transition spacing variation and signal amplitude, the data structure including track format, use of error correction techniques, user data capacity for ID-1, ID-2 and ID-3 size cards, and decoding techniques, and the location of encoded tracks.

Typically, magnetic stripe information is formatted in three tracks. Certain industry information must be maintained on certain portions of the tracks, while other portions of the tracks may have open data fields. The contents of each track and the formatting of the information provided to each track is controlled by the ISO/IEC 7811 standard. For example, the information must typically be encoded in binary. Track **1** is usually encoded with user information (i.e., name) in alphanumeric format. Track **2** is typically comprised of discretionary and nondiscretionary data fields. In one example, the nondiscretionary field may comprise 19 characters and the discretionary field may comprise 13 characters. Track **3** is typically reserved for financial transactions and includes enciphered versions of the user's personal identification number, country code, current units amount authorized per cycle, subsidiary accounts, and restrictions.

As such, where information is provided in accordance with the present invention, it may be provided in magnetic stripe track format. For example, the counter values, authentication tags and encrypted identifiers, described herein, may be forwarded encoded in all or a portion of a data stream representing data encoded in, for example, track **2** or track **3** format.

System Overview

FIG. **1** shows a system **100**. System **100** includes an enrolling system **102**, an authentication system **104**, and a settlement system **106**, which can all be coupled via a network **108** (e.g., a wired or wireless internet, intranet, etc.). Customers wanting to use a debit card program of an issuer enter information or data into enrolling system **102**. This information can be, but is not limited to, personal, financial, biographical, biometrical, etc. information. The information is transmitted via network **108** (or directly in some examples) to authentication system **104**. Authentication system **104** can be operated and positioned as an issuing company's system or can be a third party system, in various examples. Once the person's identity has been verified and financial information has been

accepted, one or more accounts (e.g., main and overdraft, DDA, etc.) of the person are associated with a debit card **110**.

Customers are then issued a debit card **110** for enabling purchases at all merchants **112** that accept debit card **110**. In one example, at the end of each business day, purchases made with the debit card **110** are deducted from the customer's specified DDA via the ACH. The card issuer maintains an itemized list of transactions along with purchase amounts and transmits this information through the ACH to the DDA bank **104**, which may use this information for creating detailed statements.

Additionally, or alternatively, for each transaction, fund availability may be verified, for example using authentication system **104**. In one example, this may be accomplished using data extracted from online banking services of the customer's DDA bank **104**. The customer provides consent and an appropriate user name/password for allowing the card issuer to sign into the online banking services of the DDA bank **104** for the purposes of obtaining available balance and transaction history. In one example, purchases transacted on the debit card **110** are interrogated against the balance of the linked DDA. If the DDA balance exceeds the value of the purchase, the transaction is approved. The transaction value deducted from the available balance may be provided to the customer to indicate their "line of credit." The card issuer may contract with third party service providers to provide account aggregation services that can facilitate the extraction of customer data from non-card issuer bank accounts.

In the event that the value of the purchase exceeds the DDA balance, the debit card **110** uses an overdraw feature. The purchase is then be transferred to a customer's existing credit or charge account that has been designated for use as an overdraft account. Alternatively, transferred purchases may accrue interest under the terms of the agreement of the customer's credit or charge account with the card issuer. Additionally, the card issuer may ensure on a periodic or per transaction basis that the customer's linked DDA is in good standing. This may be accomplished through the use of external vendors, such as eFunds, to validate account standing.

The debit card **110** allows the card issuer the ability to offer an additional revenue generating product to customers who prefer to use debit cards. The debit card **110** also allows the card issuer the ability to offer a debit product to an existing customer without having to offer the customer a DDA because the debit card is linked to the customer's existing DDA. The debit card **110** may be offered to all customers with established DDA's including asset managed investment accounts and retirement accounts.

Process Overview

FIG. **2** shows a flowchart depicting a debit card application method **200**. In step **202**, an application for a debit card is transmitted to a card issuing company. In step **204**, DDA information is provided by the applicant, which can include, e.g., bank routing and account information. In step **206**, the DDA information is validated through a third party vendor, which can be done to ensure the accuracy of data provided and that the account is in good standing. The DDA information could also be utilized for cash withdrawals at ATMs.

In one example, the debit card application method can include disclosures for extension of credit (Reg. Z) and daily direct debit from an existing DDA (Reg. E).

FIG. **3** shows a flowchart depicting a transaction processing method **300**. In step **302**, debit card account information captured at a merchant, e.g., either POS or via a network, is cross referenced against the card member's DDA. In step **304**, a determination is made whether the cross reference was successful. If no, in step **306** a message is sent to the merchant that the transaction was not authorized. If yes, in step **308** the transaction is authorized. In step **310**, an authorization code is transmitted to the merchant.

In one example, transactions are processed and authorized through CAS. The CAS cross references the debit card account against the card member's DDA. Similar to a paper check transaction, the authorization process may call a third-party vendor (e.g., eFunds or First Data Corporation of Greenwood Village, Colo.) to validate that the DDA is in good standing. Once the DDA is verified, the transaction is authorized by the CAS after which the authorization code is sent back to the merchant BAU. The process can include signature based authentication, transactions transmitted BAU, and verification.

FIG. **4** shows a flowchart depicting an enrollment method **400**. In step **402**, an application for a debit card is transmitted to a card issuing company. In step **404**, the debit card application is processed. In step **406**, the applicant's identity, bank, and other information submitted in the application are verified. In step **408**, a determination is made whether the verification was successful. If no, in step **410** a message is sent that the application was not approved. If yes, in step **412**, a determination is made whether the new application should be accepted. If no, in step **414** a message is sent to the applicant that the application has been declined. If yes, in step **416** the applicant's bank accounts are associated with the debit card.

FIG. **5** pictorially shows an enrollment process **500**. In this system and process, in steps **1***a*, **1***b*, and **1***c*, respectively, a customer applies for a debit card via the web, telephone or through a paper application. The application information is received by a respective entity of an issuing card company (e.g., Internet, TSC representative, or a data entry representative) who in respective steps **2***a*, **2***b*, and **2***c* transmit the information to a new account processing portion **3**. In step **4**, an issuer or third party verification is performed on this information via customer bank data, and results are returned in step **5**. If approved, in steps **6***a*, **7**, and **8**, customer accounts are associated with a debit card, which is mailed to the customer. If denied, in step **6***b* the customer is alerted of the denial.

FIG. **6** shows a flowchart depicting a transaction processing method **600**. In step **602**, information associated with a debit card and a transaction is transmitted to an issuing card company or third party vendor. In step **604**, a cross reference is made between pre-stored customer information and the transmitted information. In step **606**, a decision is made whether the cross-reference was successful. If no, in step **608** a message that authorization is denied is sent to the customer/merchant. If yes, in step **610** the transaction is allowed to be completed.

FIG. **7** pictorially shows a transaction authorization process **700**. In step **1**, the debit card information is received at a merchant, and an authorization process begins. The authorization process starts through a communication between the merchant and a card issuer system (e.g., Amex-GES). In step **2**, the card issuer system is notified of the requested transaction. In steps **3** and **4**, the customer's information stored in a database is cross referenced. In steps **5**, **6**, **7**, and **8** an account status is retrieved. In one example, the account status is retrieved by a card issuer or third party system verifying the information using information stored in another database. In step **9**, if verification is successful, the requested transaction is allowed to occur and the transaction is completed.

In one example, authorization is performed in method **600** and/or **700** using an enrollment-Fraud Assessment system and method, in which a neutral-network decision model pre-

dicts likelihood of fraud. This determines Identity Information Validation, which means the applicant is who they say they are. This can be done using Predictive Scoring using a logistic scoring model. The following information, for example, can be used for the authorization: Thomson MICR* ID, Unpaid NSF checks written to retailers, Account status of serious unpaid NSF accounts, Closed account references from Multiple sources, Private/Shared velocity of all consumers as MICR funding activity on the Internet, OICR validation of known financial services companies that use ACH, Name/MICR Association from Debit Bureau, Convenience Check Analysis. MICR Code is a nine-digit number that helps in sorting checks, and also helps in uniquely identifying a branch of any given bank in any given city.

FIG. **8** shows a flowchart depicting a settlement method **800**. In step **802**, transaction information is transmitted to a debit card issuing company. In step **804**, settlement information is prepared. In step **806**, the settlement information is transmitted to financial institutions and/or third party vendors. In step **808**, reports are generated at either the financial institutions and/or the third party vendors based on the settlement information. In step **810**, the reports are transmitted to other financial institutions and/or governmental entities.

FIG. **9** pictorially shows a settlement process **900**. In step **1**, a transaction is submitted to a debit card issuing company. In step **2**, settlement files are generated and transmitted by the card issuing company to a network switch or processor. In one example, the settlement files can include information that is used to prepare CM transaction data and other reports via the card issuer WWCAS.

In one example, in step **3***a*, the settlement files and associated data are transmitted via the card issuer WWCAS to a third party vendor, for example eFunds. Additionally, or alternatively, the third party vendor can process the received information, for example by converting MICR code in ACH format. In step **4***a*, a connection to an ACH network is established that allows for transmission and receipt of information relating to the CM transaction data and the other reports. In step **5***a*, a connection between the ACH network and one or more funding sources (e.g., banks) is established that allows for transmission and receipt of information corresponding to the CM transaction data and the other reports.

Additionally, or alternatively, in step **3***b*, a connection is established between the card issuer WWCAS and an Associated Party. In process **4***b*, a connection is established between the Associated Party and a finding source, and additionally or alternatively, in process **4***c* a connection is established between the Associated Party and a funding source via an ACH system (e.g., the Federal Reserve). The connection(s) are used to transmit and received information associated with the settlement files and associated information. The received information can be used by the Associated Party to generate reports.

FIG. **10** shows a flowchart depicting a transaction rejection method **1000** of a requested transaction. In step **1002**, presentments of transactions are generated. In step **1004**, the generated presentments of transactions are transmitted from one or more third party vendors to one or more financial institutions or funding sources. In step **1006**, rejections of the presented transactions are transmitted from the one or more financial institutions or funding sources to the one or more third party vendors. In step **1008**, re-presentments of the transactions are generated. In step **1010**, the re-presentments of the transactions are transmitted to an issuing card company. In step **1012**, final rejections of the re-presented transactions are transmitted and associated records (e.g., electronic records) are updated.

FIG. **11** pictorially shows a transaction rejection process of a requested transaction. In step **1**, a presentment of a requested transaction is made, possibly via a card issuer WWCAS switch/processor. The presentments can be transmitted to a Bank C and/or a third party vendor, such as eFunds. For example, eFunds can be used to convert MICR code into ACH format.

In one example, in combined or alternative steps **2***a* and **2***b*, Bank C can transmit the presentment information either directly to Bank B or to an ACH network. If sent to the ACH network, in combined or alternative steps **3***a* and **3***b*, the ACH network can transmit the presentment information to Bank A and/or Bank B. Additionally, or alternatively, in step **2***c* eFunds can transmit the presentment information via the ACH network to either Bank A and/or Bank B.

In one example, when step **2***b* has occurred, in step **4***a* a reject notification can be transmitted from Bank B to Bank C rejecting the transaction. In another example, when step **2***a* has occurred, in steps **4***a*, **4***b*, and **4***c* one or more rejection notifications can be transmitted from one or both of Banks A and Bank B either to the ACH Network or to Bank C rejecting the requested transaction. In a further example, when step **2***c* has occurred, in steps **4***a*, **4***b*, and **4***c* one or more rejection notifications can be transmitted from one or both of Banks A and Bank B to either the ACH Network or Bank C. If the one or more respective rejection notices from Banks A and/or B are received at the ACH Network, in steps **5***a* and **5***b*, the one or more rejection notices from the respective one or both of Bank A and/or Bank B are transmitted by the ACH Network to one or both of Bank C and eFunds.

In steps **6***a* and **6***b*, at least one or more re-presentments are made for the transaction to be accepted. In step **7**, a final rejection is sent to the customer regarding the customers DDA, and an excess amount over the DDA limit is posted to the customer's overdraft account. For example, this overdraft account can be a charge or credit card of the issuing company that is issued to the customer and previously associated with the debit card.

Overview of Process

FIG. **12** show a flowchart depicting an overall method **1200**. In step **1202**, a consumer enrolls into a debit card program and is issued a debit card. In step **1204**, a DDA is associated with the debit card. In step **1206**, an overdraft account is associated with the debit card. In step **1208**, a transaction requested by the debit card is authenticated against at least one of the account and the overdraft account. In step **1210**, information regarding at least one of the account and the overdraft account is updated based on the transaction. In step **1212**, a periodic output of the account information for the account and the overdraft account is provided to the consumer.

Example Implementations

FIG. **13** is a block diagram of a sample computer system **1300** that can be used in the implementation of one or more embodiments of the present invention.

The present invention (i.e., system **100**, systems and processes in FIGS. **2-12**, or any part(s) or function(s) thereof) may be implemented using hardware, software or a combination thereof and may be implemented in one or more computer systems or other processing systems. However, the manipulations performed by the present invention were often referred to in terms, such as receiving or comparing, which are commonly associated with mental operations performed by a human operator. No such capability of a human operator

is necessary, or desirable in most cases, in any of the operations described herein which form part of the present invention. Rather, the operations are machine operations. Useful machines for performing the operation of the present invention include general purpose digital computers or similar devices.

In fact, in one embodiment, the invention is directed toward one or more computer systems capable of carrying out the functionality described herein. An example of a computer system **1300** is shown in FIG. **13**.

The computer system **1300** includes one or more processors, such as processor **1304**. The processor **1304** is connected to a communication infrastructure **1306** (e.g., a communications bus, cross-over bar, or network). Various software embodiments are described in terms of this exemplary computer system. After reading this description, it will become apparent to a person skilled in the relevant art(s) how to implement the invention using other computer systems and/or architectures.

Computer system **1300** can include a display interface **1302** that forwards graphics, text, and other data from the communication infrastructure **1306** (or from a frame buffer not shown) for display on the display unit **1330**.

Computer system **1300** also includes a main memory **1308**, preferably random access memory (RAM), and may also include a secondary memory **1310**. The secondary memory **1310** may include, for example, a hard disk drive **1312** and/or a removable storage drive **1314**, representing a floppy disk drive, a magnetic tape drive, an optical disk drive, etc. The removable storage drive **1314** reads from and/or writes to a removable storage unit **1318** in a well known manner. Removable storage unit **1318** represents a floppy disk, magnetic tape, optical disk, etc. which is read by and written to by removable storage drive **1314**. As will be appreciated, the removable storage unit **1318** includes a computer usable storage medium having stored therein computer software and/or data.

In alternative embodiments, secondary memory **1310** may include other similar devices for allowing computer programs or other instructions to be loaded into computer system **1300**. Such devices may include, for example, a removable storage unit **1322** and an interface **1320**. Examples of such may include a program cartridge and cartridge interface (such as that found in video game devices), a removable memory chip (such as an erasable programmable read only memory (EPROM), or programmable read only memory (PROM)) and associated socket, and other removable storage units **1322** and interfaces **1320**, which allow software and data to be transferred from the removable storage unit **1322** to computer system **1300**.

Computer system **1300** may also include a communications interface **1324**. Communications interface **1324** allows software and data to be transferred between computer system **1300** and external devices. Examples of communications interface **1324** may include a modem, a network interface (such as an Ethernet card), a communications port, a Personal Computer Memory Card International Association (PCMCIA) slot and card, etc. Software and data transferred via communications interface **1324** are in the form of signals **1328** which may be electronic, electromagnetic, optical or other signals capable of being received by communications interface **1324**. These signals **1328** are provided to communications interface **1324** via a communications path (e.g., channel) **1326**. This channel **1326** carries signals **1328** and may be implemented using wire or cable, fiber optics, a telephone line, a cellular link, an radio frequency (RF) link and other communications channels.

In this document, the terms "computer program medium" and "computer usable medium" are used to generally refer to media such as removable storage drive **1314**, a hard disk installed in hard disk drive **1312**, and signals **1328**. These computer program products provide software to computer system **1300**. The invention is directed to such computer program products.

Computer programs (also referred to as computer control logic) are stored in main memory **1308** and/or secondary memory **1310**. Computer programs may also be received via communications interface **1324**. Such computer programs, when executed, enable the computer system **1300** to perform the features of the present invention, as discussed herein. In particular, the computer programs, when executed, enable the processor **1304** to perform the features of the present invention. Accordingly, such computer programs represent controllers of the computer system **1300**.

In an embodiment where the invention is implemented using software, the software may be stored in a computer program product and loaded into computer system **1300** using removable storage drive **131**, hard drive **1312** or communications interface **1324**. The control logic (software), when executed by the processor **1304**, causes the processor **1304** to perform the functions of the invention as described herein.

In another embodiment, the invention is implemented primarily in hardware using, for example, hardware components such as application specific integrated circuits (ASICs). Implementation of the hardware state machine so as to perform the functions described herein will be apparent to persons skilled in the relevant art(s). In yet another embodiment, the invention is implemented using a combination of both hardware and software.

CONCLUSION

While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example, and not limitation. It will be apparent to persons skilled in the relevant art(s) that various changes in form and detail can be made therein without departing from the spirit and scope of the present invention). Thus, the present invention should not be limited by any of the above described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

In addition, it should be understood that the figures and screen shots illustrated in the attachments, which highlight the functionality and advantages of the present invention, are presented for example purposes only. The architecture of the present invention is sufficiently flexible and configurable, such that it may be utilized (and navigated) in ways other than that shown in the accompanying figures.

Further, the purpose of the following Abstract is to enable the U.S. Patent and Trademark Office and the public generally, and especially the scientists, engineers and practitioners in the art who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The Abstract is not intended to be limiting as to the scope of the present invention in any way.

What is claimed is:

1. A method comprising:

authenticating, by a processing device, a transaction requested by a debit card against at least one of a demand deposit account associated with the debit card or an overdraft account associated with the debit card,

wherein the authentication includes fraud assessment, and wherein the fraud assessment includes communication with data sources via a network; and

updating, by the processing device, information regarding at least one of the demand deposit account and the overdraft account based on the transaction.

2. The method of claim **1**, wherein the overdraft account is a transaction account.

3. The method of claim **1**, wherein the overdraft account is a bank account.

4. The method of claim **1**, further comprising, before the authenticating, enrolling in a debit card program during which the associating of the demand deposit account and the overdraft account are performed.

5. The method of claim **1**, further comprising:

providing a periodic output of the account information for the demand deposit account and the overdraft account.

6. A system, comprising:

an authentication system configured to:

receive information regarding a requested transaction of a debit card,

receive information regarding a main account that has been associated with the debit card and an overdraft account that has been associated with the debit card, and

accept or reject the requested transaction based on an authorization including a fraud assessment, wherein the fraud assessment includes communication with data sources via a network.

7. The system of claim **6**, wherein the main account and the overdraft account are held at unrelated financial institutions.

8. The system of claim **6**, further comprising:

an enrolling system that is configured to verify an enrollee, to perform the associating of the main and overdraft accounts of the enrollee with the debit card, and to issue the debit card.

9. The system of claim **8**, wherein the enrolling system is configured to use a transaction account as the overdraft account.

10. The system of claim **8**, wherein the enrolling system is configured to use a banking account as the overdraft account.

11. The system of claim **6**, further comprising: a settlement system configured to generate a periodic report of at least one of the transactions, the main account, and the overdraft account.

12. A computer program product for performing a debit card authentication the computer program product comprising a tangible computer usable medium having control logic stored therein, said control logic comprising:

first computer readable program code means for authenticating, through authorizing including fraud assessment, a transaction requested by the debit card against at least one of an account that has been associated with the debit card or an overdraft account that has been associated with the debit card, wherein the fraud assessment includes communication with information sources via a network; and

second computer readable program code means for updating information regarding at least one of the account or the overdraft account based on the transaction.

13. The computer program product of claim **12**, further comprising:

third computer readable program code means for enrolling into a debit card program;

fourth computer readable program code means for associating the account to the debit card; and

fifth computer readable program code means for associating the overdraft account to the debit card.

14. The computer program product of claim **12**, further comprising:

third computer readable program code means for providing a periodic output of the account information for the account and the overdraft account.

15. A tangible computer-readable medium having stored thereon computer executable instructions that, if executed by a computing device, cause the computing device to perform a method comprising:

authenticating, through authorizing including fraud assessment, a transaction requested by a debit card against at least one of a demand deposit account that has been associated with the debit card and an overdraft account that has been associated with the debit card, wherein the fraud assessment includes communication with information sources via a network; and

updating information regarding at least one of the demand deposit account and the overdraft account based on the transaction.

16. The method of claim **15**, further comprising, before the authenticating, enrolling in a debit card program during which the associating of the demand deposit account and the overdraft account are performed.

17. The method of claim **15**, further comprising:

providing a periodic output of the account information for the demand deposit account and the overdraft account.

* * * * *