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A METHOD AND SYSTEM FOR SELECTION OF PAYMENT CARDS FOR TRANSACTIONS AFTER PRE-STIPULATED TIME PERIODS

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RUNGTA, ADITI; HENG, JOZUA; TAY, EDWIN KAI CONG; LIM, WAY ZHENG CALVEN; and ZHAO, LUTONG, "A METHOD AND SYSTEM FOR SELECTION OF PAYMENT CARDS FOR TRANSACTIONS AFTER PRE-STIPULATED TIME PERIODS", Technical Disclosure Commons, (December 20, 2022) https://www.tdcommons.org/dpubs_series/5589



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TITLE "A METHOD AND SYSTEM FOR SELECTION OF PAYMENT CARDS FOR TRANSACTIONS AFTER PRE-STIPULATED TIME PERIODS"

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TECHNICAL FIELD

[001] The present disclosure generally relates to the field of tokenisation and processing cards. More particularly, but not exclusively, the disclosure relates to a method and a system for selection of payment cards for transactions after pre-stipulated time period.

BACKGROUND

[002] Retail cards including both debit, and credit cards, have been an innovation which has not only allowed people to splurge, but also avail various benefits including, but not limited to, more shopping, free flight tickets, movie vouchers, spa days, and the like. Although use of these cards allows consumers to avail various benefits, each card is unique in its own by offering a different type and set of benefits. Due to this, most consumers have started keeping and utilising multiple cards. Each card generally allows them to avail different benefits, that another card may not. With such variety and diversification of these cards, it is difficult for consumers to choose an appropriate card at a time of transaction/payment.

[003] Conventional methods allow the consumers to only select a given card for each transaction at the time of the transaction. This may be incessantly time-taking and hassle-some since the consumer must finalise and decide which card to use either with no apparent information or scout benefits through websites to choose a best card. Eventually, this ruins an overall experience of the consumer and puts a lot of stress on the consumer at the time of the transaction. Often, consumers do not end up choosing the card which maximises their benefits and end up losing out on the benefits being provided.

[004] The information disclosed in this background of the disclosure section is only for enhancement of understanding of the general background of the invention and should not be taken as an acknowledgement or any form of suggestion that this information forms the prior art already known to a person skilled in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

[005] The accompanying drawings, which are incorporated in and constitute a part of this disclosure, illustrate exemplary embodiments and, together with the description, serve to explain the disclosed principles. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears.

[006] The same numbers are used throughout the figures to reference like features and components. Some embodiments of device or system and/or methods in accordance with embodiments of the present subject matter are now described, by way of example only, and with reference to the accompanying figures, in which:

[007] **FIGURE 1** illustrates an exemplary representation for registering a consumer for providing selection of payment cards for transactions after pre-stipulated time period, in accordance with some embodiments of the present disclosure;

[008] **FIGURE 2** shows a flowchart illustrating a method of providing selection of payment cards for transactions after pre-stipulated time periods, in accordance with some embodiments of the present disclosure;

[009] **FIGURES 3a-3c** illustrate exemplary embodiments demonstrating grouping of authorisation requests sent to issuers, in accordance with some embodiments of the present disclosure.

[010] **FIGURE 4** illustrates an exemplary representation for clearing a transaction using a payment card, in accordance with some embodiments of the present disclosure; and

[011] **FIGURE 5** illustrates a block diagram of an exemplary computer system for implementing embodiments consistent with the present disclosure.

[012] The figures depict embodiments of the disclosure for purposes of illustration only. One skilled in the art will readily recognize from the following description that alternative embodiments of the structures and methods illustrated herein may be employed without departing from the principles of the disclosure described herein.

DESCRIPTION OF THE DISCLOSURE

[013] In the present document, the word "exemplary" is used herein to mean "serving as an example, instance, or illustration." Any embodiment or implementation of the present subject matter described herein as "exemplary" is not necessarily to be construed as preferred or advantageous over other embodiments.

[014] While the disclosure is susceptible to various modifications and alternative forms, specific embodiment thereof has been shown by way of example in the drawings and will be described in detail below. It should be understood, however that it is not intended to limit the disclosure to the particular forms disclosed, but on the contrary, the disclosure is to cover all modifications, equivalents, and alternative falling within the spirit and the scope of the disclosure.

[015] The terms "comprises", "comprising", or any other variations thereof, are intended to cover a non-exclusive inclusion, such that a setup, device, or method that comprises a list of components or steps does not include only those components or steps but may include other components or steps not expressly listed or inherent to such setup or device or method. In other words, one or more elements in a device or system or apparatus proceeded by "comprises... a" does not, without more constraints, preclude the existence of other elements or additional elements in the device or system or apparatus.

[016] The terms "an embodiment", "embodiment", "embodiments", "the embodiments", "the embodiments", "one or more embodiments", "some embodiments", and "one embodiment" mean "one or more (but not all) embodiments of the invention(s)" unless expressly specified otherwise.

[017] The terms "including", "comprising", "having" and variations thereof mean "including but not limited to", unless expressly specified otherwise.

[018] The present disclosure relates to a method and system for providing selection of payment cards for transactions after a pre-stipulated time periods. The method includes generating a universal token for a consumer, such that the universal token is mapped to each payment card of a plurality of payment

cards associated with the customer. At an end of the pre-stipulated time period wherein the consumer is required to pay for the purchases, the consumer may choose a payment card from the plurality of payment cards for each transaction made using the universal token. In an embodiment, the system may suggest a preferable payment card for each transaction, which may provide maximum benefits to the consumer. The universal token may be a virtual card implemented on devices associated with the customer and is mapped with national identity and/or financial information. In an example, the universal token may be mapped with a Permanent Account Number (PAN) identification. In another example, the universal token may be mapped with a Unified Payments Interface (UPI), which is mapped to the identity and/or financial information of the consumer. The mapping of the universal token with such national identity and/or financial information is a one-to-many mapping, and this information is stored as key-value pairs in a data repository.

[019] In the following detailed description of the embodiments of the disclosure, reference is made to the accompanying drawings that form a part hereof, and in which are shown by way of illustration specific embodiments in which the disclosure may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the disclosure, and it is to be understood that other embodiments may be utilized and that changes may be made without departing from the scope of the present disclosure. The following description is, therefore, not to be taken in a limiting sense.

[020] **Figure 1** illustrates an exemplary representation for registering a consumer, in accordance with some embodiments of the present disclosure.

[021] As shown in **Figure 1**, the registration of the consumer is performed using the system 100 for providing selection of payment cards. The exemplary representation for registering the consumer comprises at least one device (illustrated as a device 102), and a universal token database 110. In one embodiment, a merchant store is connected via a communication network to the device 102. It will be appreciated that the system 100 and method for providing selection of payment cards for transactions after pre-stipulated time period may be utilised via the device 102. Moreover, the device 102 may be any device associated with a consumer. The device 102 may include, but are not limited to, a computer, a laptop, a tablet, a phablet, a mobile phone, a smart device, a wearable mobile device. The device 102 may include a functionality for communicating over internet or another appropriate communication network. In an embodiment, the communication network may include, without

limitation, a direct interconnection, LAN (local area network), WAN (wide area network), wireless network, point-to-point network, or another configuration. One of the most common types of networks in current use is a TCP/IP (Transfer Control Protocol and Internet Protocol) network for communication between database client and database server. Other common Internet protocols used for such communication include HTTPS, FTP, AFS, and WAP and using secure communication protocols etc.

[022] The device 102 may comprise an integrated software application related to a merchant of the merchant store, which enables real time interaction with the merchant store. The software application may be used to connect at least one payment card of the consumer with a local network of the merchant store. Alternatively, the software application may be used for accessing any other features not mentioned herein explicitly.

[023] As shown in the Figure 1, the device 102 is communicably coupled with the universal token database 110. In order to register the consumer, the following steps may be followed. At step 104, at least one payment card pertaining to the consumer is registered via the device 102. The at least one payment card is at least one of: a debit card, a credit card. At step 106, a primary payment card may be set for each issuer by the consumer. It will be appreciated that the step 106 is an optional step, and that the consumer may be registered without setting any primary payment cards as well. Notably, the primary payment card is set to quicken an authorisation process, such that authorisation from an issuer is taken via the primary payment card instead of for every payment card when the consumer is utilising the universal token for the transaction. At step 108, a universal token is generated for the consumer. The universal token is a virtual card which may be stored in a device 102 associated with the consumer. Moreover, the virtual card may include a predefined number of digits. For instance, the virtual card may include 16 digits, wherein first four digits may be hexadecimal, in order to differentiate the universal token from other general tokens or debit card numbers, or credit card numbers. Notably, this allows for 6.5536X10^16 possible combinations.

[024] Thereafter, the universal token is mapped with the at least one payment card of the consumer. In case there is one payment card, the universal token is mapped with the payment card in a one-to-one mapping, and such mapping is stored at the universal token database 110. In this case, clearance of any transaction performed via the universal token is completed using the payment card. However, alternatively, in case there are multiple payment cards, the universal token is mapped with the payment

cards using a one-to-many mapping, and such mapping is stored at the universal token database 110. Herein, such mapping may be stored as a key-value pair {universal_token_id: [pan_id1, pan_id2, pan_id3]}, wherein the key is universal_token_id and the value is the list of pan_id. Notably, registration of the at least one payment card of the consumer is essential for eventually utilising the system and method for providing selection of payment cards for transactions after the pre-stipulated time period.

[025] **Figure 2** shows a flowchart illustrating a method of providing selection of payment cards for transactions after pre-stipulated time period, in accordance with some embodiments of the present disclosure.

[026] As illustrated in Figure 2, the method 200 comprises one or more blocks for providing selection of payment cards for transactions after pre-stipulated time periods. The method 200 may be described in the general context of computer executable instructions. Generally, computer executable instructions can include routines, programs, objects, components, data structures, procedures, modules, and functions, which perform specific functions or implement specific abstract data types.

[027] The order in which the method 200 is described is not intended to be construed as a limitation, and any number of the described method blocks can be combined in any order to implement the method. Additionally, individual blocks may be deleted from the methods without departing from the spirit and scope of the subject matter described herein. Furthermore, the method can be implemented in any suitable hardware, software, firmware, or combination thereof.

[028] At block 202, the universal token is utilised for a transaction. Herein, the transaction may be made online, or via a POS (point of sale). Moreover, depending on settings of the at least one payment card of the consumer, the transaction may be made at a national or an international level. For example, if the at least one payment card only allows for national or domestic transactions, the consumer may not be able to utilise the universal token for international transactions.

[029] At block 204, the universal token is authorised by issuing agencies. In order for any transaction to be authorised, the transaction must be authorised by all issuing agencies. If the consumer has multiple payment cards issued by an issuer, and the consumer has set a primary payment card, then the issuer may authorise the transaction for only the primary payment card. Moreover, once the

universal token transaction is authorised, transaction details are stored in a new draft within the data repository.

[030] In an embodiment, for sake of efficiency, a request for authorisation is routed using predefined rules. In an exemplary embodiment, one rule may be that authorisation requests to an issuing agency may be grouped together. In another exemplary embodiment, another rule may be that authorisation requests sent to issuers within a geographical area are sent sequentially, whereas transaction requests sent to issuers in different geographical areas are sent simultaneously or parallelly. This notably expedites the authorisation process and prevents putting undue load on a network. For example, two authorisation requests within New York may be sent sequentially, whereas two authorisation requests wherein one is for New York and another for Dublin may be sent parallelly. Notably, receipts are not sent to any specific issuer for clearing and settlement, and instead maintained with the universal token till an end of the pre-stipulated time period for clearance and settlement.

[031] At block 206, delayed selection of a payment card is provided for the transaction. This is termed as 'delayed selection' because instead of the consumer selecting which payment card to fulfil the transaction with at a time of the transaction, the consumer is provided with an option of a delayed selection of the payment card at a later date (i.e., after the pre-stipulated time period). This means that the consumer may select which payment card to fulfil the transaction with at a delayed pre-stipulated time period. This time period may vary based on initial parameters. Herein, such initial parameters refer to parameters set while registering the consumer with the system for providing selection of payment cards after the pre-stipulated time period. Moreover, the pre-stipulated time period may be a week, a fortnight, a month, a quarter, a year, or any other pre-stipulated or defined period. In an exemplary embodiment, the pre-stipulated time period is a month. Herein, the consumer may complete transactions using the universal token for a month before clearing and settling the bills using the at least one payment card. For example, if the pre-stipulated time period is set as 15 days, and a transaction using the universal token is made on 1st January 2022, then the consumer must select the payment card for payment by 16th January 2022.

[032] Moreover, at an end of the pre-stipulated time period, the consumer may be required to access a graphical user interface (GUI) of the system for providing selection of payment cards for completion of the transactions. The GUI provides a list of transactions made by the consumer within the pre-stipulated time period. Additionally, the GUI may provide a drop-down menu beside each transaction to allow the consumer to pick a payment card for completing the payment. It will be appreciated that

the payment cards which have been mentioned by the consumer at time of registration are provided in the drop-down menu. Notably, the GUI shows a recommended payment card being highlighted to assist the consumer in availing maximum benefits. In an exemplary embodiment, recommendation of the payment card is decided based on data evaluated from digital benefits platforms. Since the GUI shows a recommended card for each transaction, the primary card may sometimes not be recommended. In such cases, the primary card is overridden, and another payment card (possibly from same issuer) may be utilised to avail maximum benefits, by the consumer.

[033] At block 208, the transaction is cleared by using the payment card.

[034] **Figures 3a-3c** illustrate exemplary embodiments demonstrating grouping of authorisation requests sent to issuers, in accordance with some embodiments of the present disclosure.

[035] As shown, the universal token is mapped to two Development Bank of Singapore (DBS) payment cards (302, 304) in Singapore, one United Overseas Bank (UOB) payment card (306) in Singapore, and one DBS payment card (308) in United States. Herein, DBS Singapore, DBS United States and UOB Singapore are issuers of the payment cards mapped to the universal token. Additionally, this mapping is performed using the system of the present disclosure.

[036] In Figure 3a, no primary payment card is set for issuer DBS. Herein, a first request may be sent to DBS Singapore for both payment cards (302, 304), a second request may be sent to UOB Singapore for the payment card (306), and a third request may be sent to DBS United States for the payment card (308). If it is assumed that a point of sale for the transaction is in Singapore, the first and the third request may be sent to DBS in both Singapore and United States at time T1, in parallel. Moreover, the second request may be sent to UOB in Singapore at time T2, wherein T2 is later than T1.

[037] In Figure 3b, the DBS payment card (302) is set as a primary payment card for the issuer DBS Singapore. Herein, a first request may be sent to DBS Singapore the primary payment card (302), a second request may be sent to UOB Singapore for the payment card (306), and a third request may be sent to DBS United States for the payment card (308). If it is assumed that a point of sale for the transaction is in Singapore, the first and the third request may be sent to DBS in both Singapore and United states at time T1, in parallel. Moreover, the second request may be sent to UOB in Singapore at time T2, wherein T2 is later than T1.

[038] In Figure 3c, consider that issuers DBS Singapore and UOB Singapore are in agreement that only one authorization is required, and the UOB Singapore payment card (306) is set as the primary payment card. Herein, a first request may be sent to UOB Singapore for the payment card (306), and a second request may be sent to DBS United States for the payment card (308). If it is assumed that a point of sale for the transaction is in Singapore, the first and the second request may be sent to both UOB in Singapore and DBS in United states at time T1, in parallel.

[039] **Figure 4** illustrates an exemplary representation for clearing a transaction using a payment card, in accordance with some embodiments of the present disclosure.

[040] As shown in Figure 4, an exemplary environment 400 for clearing the transaction using the payment card is demonstrated. Herein, a list of permanent account number identification is acquired from the universal token database 110, benefits are acquired from the digital benefits platforms' API 402, and a list of transactions for a month are acquired from a delayed sales draft database 404; and sent to the check-out universal token GUI 406 (as mentioned above) for display and selection. Herein, once the consumer selects a payment card for each transaction, data pertaining to the same is sent to and stored at a sales draft database 402.

[041] **Figure 5** illustrates a block diagram of an exemplary computer system for implementing embodiments consistent with the present disclosure.

[042] In an embodiment, the computer system 500 for providing selection of payment cards for transactions after pre-stipulated time periods. The computer system 500 may include a central processing unit ("CPU" or "processor") 502. The processor 502 may comprise at least one data processor for executing program components for executing user or system-generated business processes. The processor 502 may include specialized processing units such as integrated system (bus) controllers, memory management control units, floating point units, graphics processing units, digital signal processing units, etc.

[043] The processor 502 may be disposed in communication with one or more input/output (I/O) devices (512 and 513) via I/O interface 501. The I/O interface 501 may employ communication protocols/methods such as, without limitation, audio, analog, digital, stereo, IEEE-1394, serial bus, Universal Serial Bus (USB), infrared, PS/2, BNC, coaxial, component, composite, Digital Visual Interface (DVI), high-definition multimedia interface (HDMI), Radio Frequency (RF) antennas, S-

Video, Video Graphics Array (VGA), IEEE 802.n /b/g/n/x, Bluetooth, cellular (e.g., Code-Division Multiple Access (CDMA), High-Speed Packet Access (HSPA+), Global System For Mobile Communications (GSM), Long-Term Evolution (LTE) or the like), etc.

[044] Using the I/O interface 501, the computer system 500 may communicate with one or more I/O devices (512 and 513). In some implementations, the processor 502 may be disposed in communication with a communication network 509 via a network interface 503. The network interface 503 may employ connection protocols including, without limitation, direct connect, Ethernet (e.g., twisted pair 10/100/1000 Base T), Transmission Control Protocol/Internet Protocol (TCP/IP), token ring, IEEE 802.11a/b/g/n/x, etc. Using the network interface 503 and the communication network 509, the computer system 500 may be connected to the universal token database 110. The communication network 509 can be implemented as one of the several types of networks, such as intranet or any such wireless network interfaces. The communication network 509 may either be a dedicated network or a shared network, which represents an association of several types of networks that use a variety of protocols, for example, Hypertext Transfer Protocol (HTTP), Transmission Control Protocol/Internet Protocol (TCP/IP), Wireless Application Protocol (WAP), etc., to communicate with each other. Further, the communication network 509 may include a variety of network devices, including routers, bridges, servers, computing devices, storage devices, etc.

[045] In some embodiments, the processor 502 may be disposed in communication with a memory 505 e.g., RAM, and ROM, etc. as shown in Figure 5, via a storage interface 504. The storage interface 504 may connect to memory 505 including, without limitation, memory drives, removable disc drives, etc., employing connection protocols such as Serial Advanced Technology Attachment (SATA), Integrated Drive Electronics (IDE), IEEE-1394, Universal Serial Bus (USB), fiber channel, Small Computer Systems Interface (SCSI), etc. The memory drives may further include a drum, magnetic disc drive, magneto-optical drive, optical drive, Redundant Array of Independent Discs (RAID), solid-state memory devices, solid-state drives, etc.

[046] The memory 505 may store a collection of program or database components, including, without limitation, user/application, an operating system 507, a web browser 508, a user interface 506, and the like. In some embodiments, computer system 500 may store user/application data, such as the

data, variables, records, etc. as described in this invention. Such databases may be implemented as fault-tolerant, relational, scalable, secure databases such as Oracle or Sybase.

[047] The operating system 507 may facilitate resource management and operation of the computer system 500. Examples of operating systems include, without limitation, Apple Macintosh TM OS X TM, UNIX TM, Unix-like system distributions (e.g., Berkeley Software Distribution (BSD), FreeBSD TM, Net BSD TM, Open BSD TM, etc.), Linux distributions (e.g., Red Hat TM, Ubuntu TM, K-Ubuntu TM, etc.).

[048] International Business Machines (IBM TM) OS/2 TM, Microsoft Windows TM (XP TM, Vista/7/8, etc.), Apple iOS TM, Google Android TM, Blackberry TM Operating System (OS), or the like. A user interface may facilitate display, execution, interaction, manipulation, or operation of program components through textual or graphical facilities. For example, user interfaces may provide computer interaction interface elements on a display system operatively connected to the computer system 500, such as cursors, icons, check boxes, menus, windows, widgets, etc. Graphical User Interfaces (GUIs) may be employed, including, without limitation, Apple TM Macintosh TM operating systems' Aqua TM, IBM TM OS/2 TM, Microsoft TM Windows TM (e.g., Aero, Metro, etc.), Unix X-Windows TM, web interface libraries (e.g., ActiveX, Java, JavaScript, AJAX, HTML, Adobe Flash, etc.), or the like.

[049] The illustrated steps are set out to explain the exemplary embodiments shown, and it should be anticipated that ongoing technological development will change the manner in which particular functions are performed. These examples are presented herein for purposes of illustration, and not limitation. Further, the boundaries of the functional building blocks have been arbitrarily defined herein for the convenience of the description. Alternative boundaries can be defined so long as the specified functions and relationships thereof are appropriately performed. Alternatives (including equivalents, extensions, variations, deviations, etc., of those described herein) will be apparent to persons skilled in the relevant art(s) based on the teachings contained herein. Such alternatives fall within the scope and spirit of the disclosed embodiments. Also, the words "comprising," "having," "containing," and "including," and other similar forms are intended to be equivalent in meaning and be open ended in that an item or items following any one of these words is not meant to be an exhaustive listing of such item or items or meant to be limited to only the listed item or items.

[050] Furthermore, one or more computer-readable storage media may be utilized in implementing embodiments consistent with the present disclosure. A computer readable storage medium refers to any type of physical memory on which information or data readable by a processor may be stored. Thus, a computer readable storage medium may store instructions for execution by one or more processors, including instructions for causing the processor(s) to perform steps or stages consistent with the embodiments described herein. The term "computer readable medium" should be understood to include tangible items and exclude carrier waves and transient signals, i.e., are non-transitory.

[051] Examples include random access memory (RAM), read-only memory (ROM), volatile memory, non-volatile memory, hard drives, CD ROMs, DVDs, flash drives, disks, and any other known physical storage media.

[052] The terms "an embodiment", "embodiment", "embodiments", "the embodiments", "the embodiments", "one or more embodiments", "some embodiments", and "one embodiment" mean "one or more (but not all) embodiments of the invention(s)" unless expressly specified otherwise.

[053] The terms "including", "comprising", "having" and variations thereof mean "including but not limited to", unless expressly specified otherwise.

[054] The enumerated listing of items does not imply that any or all the items are mutually exclusive, unless expressly specified otherwise. The terms "a", "an" and "the" mean "one or more", unless expressly specified otherwise.

[055] A description of an embodiment with several components in communication with each other does not imply that all such components are required. On the contrary, a variety of optional components are described to illustrate the wide variety of possible embodiments of the invention.

[056] When a single device or article is described herein, it may be readily apparent that more than one device/article (whether they cooperate) may be used in place of a single device/article. Similarly, where more than one device or article is described herein (whether or not they cooperate), it may be readily apparent that a single device/article may be used in place of the more than one device or article, or a different number of devices/articles may be used instead of the shown number of devices or

programs. The functionality and/or the features of a device may be alternatively embodied by one or more other devices which are not explicitly described as having such functionality/features. Thus, other embodiments of the invention need not include the device itself.

[057] The illustrated operations of **Figure 2** show certain events occurring in a certain order. In alternative embodiments, certain operations may be performed in a different order, modified, or removed. Moreover, steps may be added to the above-described logic and still conform to the described embodiments. Further, operations described herein may occur sequentially or certain operations may be processed in parallel. Yet further, operations may be performed by a single processing unit or by distributed processing units.

[058] Finally, the language used in the specification has been principally selected for readability and instructional purposes, and it may not have been selected to delineate or circumscribe the inventive subject matter.

A METHOD AND SYSTEM FOR PROVIDING SELECTION OF PAYMENT CARDS FOR TRANSACTIONS AFTER PRE-STIPULATED TIME PERIODS

ABSTRACT

The present disclosure relates to a method and system for providing selection of payment cards for transactions after pre-stipulated time periods. The method includes generating a universal token for a consumer, such that the universal token is mapped to the consumer's payment cards. Thereafter, the universal token is utilised for a transaction. In order for the transaction to be authorised, the universal token is authorised by issuing agencies. At an end of the pre-stipulated time period, the consumer may pay for purchases by choosing a payment card from a plurality of payment cards for each transaction made using the universal token. The transaction is ultimately cleared after the pre-stipulated time period using the payment card chosen by the consumer.

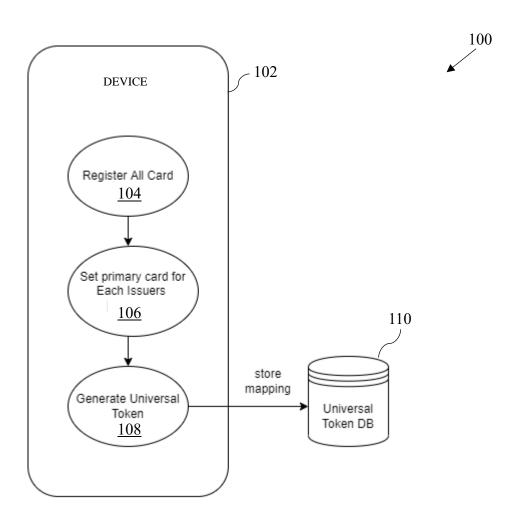


FIGURE 1

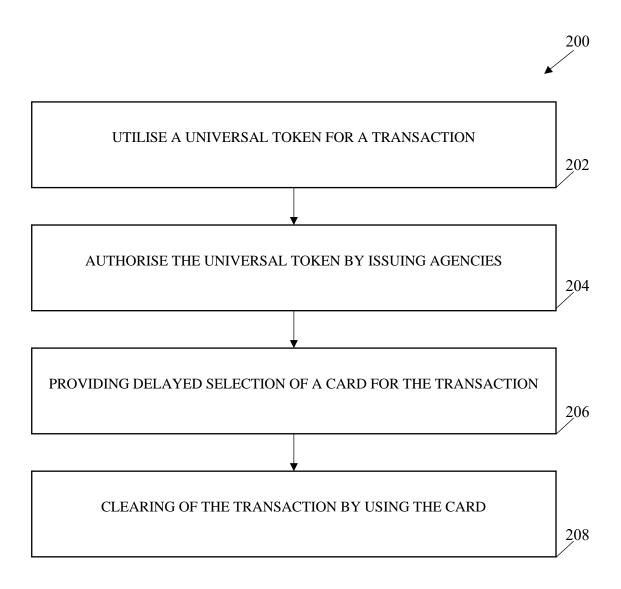


FIGURE 2

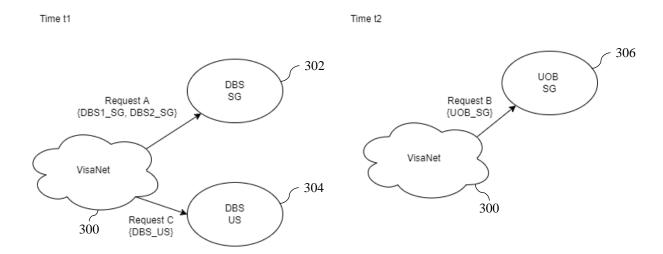


FIGURE 3a

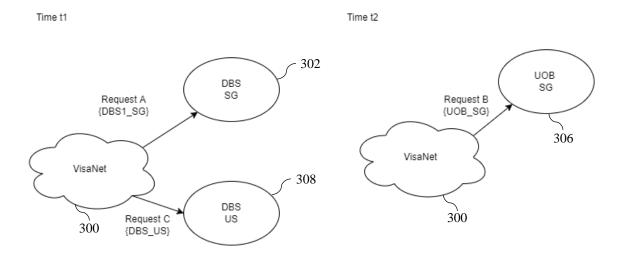


FIGURE 3b

Time t1

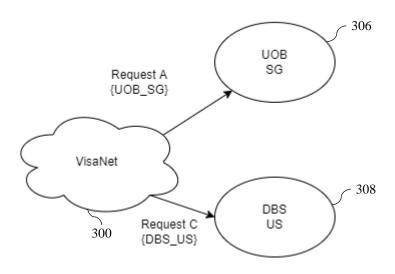


FIGURE 3c

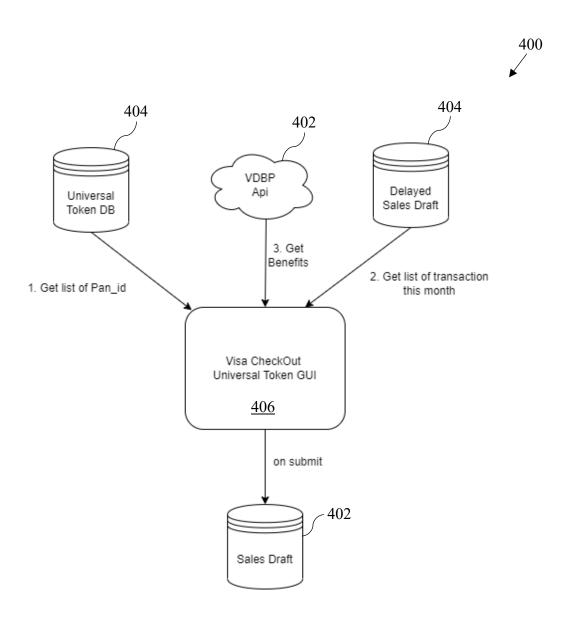


FIGURE 4

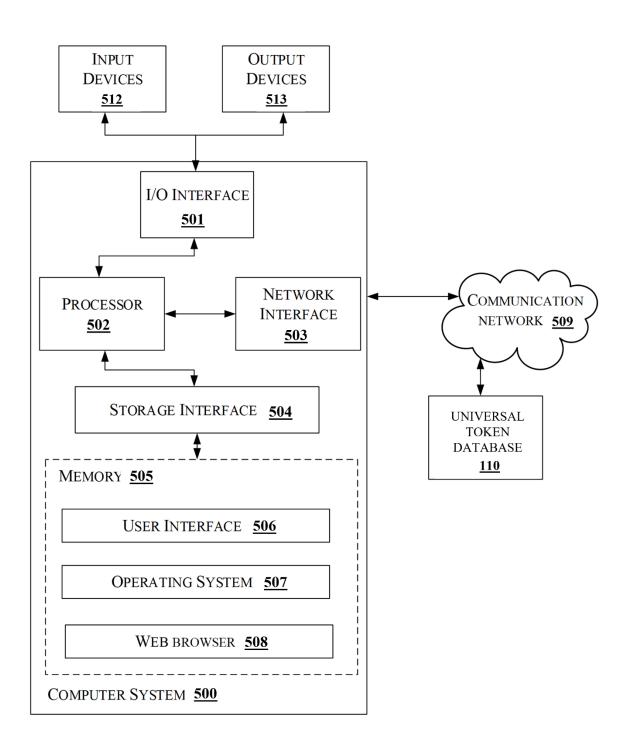


FIGURE 5