

PEER TO PEER TRANSACTIONS USING NEAR FIELD COMMUNICATION

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CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application is a PCT application which claims priority to U.S. Provisional Application No. 63/600,455, filed on November 17, 2023, which is herein
10 incorporated by reference in its entirety.

BACKGROUND

[0002] Peer-to-peer transfer of funds refers to a first person transferring funds from a user account of the first person to a user account of a second person (e.g., a recipient). Various systems directed to peer-to-peer transfers require the first person
15 to enter the account information of the recipient on a platform. This action is prone to human error and may result in a wrong account identifier being used for the transfer. Further, existing infrastructure for conducting transactions with machine-readable code tends to cause barriers to entry for the use of such technology (e.g., additional account creation, registrations, costs, etc.). Furthermore, existing
20 implementations that use machine-readable code for conducting transactions for resources tend to not have much configuration ability.

[0003] Embodiments of the disclosure address these problems and other problems individually and collectively.

BRIEF SUMMARY

25 **[0004]** One embodiment of the invention includes a method comprising receiving, at a first contactless communication device after a first near field communication (NFC) coupling with a second contactless communication device in an NFC range, an input for a funds transfer. The method further comprises launching, on the first contactless communication device, one or more of a digital
30 wallet or a digital tag library including one or more account identifiers. The method

further comprises receiving, at the first contactless communication device, a selection of a first account identifier to be used in the funds transfer. The method further comprises receiving, at the first contactless communication device and via the NFC, a second account identifier associated with the second contactless communication device. The method further comprises generating, at the first contactless communication device, a request for the funds transfer including the first account identifier and the second account identifier. The method further comprises transmitting, by the first contactless communication device, the request for the funds transfer to a processing computer. The method further comprises displaying, by the first contactless communication device, a notification indicating a status of the funds transfer

[0005] One embodiment of the invention includes a user device. The user device comprises an NFC antenna, a processor, and a memory storing instructions that, when executed by the processor, cause the processor to perform operations. The operations comprise receiving after a first near field communication (NFC) coupling with a second user device in an NFC range, an input for a funds transfer. The operations further comprise launching one or more of a digital wallet or a digital tag library including one or more account identifiers. The operations further comprise receiving a selection of a first account identifier to be used in the funds transfer. The operations further comprise receiving and via the NFC, a second account identifier associated with the second user device. The operations further comprise generating a request for the funds transfer including the first account identifier and the second account identifier. The operations further comprise transmitting the request for the funds transfer to a processing computer. The operations further comprise displaying a notification indicating a status of the funds transfer.

[0006] One embodiment of the invention includes a system including a first user device comprising a first NFC antenna, a first processor, and first memory storing instructions that, when executed by the first processor, cause the first processor to perform first operations. The first operations comprising receiving after a first near field communication (NFC) coupling with a second user device in an NFC range, a first input for a funds transfer. The first operations further comprising launching, on a first display of the first user device, one or more of a first digital wallet or a first digital tag library including one or more first account identifiers. The

first operations further comprising receiving a first selection of a first account identifier to be used in the funds transfer. The first operations further comprising receiving via the NFC, a second account identifier associated with the second user device. The first operations further comprising generating, a request for the funds transfer including the first account identifier and the second account identifier. The first operations further comprising transmitting the request for the funds transfer to a processing computer. The first operations further comprising displaying a notification indicating a status of the funds transfer. The system further comprising the second user device comprising a second NFC antenna, a second processor, and second memory storing instructions that, when executed by the second processor, cause the second processor to perform second operations. The second operations comprising receiving after the first NFC coupling with the first user device in the NFC range, a second input for the funds transfer. The second operations further comprising launching, on a second display of the second user device, one or more of a second digital wallet or a second digital tag library including one or more second account identifiers. The second operations further comprising receiving a second selection of the second account identifier to be used in the funds transfer. The second operations further comprising transmitting the second account identifier to the first user device via the NFC.

20 **[0007]** A better understanding of the nature and advantages of embodiments may be gained with reference to the following detailed description and accompanying drawings.

TERMS

25 **[0008]** Before discussing embodiments of the invention, some description of some terms may be helpful.

[0009] A “credential” may be any suitable information that serves as reliable evidence of worth, ownership, identity, or authority. A credential may be a string of numbers, letters, or any other suitable characters, as well as any object or document that can serve as confirmation. Examples of credentials include value credentials, identification cards, certified documents, access cards, passcodes, and other login information, etc.

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[0010] “Payment credentials” may include any suitable information associated with an account (e.g., a payment account and/or payment device associated with the account). Such information may be directly related to the account or may be derived from information related to the account. Examples of account information may
5 include a PAN (primary account number or “account number”), username, expiration date, and verification values such as CVV, dCVV, CVV2, dCVV2, and CVC3 values.

[0011] A “user” may include an individual. In some embodiments, a user may be associated with one or more personal accounts and/or mobile devices. The user may also be referred to as a cardholder, account holder, or consumer in some
10 embodiments.

[0012] A “user device” may be a device that is operated by a user. Examples of user devices may include a mobile phone, a smart phone, a card, a personal digital assistant (PDA), a laptop computer, a desktop computer, a server computer, a thin-client device, a tablet PC, a mobile device, etc. Additionally, user devices may
15 be any type of wearable technology device, such as a watch, earpiece, glasses, etc. The user device may include one or more processors capable of processing user input. The user device may also include one or more input sensors for receiving user input. As is known in the art, there are a variety of input sensors capable of detecting user input, such as accelerometers, cameras, microphones, etc. The user
20 input obtained by the input sensors may be from a variety of data input types, including, but not limited to, audio data, visual data, or biometric data. The user device may comprise any electronic device that may be operated by a user, which may also provide remote communication capabilities to a network. Examples of remote communication capabilities include using a mobile phone (wireless) network,
25 wireless data network (e.g., 3G, 4G or similar networks), Wi-Fi, Wi-Max, or any other communication medium that may provide access to a network such as the Internet or a private network. A user device may also be a credit, debit, or prepaid card.

[0013] A user device may include a contactless communication device (e.g., a device that can communicate using a Near Field Communication (NFC) antenna). A
30 contactless communication device may include any smart device or form factor containing an NFC antenna that can transmit information to another smart device through the NFC antenna. Examples of contactless communication devices may

include, but is not limited to, mobile phones, smart watches, smart wearables, TVs, laptops, payment cards (debit, credit, prepaid others), badges, tags, key fobs, home assistant devices, soundbars, refrigerators, cars, IOT devices etc.

[0014] A “mobile device” (sometimes referred to as a mobile communication device) may comprise any suitable electronic device that may be transported and operated by a user, which may also provide remote communication capabilities to a network. A mobile communication device may communicate using a mobile phone (wireless) network, wireless data network (e.g., 3G, 4G or similar networks), Wi-Fi, Bluetooth, Bluetooth Low Energy (BLE), Wi-Max, or any other communication medium that may provide access to a network such as the Internet or a private network. Examples of mobile devices include mobile phones (e.g., cellular phones), PDAs, tablet computers, net books, laptop computers, wearable devices (e.g., watches), vehicles such as automobiles and motorcycles, personal music players, hand-held specialized readers, etc. A mobile device may comprise any suitable hardware and software for performing such functions, and may also include multiple devices or components.

[0015] An “application” may be computer code or other data stored on a computer readable medium (e.g., memory element or secure element) that may be executable by a processor to complete a task.

[0016] A “transfer application” can include an application facilitating the transfer of funds between multiple parties. For instance, a transfer application can include a peer-to-peer transaction application. The transfer application can be executed on a mobile device (e.g., a user device, a contactless communication device) associated with a user, and the transfer application can be implemented using a server (e.g., application server computer) in communication with the mobile device. The transfer application can provide an account (e.g., from a digital wallet which may be part of the transfer application or external to it) for each user. The transfer application can support sending or receiving/requesting funds between users. For example, the transfer application can allow a user to select a recipient user to transfer a specified amount of funds to the recipient user. The transfer application can then transfer the specified amount from an account for the user to an account for the recipient user. In other examples, the transfer application can allow

a user to select a sender user to receive a specified amount of funds from. The transfer application can then request the transfer of the specified amount to an account of the user from an account of the sender user. Examples of transfer applications include a digital wallet or a digital tag library.

- 5 **[0017]** A “digital tag library” may include a library of digital tags. The digital tags may include account identifiers (e.g., a username, a payname, a wallet identifier (e.g., a wallet address)) that are associated with a secondary account identifier. The account identifier may include a receive-only account identifier that enables received funds to be transferred to a secondary account identified by the secondary account
10 identifier. Digital tags may be displayed when a receive funds option is selected.

- [0018]** A “digital wallet” can include an application running on an electronic device that allows an individual to conduct electronic commerce transactions. A digital wallet may store user profile information, payment credentials, bank account information, one or more digital wallet identifiers (e.g., digital wallet ID) and/or the
15 like and can be used in a variety of transactions, such as but not limited to eCommerce, social networks, money transfer/ personal payments, mobile commerce, proximity payments, gaming, and/or the like for retail purchases, digital goods purchases, utility payments, purchasing games or gaming credits from gaming websites, transferring funds between users, and/or the like. A digital wallet ID
20 uniquely identifies one specific digital wallet. A digital wallet ID may be provided in a pull transaction or a push transaction to identify the particular digital wallet to be used in the transaction. A digital wallet may be designed to streamline the purchase and payment process. A digital wallet may allow the user to load one or more payment cards onto the digital wallet so as to make a payment without having to
25 enter an account number or present a physical card. The account numbers may be tokenized on the digital wallet such that the actual account number is not stored on the digital wallet.

- [0019]** “Access data” may include any suitable data that can be used to access a resource or create data that can access a resource. In some
30 embodiments, access data may be account information for a payment account. Account information may include a PAN, payment token, expiration date, card verification values (e.g., CVV, CVV2), dynamic card verification values (dCVV,

dCVV2), an identifier of an issuer with which an account is held, etc. In other embodiments, access data could include data that can be used to access a location or to access secure data. Such information may be ticket information for an event, data to access a building, transit ticket information, passwords, biometrics, or other
5 credentials to access secure data, etc.

[0020] “Payment credentials” may include any suitable information associated with an account (e.g., a payment account and/or payment device associated with the account). Such information may be directly related to the account or may be derived from information related to the account. Examples of account information may
10 include a PAN (primary account number or “account number”), username, expiration date, CVV (card verification value), dCVV (dynamic card verification value), CVV2 (card verification value 2), CVC3 card verification values, etc. CVV2 is generally understood to be a static verification value associated with a payment device. CVV2 values are generally visible to a user (e.g., a consumer), whereas CVV and dCVV
15 values are typically embedded in memory or authorization request messages and are not readily known to the user (although they are known to the issuer and payment processors). Payment credentials may be any information that identifies or is associated with a payment account. Payment credentials may be provided to make a payment from a payment account. Payment credentials can also include a
20 username, an expiration date, a gift card number or code, and any other suitable information.

[0021] An “authorizing entity” may be an entity that authorizes a request. Examples of an authorizing entity may be an issuer, a governmental agency, a document repository, an access administrator, etc.

25 **[0022]** An “issuer” may typically refer to a business entity (e.g., a bank) that maintains an account for a user. An issuer may also issue payment credentials stored on a user device, such as a cellular telephone, smart card, tablet, or laptop to the consumer.

[0023] A “settlement process” can be a process in which funds are actually
30 delivered from one entity to one or more other entities to fulfil a transaction.

[0024] A “processor” may include a device that processes something. In some embodiments, a processor can include any suitable data computation device

or devices. A processor may comprise one or more microprocessors working together to accomplish a desired function. The processor may include a CPU comprising at least one high-speed data processor adequate to execute program components for executing user and/or system-generated requests. The CPU may
5 be a microprocessor such as AMD's Athlon, AMD Ryzen, AMD Threadripper, Duron, and/or Opteron; IBM and/or Motorola's PowerPC; IBM's and Sony's Cell processor; Intel's Celeron, Itanium, Pentium, Xeon, and/or XScale; and/or the like processor(s).

[0025] A "memory" may be any suitable device or devices that can store electronic data. A suitable memory may comprise a non-transitory computer
10 readable medium that stores instructions that can be executed by a processor to implement a desired method. Examples of memories may comprise one or more memory chips, disk drives, etc. Such memories may operate using any suitable electrical, optical, and/or magnetic mode of operation.

BRIEF DESCRIPTION OF THE DRAWINGS

15 **[0026]** FIG. 1 shows a block diagram of a system, according to an embodiment.

[0027] FIGS. 2A-D illustrate two user devices interacting using near field communication (NFC), according to certain embodiments.

20 **[0028]** FIG. 3 shows an exemplary flow diagram of performing a peer to peer push transfer, according to certain embodiments.

[0029] FIGS. 4 shows an exemplary flow diagram of performing a peer to peer pull transfer, according to certain embodiments.

[0030] FIG. 5 shows a block diagram of user device, according to certain embodiments.

25 **[0031]** FIG. 6 shows a block diagram of processing network computer, according to certain embodiments.

DETAILED DESCRIPTION OF THE INVENTION

[0032] Embodiments provide techniques to identify, through a Near Field Communication (NFC) tap (e.g., two devices being brought in a close proximity

and/or being physically tapped against one another) between two user devices, the purpose of the device tap. If a funds transfer (e.g., money transfer) is selected by user(s) of the user devices, the techniques identify through that interaction the sender, the recipient, a funding source, and a payment means of the recipient in which they will receive the funds for the funds transfer.

[0033] When a contactless communication device containing an NFC antenna (e.g., a contactless communication device, a mobile phone) is brought in close proximity of, and/or physically tapped against, another contactless communication device, the software on both contactless communication devices can ask the user (e.g., by opening a selection box, window, screen, pop-up etc.) about the purpose of the NFC communication and/or the tap. When the user selects that a fund transfer is intended, embodiments can guide the user to provide a series of inputs such as the user would like to send money or receive money through that interaction; and which account, digital wallet or payment means they will be using to proceed with the funds transfer. By enabling and standardizing the user experience, no matter what contactless communication device consumers are using (same or different device manufacturers, same or different operating systems) and no matter what cards, digital wallets or payment means they are using to transfer funds, embodiments orchestrate the fund transfer process to indicate who is the sender and who is the recipient of the funds transfer across contactless communication devices.

[0034] Embodiments allow a user to transfer funds to a recipient. Specifically, the user may operate a first user device. In some embodiments, the first user device may be a portable user device such as a mobile communication device. A transfer application (e.g., a digital wallet, a digital tag library) may be installed on the first user device, and linked to (e.g., associated with) a first user account of the user. The first user device may be brought within NFC range of a second user device. The second user device may be made by the same manufacturer as the first user device, have the same operating system as the first user device, be made by a different manufacturer than the first user device, and/or include a different operating system than the first user device. Upon the devices being brought within communication range (e.g., NFC range) of one another, the first user device and/or the second user device may present a menu that prompts users of the user devices to select an action to perform. The action may include a funds transfer option.

[0035] Upon the funds transfer option being selected by one or both of the user devices, the transfer application may be launched on the first user device and/or the second user device (e.g., on a display of the respective device). The transfer application on the first user device may enable the first user to select an option to send funds, determine the amount of funds to transfer, and/or determine a first account (e.g., a first user account, a second user account, a first credit card) to send the funds from. The transfer application on the second user device may enable the second user to select an option to receive funds, determine the amount of funds to be received, and/or determine a second account to receive the funds. Once the transfer is set up, the transfer application may ask the users to bring the first user device in close proximity of (e.g., tap) the second user device of the recipient. The amount, the first account (or a first account identifier (e.g., PAN, a digital wallet address, a token)), and/or the second account (or a second account identifier) may be transmitted between the first user device and the second user device thereby enabling one of the user devices to transmit a funds transfer request to an authorizing entity computer for transfer the funds from the first account to the second account.

[0036] The funds transfer request may be transmitted by the first user device (e.g., sender device) to a first authorizing entity computer as a push transaction request or from the second user device (e.g., recipient device) to a second authorizing entity computer as a pull transaction request (e.g., requesting funds be sent from the first user account to the second user account). A processing network computer may debit the transfer amount to the first account issued and/or managed by the first authorizing entity computer, and credit the amount to the second account issued and/or managed by the second authorizing entity computer. Upon receipt of funds, the second authorizing entity computer may send a notification to the second user (e.g., to the second user device). For example, if the second user device is a communication device, the second authorizing entity computer may send a push notification, a text message, an email message, a voice message, a call to the second user device.

[0037] Details of some embodiments of the present disclosure will now be described in greater detail. For clarity, a certain number of components are shown in the subsequent figures. It is understood, however, that embodiments of the

disclosure may include more than one of each component. In addition, the components in each figure may communicate via any suitable communication medium (including the internet, NFC), using any suitable communication protocol.

[0038] FIG. 1 shows a block diagram of a system 100, according to an embodiment. System 100 includes a first user device 102a (e.g., a first contactless communication device), a second user device 102b (a second contactless communication device), a first authorizing entity computer 106a, a processing network computer 108, and a second authorizing entity computer 106b.

[0039] The first user device 102a may be a communication device (e.g., a mobile phone, a smart watch, a tablet) operated by a first user (e.g., a funds sender, a funds recipient). In some embodiments, the first user device 102a may have a first wallet application 104a (e.g., a transfer application) installed thereon. The first wallet application 104a may be managed by a first transfer server. The first user device 102a may download the first wallet application 104a and the first wallet application 104a may be configured by linking a first account identifier (e.g., of the first user) issued and/or managed by the first authorizing entity computer 106a to the first wallet application 104a. For example, the first wallet application 104a installed on the first user device 102a may store the first account identifier, a token or any other credential that identifies the first account. For example, an account identifier may include a digital wallet address (e.g., a USDC wallet address, a Bitcoin wallet address, a Solana wallet address, etc.).

[0040] The first user device 102a may comprise an NFC reader, which can be used to communicate with the second user device 102b. In some embodiments, the second user device 102b may be a communication device (e.g., a mobile phone, a smart watch, a tablet). The first user device 102a and the second user device 102b may be different typed of communication devices (e.g., one is a phone, the other one is a wearable). The second user device 102b may include a memory for storing second account identifying information.

[0041] In some embodiments, the second user device 102b may have a second wallet application 104b (e.g., a transfer application) installed thereon. The second wallet application 104b may be managed by a second transfer server. The second transfer server may be the same as, or different from, the first transfer server.

The second user device 102b may download the second wallet application 104b and the second wallet application 104b may be configured by linking a second account identifier (e.g., of the second user) issued and/or managed by the second authorizing entity computer 106b to the second wallet application 104b. For example, the

5 second wallet application 104b installed on the second user device 102b may store the second account identifier, a token or any other credential that identifies the second account. When brought in close proximity (e.g., communication range) of one another and/or touched with one another, the first user device 102a and the second user device 102b may detect the other. The first user device 102a and the

10 second user device 102b may communicate over NFC when in NFC communication range of one another. The user devices 102a, 102b may transmit and/or receive information to and/or from the other user device 102b, 102a. The information may include a token, an account identifier, a transfer amount, a request for payment, and/or a description of a transfer.

15 **[0042]** FIGS. 2A-D illustrate two user devices 102a, 102b (e.g., contactless communication devices) interacting using NFC, according to certain embodiments. The two user devices include a first user device 102a (e.g., first user device 102a describe above) and a second user device 102b (e.g., second user device 102b described above). The user devices 102a, 102b may, by default, have a listening

20 mode activated where NFC signals and/or other communication signals or inputs are being listened for. The user devices 102a, 102b may emit (e.g., periodically) signals that can be received by other devices (e.g., user devices with an active listening mode).

[0043] FIG. 2A illustrates the first user device 102a with a first display 202a

25 (e.g., a touchscreen) and the second user device 102b with a second display 202b (e.g., a touchscreen) brought within close proximity of each other (e.g., within a distance where respective NFC antennas can communicate). The close proximity may enable the user devices 102a, 102b to establish a communication coupling (e.g., using NFC). In certain embodiments, when the first user device 102a and the

30 second user device 102b are within close proximity of the other, they may be capable of receiving signals transmitted by the other user device 102a, 102b. In certain embodiments, a “handshake” may take place between the user devices 102a, 102b to establish a secure communication channel. In certain embodiments,

the user devices 102a, 102b may be listening for signals (e.g., from the other user device) to determine if another device (e.g., another user device) is close by and further processing should be performed. In certain embodiments, other sensors are used in combination with a communication interface (e.g., an NFC antenna) of the user devices 102a, 102b. For example, an accelerometer may be used to determine if the user device 102a, 102b has been tapped/bumped against another object (e.g., the other user device 102a, 102b). The combination of close proximity and/or the tapping of the user devices 102a, 102b may act as an instruction for the user devices 102a, 102b within proximity to one another to communicate and/or perform processing.

[0044] Before the user devices 102a, 102b are brought within close proximity of one another, the user devices 102a, 102b may be locked, unlocked, running an application in a foreground, running no applications in the foreground, and/or be in a sleep state, etc. A process of an operating system of the user device 102a, 102b may determine when the user devices 102a, 102b are within close proximity to one another based on the communication interface and/or other user device sensors.

[0045] FIG. 2B illustrates an exemplary menu (e.g., protocol menu) that may be presented (e.g., displayed) by the first user device 102a and/or second user device 102b. The menu may be presented by the first user device 102a and/or the second user device 102b after an NFC coupling has occurred between the first user device 102a and the second user device 102b based on the user devices 102a, 102b being within a communication range of each other.

[0046] The menu may present a set of options / actions (e.g., that can be performed over NFC). The set of options may include one or more options that, if selected, can cause further NFC communication to occur and/or communication to occur using another user device communication interface (e.g., a network interface (e.g., cellular, Wi-Fi, etc.)). The first user device 102a may present a first set of one or more options. The first set of options may include option one 204a, option two 206a, option three 208a, option four 210a, and/or other options. The first set of options may include options for sharing/transmitting photo, video, a document, contact file, paying for a transaction, and/or conducting a funds transfer.

[0047] The first set of options presented by the first user device 102a may include an option generally related to conducting the funds transfer and/or may include an option for a specific type of funds transfer. For example, the option may indicate a funds transfer for sending funds from an account associated with the first
5 user device 102a. In an example, the option may indicate a funds transfer for receiving funds from an account associated with another user device (e.g., the second user device 102b).

[0048] In certain embodiments described herein, selection of the option indicating a funds transfer triggers a flow that provides receive-only fund credentials
10 associated with a user device 102b (e.g., of a recipient) to the other user device 102a (e.g., a sender). A second set of options presented by the second user device 102b may include similar options (e.g., option five 204b, option six 206b, option seven 208b, option eight 210b, and/or other options) as the first set of options and may be presented in a similar manner.

[0049] An input (e.g., user input) selecting one of the displayed options may be received by the first user device 102a. The input may indicate that a funds transfer should be performed. The input may cause the first display 202a and/or the
15 second display 202b to present account information.

[0050] The combination of close proximity, the tapping of the user devices
20 102a, 102b, and/or the input indicating the selection of a menu option may cause a digital wallet (e.g., as described above) and/or a digital tag library to be launched on the first user device 102a and/or the second user device 102b. The digital wallet and/or a digital tag library may include a set of one or more account identifiers. For example, the digital wallet and/or a digital tag library may include account information
25 to be used to tap to pay merchant transactions or peer to peer payments described herein.

[0051] FIG. 2C illustrates an exemplary user interface that may be presented in response to a first user interface on the first user device 102a and/or a second user interface on the second user device 102b receiving an input for a funds transfer.
30 The first user device 102a may present a first set of one or more account identifiers. In the illustrated example, the first set of account identifiers includes a first account identifier 212a (e.g., a PAN, a token), a second account identifier 212b, and a third

account identifier 212c. Similarly, the illustrated example shows the second user device 102b presenting a second list of one or more account identifiers that includes a fourth account identifier 212d, a fifth account identifier 212e, and a sixth account identifier 212f. Each of the account identifiers may be associated with respective user accounts. The respective user accounts may be associated with respective funds (e.g., currency, virtual currency, store credits, loyalty points, app credits, gaming points, etc.).

[0052] For simplicity of explanation in for FIG. 2A-D, the first user device 102a is explained below as being a user device (e.g., contactless communication device) that transmits funds of a first account identified by the first account identifier 212a associated with the first user device 102a to a fourth account identified by the fourth account identifier 212d associated with the second user device 102b. The second user device 102b may additionally, or alternatively, cause funds from the fourth account to be transmitted to the first account. The funds may be transferred using a push transaction request (e.g., sender account initiated funds transfer) or a pull transaction request (e.g., receiving account initiated funds transfer).

[0053] The first user device 102a may present the first set of account identifiers. The first user device 102a may present the first set of account identifiers after a first input is received by the first user device 102a indicating an option in the first set of options being selected and corresponding to conducting a funds transfer (e.g., sending funds, requesting funds, receiving funds).

[0054] The second user device 102b may present the second set of account identifiers. The second user device 102b may present the second set of account identifiers after a second input is received by the second user device 102b indicating an option in the second set of options being selected and corresponding to conducting a funds transfer (e.g., sending funds, requesting funds, receiving funds). In certain embodiments, the second user device 102b may present the second set of account identifiers after an NFC signal or ping is received by the second user device 102b and the NFC signal or ping includes an indication that an option in the first set of options was selected and the option corresponds to conducting a funds transfer.

[0055] The first user device 102a may receive an input indicating a selection of the first account identifier 212a. The selection may indicate that the first account

identifier 212a will be used for conducting the funds transfer. The funds transfer may include transferring or receiving funds from/to the first account identified by the first account identifier 212a. Funds may be transferred to or received from an account associated with the fourth account identified by the fourth account identifier 212d.

- 5 The fourth account identifier 212d may have been determined based on input received by the second user device 102b.

[0056] The first account identifier 212a may be transmitted to the second user device 102b (e.g., via the NFC). The fourth account identifier 212d may be transmitted to the first user device 102a (e.g., via the NFC). An indication of the option selected by the first user device 102a and/or the second user device 102b may be transmitted to the second user device 102b and/or the first user device 102a, respectively.

[0057] FIG. 2D illustrates an example embodiment where the first user device 102a may present user interface elements for enabling user input to be received (e.g., via a touchscreen) by the first user device 102a. The first user device 102a may present a number pad using the first display 202a. The number pad may be presented in response to an option being selected and/or an account identifier being selected. The first display 202a may enable a transfer amount to be input to the first user device 102a. A transfer amount received by the first user device 102a may be used to conduct a funds transfer. The funds transfer may be for sending and/or receiving funds.

[0058] The fourth account identifier 212d of the fourth account associated with the second user device 102b may have been received by the first user device 102a (e.g., before or after receiving the transfer amount or the input indicating selection of an account identifier).

[0059] In the case of the funds transfer being for receiving funds, the amount received by the first user device 102a from the second user device 102b using NFC, or another communication interface, may indicate a transfer amount to request from an account associated with the second user device 102b. The amount and the first account identifier 212a may be transmitted to the second user device 102b (e.g., via NFC) and the second user device 102b may transmit a request for funds (e.g., a push transaction request) transfer to a processing network computer (e.g.,

processing network computer 108 described above). The request for the funds transfer may include the fourth account identifier 212d. In certain embodiments, the fourth account identifier 212d is received by the first user device 102a. The fourth account identifier 212d, the first account identifier 212a, and the amount may be included in a request for a funds transfer (e.g., a pull transaction request) and transmitted to the processing network computer.

[0060] In the case of the funds transfer being for sending funds, the amount received by the first user device 102a as input may indicate a transfer amount to transmit from the first account. The amount may be for transmitting to an account associated with the second user device 102b. The amount may be transmitted to the second user device 102b with the first account identifier 212a (e.g., via NFC) and the second user device 102b may transmit a request for a funds transfer (e.g., a pull transaction request) that includes the first account identifier 212a and the amount to the processing network computer. In certain embodiments, the first user device 102a may receive the fourth account identifier 212d from the second user device 102b to be included in a request for a funds transfer (e.g., a push transaction request) transmitted to the processing network computer. The request may further include the first account identifier 212a and the amount.

[0061] The push transaction request and a pull transaction request may include an account identifier of an account for funds to be sent to, an account identifier of an account for funds to be sent from, and/or an amount of funds to be transferred. The push transaction request may be payer-initiated. The pull transaction request may be payee-initiated.

[0062] The processing depicted in flow diagrams 300 and 400, and any other FIGS. may be implemented in software (e.g., code, instructions, program) executed by one or more processing units (e.g., processors, cores) of the respective systems, using hardware, or combinations thereof. The software may be stored on a non-transitory storage medium (e.g., on a memory device). The method presented in flow diagrams 300 and 400, and other FIGS. and described herein are intended to be illustrative and non-limiting. Although flow diagrams 300 and 400, and other FIGS, depicts the various processing steps occurring in a particular sequence or order, this is not intended to be limiting. In certain alternative embodiments, the

processing may be performed in some different order or some steps may also be performed in parallel. It should be appreciated that in alternative embodiments the processing depicted in flow diagrams 300 and 400, and other FIGS., may include a greater number or a lesser number of steps than those depicted in the respective
5 FIGS.

[0063] FIG. 3 shows an exemplary flow diagram 300 of performing a peer to peer push transfer, according to certain embodiments. Flow diagram 300 illustrates operations that can be performed with respect to a first user device 102a (e.g., first user device 102a described above), a first authorizing entity computer 106a (e.g.,
10 first authorizing entity computer 106a described above), a processing network computer 108 (e.g., processing network computer 108 described above), a second authorizing entity computer 106b (e.g., second authorizing entity computer 106b described above), and a second user device 102b (e.g., second user device 102b described above).

[0064] The first user device 102a may be used to transfer funds from a first account associated with the first authorizing entity computer 106a to a second account associated with the second authorizing entity computer 106. The first user device 102a and second user device 102b may be contactless communication devices (e.g., able to communicate wirelessly). The first user device 102a and the
20 second user device 102b may be capable of communicating with one another using NFC communication.

[0065] At step S302, the first user device 102a may detect the second user device 102b within NFC range. The first user device 102a may detect the second user device 102b as a result of the first user device 102a and the second user device
25 102b being tapped together and/or brought within communication proximity (e.g., NFC range) of each other. The first user device 102a may detect a tap against an object using one or more sensors, such as an accelerometer. The first user device 102a may communicate with the second user device 102b via NFC coupling over an NFC channel or any other suitable communication coupling (e.g., Bluetooth, Wi-Fi).

[0066] At step S304, the first user device 102a may determine an action (e.g., send a file, perform a funds transfer, receive funds (e.g., a request for payment), send funds, etc.) to perform. The action may be selected from a first set of one or

more action options (e.g., as described above with respect to FIG. 2B). The first set of options may be displayed after detecting the second user device 102b within range of the first user device 102a and/or communicating with the second user device 102b. The first set of options may be presented (e.g., displayed) by a first user interface of the first user device 102a. One or more options included in the first set of options may be performed using NFC.

[0067] In certain embodiments, a first input may be received by the first user device 102a. The first input may indicate an option from the set of options is selected. The selected option may include the funds transfer option. The selected option may indicate a type of funds transfer to perform. In the illustrated example, the first input may indicate a push transaction request is to be generated by the first user device 102a based on a fund sending option selection input to the first user device 102a. In an example, the first input may indicate a pull transaction request is to be generated by the second user device 102b based on a fund sending option selection input to the first user device 102a.

[0068] The first input may cause one or more of a digital wallet or a digital tag library to be launched and presented. The digital wallet and/or the digital tag library may include one or more account identifiers (e.g., PANs) included in a first set of account identifiers. The first set of account identifiers may be presented by a user interface of the first user device 102a.

[0069] At step S306, a first account identifier is determined. The first account identifier may be associated with a first account. The first account may be managed by the first authorizing entity computer 106a. The first account identifier may be included in the first set of account identifiers presented by the first user device 102a and included in the digital wallet and/or the digital tag library. The first account identifier may be determined based on second input received by the user interface of the first user device 102a. The second input may indicate a selection of the first account identifier from the first set of account identifiers. In the illustrated embodiments, the first account identifier may determine the first account to use for transferring funds from the first account to another account (e.g., to an account associated with a second account identifier associated with the second user device 102b). The first account (e.g., account number) identified by the first account

identifier and/or first account identifier may be included in the request for the funds transfer.

[0070] At step S308, the second user device 102b may detect the first user device 102a. The second user device 102b may detect the first user device 102a as
5 a result of the second user device 102b and the first user device 102a being tapped against an object (e.g., the other user device) and/or brought within communication proximity (e.g., NFC range) of each other. The second user device 102b may detect a tap against an object using one or more sensors, such as an accelerometer. The second user device 102b may communicate with the first user device 102a via NFC
10 coupling over the NFC channel or any other suitable communication coupling (e.g., Bluetooth, Wi-Fi).

[0071] At step S310, the second user device 102b may determine an action (e.g., send a file, perform a funds transfer, receive funds (e.g., a request for payment), send funds, etc.) to perform. The action may be selected from a second
15 set of one or more action options (e.g., as described above with respect to FIG. 2B). The second set of options may be displayed after detecting the first user device 102a within range of the second user device 102b and/or communicating with the first user device 102a. The second set of options may be presented (e.g., displayed) by a second user interface of the second user device 102b. Options included in the
20 second set of options may be carried out using NFC.

[0072] In certain embodiments, a third input may be received by the second user device 102b. The third input may indicate a second option from the second set of options is selected. The selected second option may include the funds transfer option.

[0073] The selected second option may indicate a type of funds transfer to perform. In the illustrated example, the third input may indicate a push transaction request is to be generated by the first user device 102a based on a fund receiving option selection input to the second user device 102b. In an example, the third input may indicate a pull transaction request is to be generated by the second user device
25 102b based on a fund receiving option selection input to the second user device
30 102b.

[0074] The third input may cause one or more of a digital wallet or a digital tag library to be launched and presented. The digital wallet and/or the digital tag library may include one or more account identifiers (e.g., PANs) included in a second set of account identifiers. The second set of account identifiers may be presented by a
5 user interface of the second user device 102b.

[0075] At step S312, a second account identifier is determined. The second account identifier may be associated with a second account and/or the second user device 102b. The second account may be managed by a second authorizing entity computer 106b. The second account identifier may be included in the second set of
10 account identifiers presented by the second user device 102b and included in the digital wallet and/or the digital tag library. The second account identifier may be determined based on a fourth input received by the second user interface of the second user device 102b. The fourth input may indicate a selection of the second account identifier from the second set of account identifiers. In the illustrated
15 embodiments, the second account identifier may determine an account to use for transferring funds from the second account to another account (e.g., to the first account associated with the first account identifier associated with the first user device 102a).

[0076] At step S314, the second account identifier (e.g., a PAN, a token of a
20 PAN, a tag, a payment credential) and/or other account information associated with the second account identifier may be transmitted from the second user device 102b to the first user device 102a (e.g., using NFC). In certain embodiments, a transfer amount is transmitted from the second user device 102b to the first user device 102a (e.g., via NFC). Transmitting the second account identifier and/or the transfer
25 amount may be performed using a previous communicative coupling or a new communicative coupling (e.g., NFC coupling) of the first user device 102a and the second user device 102b.

[0077] Step S314 may be performed in response to a request from the first user device 102a for account identifier information and/or determining, by the second
30 user device 102b, the second account identifier at step S312. In certain embodiments, the second account identifier identifies receive-only credentials. Receive-only credential may be used for the purpose of pushing funds from an

account identified by the first account identifier to the second account identified by the second account identifier. Receive-only credential may be used for the purpose of pushing funds from an account identified by the first account identifier to the second account identified by the second account identifier.

- 5 **[0078]** At step S316, the transfer amount may be determined. The transfer amount may be determined based on input received by the first user device 102a. The input may be received from a user interface (e.g., a touchscreen). The input may be received from the second user device 102b. For example, the second user device 102b may have received an indicated transfer amount from the second user interface of the second user device 102b and transmitted the transfer amount to the first user device 102a with the second account identifier. The transfer amount may be an amount for the funds transfer. In certain embodiments, the transfer amount is received before the second account identifier is received, with the second account identifier, or after the second account identifier received. The transfer amount may include a fiat currency, a digital currency, and/or a cryptocurrency.

- 20 **[0079]** At step S318, a push transaction request may be generated by the first user device 102a. The push transaction request may include the transfer amount, the second account identifier received from the second user device 102b and/or the first account identifier. In some embodiments, the push transaction request may include a first identifier for the first user device 102a. The push transaction request may request funds to transfer from the first account to the second account.

- 25 **[0080]** In various embodiments, the push transaction request and/or the data included in the push transaction request may be encrypted prior to being transmitted to a recipient entity (e.g., the first authorizing entity computer 106a and/or the processing network computer 108). The recipient entity may decrypt the push transaction request using a decryption key corresponding to an encryption key used by the first user device 102a to encrypt the push transaction request. In a similar manner, encryption of transmitted data may be performed between other system components.

- 30 **[0081]** In some embodiments, the push transaction request may be an original credit transaction (OCT) message. An original credit transaction can be a clearing and settlement credit transaction designed for use in business applications such as a

business money transfer or business-to-consumer repayments. The OCT can be set up as a transaction used to deliver funds to the recipient account (e.g., the second user account).

[0082] An OCT (Original Credit Transaction) can be a clearing and settlement credit transaction designed for use in business applications such as a business money transfer or business-to-consumer repayments. According to certain embodiments, the OCT can be used to transfer funds from a first user account to a second user account (e.g., a peer-to-peer transfer). The OCT can be a technique used to deliver funds (e.g., push funds) to the recipient account. It is separate from, and can take place after, an Account Funding Transaction (AFT) in some cases. An AFT can be a technique designed to supply funds to another account such as a credit, prepaid, debit, ATM, or on-line account. This timing is to ensure that payment funds are secured before funds are sent to the recipient. An AFT may occur if sufficient funds are not associated with a funding account (e.g., the account identifier by the first account identifier) and may not occur if the funding account is associated with sufficient funds. In certain embodiments, an AFT may occur responsive to an OCT in order to carry out the OCT.

[0083] At step S320, the first user device 102a may transmit the push transaction request to the first authorizing entity computer 106a. The push transaction request may originate from the digital wallet or the digital tag library of the first user device 102a. The first authorizing entity computer 106a may receive the push transaction request.

[0084] At step S322, the first authorizing entity computer 106a may identify the first user account based on the first account identifier and/or the first identifier for the first user device 102a. The first authorizing entity computer 106a may update the push transaction request to incorporate the first user account identifier. The first authorizing entity computer 106a may transmit the push transaction request to the processing network computer 108.

[0085] At step S324, the processing network computer 108 may receive the push transaction request and transmit the push transaction request to the second authorizing entity computer 106b. The processing network computer 108 may coordinate debiting the amount to the first account maintained by the first authorizing

entity computer 106a and crediting (e.g., depositing) the amount to the second account maintained by the second authorizing entity computer 106b.

[0086] At step S326, the second authorizing entity computer 106b may receive the push transaction request from the processing network computer 108.

- 5 The second authorizing entity computer 106b may credit the amount in the push transaction request to the second account.

- [0087]** In certain embodiments, the second authorizing entity computer 106b may transmit a notification to the second user device 102b (e.g., for presenting information about of the transfer (e.g., incoming funds)). The second user device
10 102b the notification is transmitted to may be determined based on a device lookup using the second account identifier. The notification may indicate a status of the funds transfer. In certain embodiments, a notification may additionally, or alternatively, be transmitted to the first user device 102a (e.g., by the first authorizing entity computer 106a). The notification may be transmitted based on a response the
15 first authorizing entity computer 106a received from the processing network computer 108 and/or the second authorizing entity computer 106b.

- [0088]** At step S328, a settlement process may be performed. At a time after step S324, an actual amount may be transferred from the first authorizing entity computer 106a to the second authorizing entity computer 106b, via the processing
20 network computer 108 in the settlement process.

- [0089]** In some embodiments, an account identifier may be a digital tag or an alias for an account. The digital tag or alias could be resolved into a payment credential (e.g., a PAN) in an extra communication step between, for example, the processing network computer 108 and the second user device 102b or between the
25 processing network computer 108 and the second authorizing entity computer 106b. Further details regarding digital tags can be found in PCT application no. PCT/US2021/030145, which is assigned to the same assignee as the present application and is herein incorporated by reference in its entirety.

- [0090]** In certain embodiments, the first user device 102a and the second user
30 device 102b are tapped with against object (e.g., each other) and/or brought within communication proximity of each other more than once. Tapping and/or bringing the devices within communication proximity of each other may act as an indication of

continuing with a funds transfer, to confirm a selected option, and reduce likelihood of accidental funds transfer requests which would needlessly use network, processing, and battery resources of the user devices, network, and other systems (e.g., the first authorizing entity computer, the processing computer, the second
5 authorizing entity computer).

[0091] In certain embodiments, the first user device 102a may prompt the first user to perform authentication. The first user device 102a may prompt the first user to perform authentication in response to the first user device 102a receiving a user input. For example, the user input may indicate that a funds transfer is to be
10 conducted and/or funds are to be transmitted to an account identifier by the second account identifier (e.g., at step S304, S318, S320, and/or before or after other steps). The first user device 102a may prompt the first user to perform authorization in response to the first user device 102a receiving a communication. The communication may be received from the second user device 102b (e.g., at step
15 S314). For example, the communication may request funds to be transferred to an account identified by the second account identifier associated with the second user device 102b from an account identified by the first account identifier associated with the first user device 102a. The communication may be received from the first authorizing entity computer 106a. For example, after the first authorizing entity
20 computer 106a receives a transaction request (e.g., a push transaction request), the first authorizing entity computer 106a may transmit a request for authentication to a user device (e.g., first user device 102a and/or another user device) associated with the first account identifier. The authorization may be performed using something a user has (e.g., an authenticator), knows (e.g., a password), or is (e.g., a biometric
25 (e.g., a fingerprint)). The authentication may be performed one or more times during the process to perform the funds transfer. Further, the authentication may be performed in association with one or more accounts (e.g., a sending account and/or a receiving account). The authentication may be performed during push and/or pull transactions. Embodiments where authentication is performed can improve security
30 enabled by the described techniques compared to other techniques. Gestures such as tapping user devices together one or more times can also improve security by reducing the likelihood unintended funds transfers will occur.

[0092] According to an exemplary use case scenario, a sender may wish to transfer \$50 to a recipient. For example, the sender and recipient may be friends who would like to share a bill at a merchant (e.g., a restaurant). The recipient may pay the bill at the merchant, and the sender may wish to transfer their share (e.g.,
5 \$50) to the recipient. A device of the sender (e.g., the first user device 102a) may be brought within close proximity to a device of the recipient (e.g., the second user device 102b). The device of the sender and the device of the recipient may establish NFC with each other and the operating systems of the user devices may cause options to be presented. The options may be like those described with respect to
10 FIG. 2B and include an option for conducting a funds transfer. An option presented by the device of the sender for transferring funds to a recipient may be selected on the sender device. An option presented by the device of the recipient may be selected on the recipient device for receiving funds from the sender.

[0093] Each of the devices may launch a digital wallet application. The
15 respective digital wallet applications may include account identifiers associated with the sender device and the recipient device. A sender account identifier associated with the device of the sender may be selected and a recipient account identifier associated with the recipient may be selected. A transfer amount may be input to the device of the sender. The sender account identifier may be selected from one or
20 more sender account identifiers. The recipient account identifier may be selected from one or more recipient account identifiers. The second account identifier may be transmitted to the sender device via the NFC. The sender device may generate and transmit a funds transfer request including a push transaction request. The push transaction request may include the sender account identifier, the recipient account
25 identifier, and the transfer amount.

[0094] The funds transfer request may be transmitted to first authorizing entity computer 106a associated with the sender account identifier and cause funds to be transferred from the sender account identified by the sender account identifier to the recipient account identified by the recipient account identifier (e.g., using processing
30 network computer 108 and/or second authorizing entity computer 106b). The processing network computer (also referred to as a “processing network”) 108 may coordinate debiting the amount to the sender account issued and/or managed by the first authorizing entity computer 106a (e.g., a first bank) and crediting the amount to

the recipient account issued and/or managed by the second authorizing entity computer 106b (e.g., a second bank).

[0095] For the simplicity of illustration, the first user device 102a is illustrated as generating and transmitting a push transaction request. However, embodiments
5 may include the first user device 102a transmitting the first account identifier and/or the amount to the second user device 102b. The second user device 102b may then generate a pull transaction request and transmit the pull transaction request to the second authorizing entity computer 106b. The pull transaction request may be carried out in a similar manner to the pull transaction request described with respect
10 to flow diagram 400, described below, but with respect to the second user device 102b and second user account rather than the first user device 102a and the first user account.

[0096] FIG. 4 shows an exemplary flow diagram 400 of performing a peer to peer pull transfer, according to certain embodiments. Flow diagram 400 illustrates
15 processing that may be performed by a first user device 102a (e.g., first user device 102a described above), a first authorizing entity computer 106a (e.g., first authorizing entity computer 106a described above), a processing network computer (e.g., processing network computer 108 described above), a second authorizing entity computer 106b (e.g., the second authorizing entity computer 106b described above),
20 and a second user device 102b (e.g., the second user device 102b described above).

[0097] In certain embodiments, the second user device 102b may be used to transfer funds from a second account associated with the second authorizing entity computer 106b to a first account associated with the first authorizing entity computer
25 106a. In certain embodiments, the first user device 102a may be used to request funds from the second account associated with the second authorizing entity computer 106b be transferred to the first account associated with the first authorizing entity computer 106a. The first user device 102a and second user device 102b may be contactless communication devices (e.g., able to communicate wirelessly). The
30 first user device 102a and the second user device 102b may be capable of communicating with one another using NFC communication.

[0098] Step S402 may be performed in a similar manner as step S302.

[0099] At step S404, the first user device 102a may determine an action (e.g., send a file, perform a funds transfer, receive funds (e.g., a request for payment), send funds, etc.) to perform. The action may be selected from a first set of one or more action options (e.g., as described above with respect to FIG. 2B). The first set
5 of options may be displayed after detecting the second user device 102b within range of the first user device 102a and/or communicating with the second user device 102b. The first set of options may be presented (e.g., displayed) by a first user interface of the first user device 102a. One or more options included in the first set of options may be performed using NFC.

10 **[0100]** In certain embodiments, a first input may be received by the first user device 102a. The first input may indicate an option from the set of options is selected. The selected option may include the funds transfer option. The selected option may indicate a type of funds transfer to perform. In an example, the first input received by the first user device 102a may indicate a push transaction request is to
15 be generated by the second user device 102b based on a fund receiving option selection indicated by the first input. In the illustrated example, the first input may indicate a pull transaction request is to be generated by the first user device 102a based on a fund receiving option selection input to the first user device 102a.

[0101] The first input may cause one or more of a digital wallet or a digital tag
20 library to be launched and presented. The digital wallet and/or the digital tag library may include one or more account identifiers (e.g., PANs, paynames, wallet identifiers (IDs) (e.g., digital wallet addresses)) included in a first set of account identifiers. The first set of account identifiers may be presented by a user interface of the first user device 102a.

25 **[0102]** At step S406, a first account identifier is determined. The first account identifier may be associated with an account. The account may be managed by a first authorizing entity computer 106a. The first account identifier may be included in the first set of account identifiers presented by the first user device 102a and included in the digital wallet and/or the digital tag library. The first account identifier
30 may be determined based on second input received by the user interface of the first user device 102a. The second input may indicate a selection of the first account identifier from the first set of account identifiers. In the illustrated embodiments, the

first account identifier may determine an account to use for transferring funds to the first account from another account (e.g., from an account associated with a second account identifier associated with the second user device 102b). The first account (e.g., account number) identified by the first account identifier and/or first account
5 identifier may be included in the request for the funds transfer.

[0103] In certain embodiments, the first account identifier identifies receive-only credentials. Receive-only credential may be used for the purpose of pushing funds from an account identified by the second account identifier to the first account identified by the first account identifier. Receive-only credential may be used for the
10 purpose of pushing funds from an account identified by the second account identifier to the first account identified by the first account identifier.

[0104] Step S408 may be performed in a similar manner as step S308.

[0105] At step S410, the second user device 102b may determine an action (e.g., send a file, perform a funds transfer, receive funds (e.g., a request for
15 payment), send funds, etc.) to perform. The action may be selected from a second set of one or more action options (e.g., as described above with respect to FIG. 2B). The second set of options may be displayed after detecting the first user device 102a within range of the second user device 102b and/or communicating with the first user device 102a. The second set of options may be presented (e.g., displayed) by a
20 second user interface of the second user device 102b. Options included in the second set of options may be performed using NFC.

[0106] In certain embodiments, a third input may be received by the second user device 102b. The third input may indicate a second option from the second set of options is selected. The selected second option may include the funds transfer
25 option.

[0107] The selected second option may indicate a type of funds transfer to perform. In an example, the third input may indicate a push transaction request is to be generated by the second user device 102b based on a fund sending option selection received by the second user device 102b. In the illustrated example, the
30 third input may indicate a pull transaction request is to be generated by the first user device 102a based on a fund sending option selection received by the second user device 102b.

[0108] The third input may cause one or more of a digital wallet or a digital tag library to be launched and presented. The digital wallet and/or the digital tag library may include one or more account identifiers (e.g., PANs) included in a second set of account identifiers. The second set of account identifiers may be presented by a
5 user interface of the second user device.

[0109] Step S414, the second account identifier (e.g., a PAN, a token of a PAN, a tag, a payment credential) and/or other account information associated with the second account identifier may be transmitted from the second user device 102b to the first user device 102a (e.g., using NFC). In certain embodiments, an amount
10 is transmitted from the second user device 102b to the first user device 102a (e.g., via NFC). Transmitting the second account identifier and/or the amount may be performed using a previous communicative coupling (e.g., NFC coupling) of the first user device 102a and the second user device 102b or a different communicative coupling.

[0110] Step S414 may be performed in response to a request from the first user device 102a for account identifier information and/or the determining of the second account identifier at step S412.

[0111] At step S416, an amount may be determined. The amount may be determined based on fourth input received by the first user device 102a. The fourth
20 input may be received from a user interface (e.g., a touchscreen). The fourth input may be received from the second user device 102b. For example, the second user device 102b may have received an indicated amount from the second user interface and transmitted the amount to the first user device 102a with the second account identifier. The amount may be an amount for the funds transfer. In certain
25 embodiments, the amount is received before the second account identifier is received, with the second account identifier, or after the second account identifier received. The amount may include a fiat currency, a digital currency, and/or a cryptocurrency.

[0112] At step S418, a pull transaction request may be generated by the first
30 user device 102a. The pull transaction request may include the amount, the second account identifier received from the second user device 102b and/or the first account identifier. In some embodiments, the pull transaction request may include a first

identifier for the first user device 102a. The pull transaction request may request funds to transfer from the second account to the first account.

[0113] In various embodiments, the pull transaction request and/or the data included in the pull transaction request may be encrypted prior to being transmitted to a recipient entity (e.g., the first authorizing entity computer 106a and/or the processing network computer 108). The recipient entity may decrypt the pull transaction request using a decryption key corresponding to an encryption key used by the first user device 102a to encrypt the pull transaction request. In a similar manner, encryption of transmitted data may be performed between other system components.

[0114] An account funding transaction (AFT) can be a technique designed to supply funds to another account such as a credit, prepaid, debit, ATM, or on-line account. The AFT may be performed to pull funds from the second user account to the first user account. In certain embodiments, the AFT is performed after an account funding transaction (AFT). This timing is to ensure that payment funds are secured before funds are sent to the recipient.

[0115] At step S420, the first user device 102a may transmit the pull transaction request to the first authorizing entity computer 106a. The pull transaction request may originate from the digital wallet or the digital tag library of the first user device 102a. The first authorizing entity computer 106a computer may receive the pull transaction request.

[0116] At step S422, the first authorizing entity computer 106a may identify the first user account based on the first account identifier and/or the first identifier for the first user device 102a. The first authorizing entity computer 106a may update the pull transaction request to incorporate the first user account identifier. The first authorizing entity computer 106a may transmit the pull transaction request to the processing network computer 108.

[0117] At step S424, the processing network computer 108 may receive the pull transaction request and transmit the pull transaction request to the second authorizing entity computer 106b. The processing network computer 108 may coordinate debiting the amount to the second account maintained by the second

authorizing entity computer 106b and crediting (e.g., depositing) the amount to the first account maintained by the first authorizing entity computer 106a.

5 **[0118]** At step S426, the second authorizing entity computer 106b may receive the pull transaction request from the processing network computer 108. The second authorizing entity computer 106b may debit the amount in the pull transaction request to the second account. In certain embodiments, the second user device 102b and/or the first user device 102a may be used or cause an authorization of a user to occur (e.g., to authorize the funds transfer). The authorization may occur before or after the transaction request is transmitted to one of the authorizing entity computers 106a, 106b, and/or the processing network computer 108.

10 **[0119]** In certain embodiments, the second authorizing entity computer 106b may transmit a notification to the second user device 102b (e.g., for presenting information about of the transfer (e.g., outgoing funds)). The second user device 102b the notification is transmitted to may be determined based on a device lookup using the second account identifier. The notification may indicate a status of the funds transfer. In certain embodiments, a notification may additionally, or alternatively, be transmitted to the first user device 102a (e.g., by the first authorizing entity computer 106a). The notification may be transmitted based on a response the first authorizing entity computer 106a received from the processing network computer 108 and/or the second authorizing entity computer 106b.

15 **[0120]** At step S428, a settlement process may be performed. At a time after step S424, an actual amount may be transferred from the second authorizing entity computer 106b to the first authorizing entity computer 106a, via the processing network computer 108 in the settlement process.

20 **[0121]** In some embodiments, an account identifier may be tag or alias for an account. The tag or alias could be resolved into a payment credential (e.g., a PAN) in an extra communication step between, for example, the processing network computer 108 and the second user device 102b or between the processing network computer 108 and the second authorizing entity computer 106b.

25 **[0122]** In certain embodiments, the first user device 102a and the second user device 102b are tapped against an object (e.g., each other) and/or brought within communication proximity of each other more than once. Tapping and/or bringing the

devices within communication proximity of each other may act as an indication of continuing with a funds transfer, to confirm a selected option, and reduce likelihood of accidental funds transfer requests which would needlessly use network, processing, and battery resources of the user devices, network, and other systems (e.g., the first authorizing entity computer, the processing computer, the second authorizing entity computer).

[0123] According to an exemplary use case scenario, a recipient may wish to request \$50 from a recipient. For example, the sender and recipient may be friends who would like to share a bill at a merchant (e.g., a restaurant). The recipient may pay the bill at the merchant, and the sender may wish to transfer their share (e.g., \$50) to the recipient after the recipient requests the sender to pay the sender's share of the bill. A device of the recipient (e.g., the first user device 102a) may be brought within close proximity to a device of the sender (e.g., the second user device 102b). The device of the sender and the device of the recipient may establish NFC with each other and the operating systems of the user devices may cause options to be presented. The options may be like those described with respect to FIG. 2B and include an option for conducting a funds transfer. An option presented by the device of the sender for transferring funds to a recipient may be selected. An option presented by the device of the recipient may be selected for receiving funds from a sender. Each of the devices may launch a digital wallet application.

[0124] The respective digital wallet applications may include account identifiers associated with the sender device and the recipient device. A sender account identifier associated with the device of the sender may be selected and a recipient account identifier associated with the device of the recipient may be selected. An amount may be input to the device of the recipient as a requested amount to be received from the sender. The sender account identifier may be selected from multiple sender account identifiers. The recipient account identifier may be selected from multiple recipient account identifiers. The second account identifier may be transmitted to the sender device via the NFC. The recipient device may generate and transmit a funds transfer request including a pull transaction request. The pull transaction request may include the first account identifier, the second account identifier, and the amount.

[0125] The funds transfer request may be transmitted to the first authorizing entity computer 106a associated with the recipient account identifier and cause funds to be transferred from the sender account identified by the sender account identifier to the recipient account identified by the recipient account identifier (e.g.,
5 using processing network computer 108 and/or second authorizing entity computer 106b). The processing network computer 108 may coordinate debiting the amount to the recipient account issued and/or managed by the first authorizing entity computer 106a (e.g., a first bank) and crediting the amount to the sender account issued and/or managed by the second authorizing entity computer 106b (e.g., a
10 second bank).

[0126] For the simplicity of illustration, the first user device 102a is illustrated as generating and transmitting a pull transaction request. However, embodiments may include the first user device 102a transmitting the first account identifier and/or the amount to the second user device 102b. The second user device 102b may then
15 generate a push transaction request and transmit the push transaction request to the second authorizing entity computer 106b. The push transaction request may be carried out in a similar manner to the push transaction request described with respect to flow diagram 300, described above, but with respect to the second user device 102b and second user account rather than the first user device 102a and the
20 first user account.

[0127] FIG. 5 shows a block diagram of user device 500, according to certain embodiments. The user device may be the first user device 102a or second user device 102b described above. The user device 500 can be a mobile device (e.g., mobile phone, smart watch, tablet, etc.) with a transfer application (e.g., 504). The
25 user device 500 can be capable of performing tasks described herein. The user device 500 may include device hardware 508 coupled to a system memory 502. The user device 500 can perform the functions described herein.

[0128] Device hardware 508 may include a processor 510, input elements 512, a short range antenna 514, a user interface 516, output elements 518, and a
30 long range antenna 520. Examples of input elements 512 may include microphones, keypads, touchscreens, sensors, and/or cameras, etc. Examples of output elements 518 may include speakers, display screens, tactile devices, and/or light emitting

diodes (LEDs), etc. The processor 510 can be implemented as one or more integrated circuits (e.g., one or more single core or multicore microprocessors and/or microcontrollers), and is used to control the operation of user device 500. The processor 510 can execute a variety of programs in response to program code or computer-readable code stored in the system memory 502, and can maintain multiple concurrently executing programs or processes.

[0129] The long range antenna 520 may include one or more radio frequency (RF) transceivers and/or connectors that can be used by user device 500 to communicate with other devices and/or to connect with external networks. The input elements 512 and output elements 518 allow a user to interact with and invoke the functionalities of user device 500. The short range antenna 514 may be configured to communicate with external devices through a short range communication medium (e.g., using Bluetooth, Wi-Fi, infrared, NFC, etc.). The long range antenna 520 may be configured to communicate with a remote base station and a remote cellular or data network, over the air.

[0130] The system memory 502 can be implemented using any combination of any number of non-volatile memories (e.g., flash memory) and volatile memories (e.g., DRAM, SRAM), or any other non-transitory storage medium, or a combination thereof media. The system memory 502 may store computer code, executable by the processor 510, for performing any of the functions described herein. For example, the system memory 502 may comprise a computer readable medium comprising code, executable by the processor 510, for implementing a method as described herein.

[0131] For example, the method may include receiving, at the user device 500 (e.g., a contactless user device) after a near field communication (NFC) with a second user device in an NFC range an input for a funds transfer. The method may further include launching, on the user device 500, one or more of a digital wallet or a digital tag library including one or more account identifiers. The method may further include receiving, at the user device 500, a selection of a first account identifier to be used in the funds transfer. The method may further include receiving, at the user device 500 and using the NFC, a second account identifier associated with the

second user device, and displaying, by the user device 500, a notification indicating a status of the funds transfer.

[0132] The system memory 502 may also store a transfer application 504 and/or an operating system 506. The transfer application 504 may include
5 instructions or code implementing a transfer application 504 for initiating a transfer of funds to an account identifier associated with a recipient user device. The transfer application 504 may also include code, executable by the processor 510, for obtaining a funds transfer amount and the account identifier associated with the recipient, providing the funds transfer amount and recipient account identifier to a
10 first authorizing entity computer, and/or forwarding a push transfer message to a processing network computer (e.g., processing network computer 108, described herein).

[0133] The transfer application 504 may also include code, executable by the processor 510, for obtaining a funds transfer amount and the account identifier
15 associated with the recipient, providing the funds transfer amount and recipient account identifier to a first authorizing entity computer, and/or forwarding a pull transfer message to a processing network computer (e.g., processing network computer 108, described herein).

[0134] The transfer application 504 may also include code, executable by the
20 processor 510, for transmitting a funds transfer amount and an account identifier associated with a recipient to another transfer application of a second user device (e.g., second user device 102b).

[0135] FIG. 6 shows a block diagram of processing network computer 108 (e.g., processing network computer 108 described above), according to certain
25 embodiments. The processing network computer 108 may include a processor 602, coupled to a network interface 604, a data store 616, and a computer readable medium 606.

[0136] The data store 616 can be implemented using any combination of any number of non-volatile memories (e.g., flash memory) and volatile memories (e.g.,
30 DRAM, SRAM), or any other non-transitory storage medium, or a combination thereof media. The data store 616 may store tokens, credentials, encryption keys, virtual accounts, funding accounts, and/or other information as described herein.

[0137] The computer readable medium 606 may comprise a number of software modules including a communication module 610.

[0138] The communication module 610 may comprise code, executable by the processor 602, to communicate using network interface 604 with one or more other systems. The post authorization processing module 614 may comprise code, executable by the processor 602, to perform clearing and settlement processing.

[0139] Embodiments of the invention provide for a number of advantages. For example, a first user device may detect a second user device within communication range of the first user device and present options that include transferring funds between accounts associated with the user devices. This flow provides a quick access to the funds transfer functionality, which then results in a reduction in resource (e.g., battery, energy, network, processing, memory, material) requirements and/or utilization.

[0140] First, embodiments can enable a reduction in processing to be performed. This is because the user devices may sense other nearby user devices, establish a communication channel between the devices, and enable users to select a funds transfer option to conduct a funds transfer. On the other hand, traditional techniques involve user devices needing to be unlocked, transfer applications being navigated to, transfer applications being launched, and account information for the transaction (e.g., an identifier of the other peer of the peer to peer payment) being entered before a funds transfer occurs. The numerous steps involved in the traditional techniques compared to the techniques described herein result in more processing resources being used by the devices as a result of the increased inputs needing to be received to obtain a similar result (e.g., transferring funds). The reduction in processing resources can enable processing resources to be freed up for other tasks and/or removed from devices. If the reduction in processing resources enables the processing resources to be removed from the device, additional benefits exist such as reducing device size, weight, and use of material.

[0141] Further, since traditional techniques used to transfer funds use many steps compared to the streamlined approach described herein, a display of a device would need to be awake or on for longer and more inputs would need to be sensed and processed, resulting in increased energy consumption compared to

embodiments described herein. By reducing the energy consumption of user devices to conduct fund transfers, less energy may be used, battery life may be extended, and/or smaller batteries can be included in the user devices. Thus, reducing energy consumption can also enable battery resources (e.g., metals) to be conserved and reduce the weight and size of the user devices.

[0142] Additional benefits that can be enabled by embodiments described herein is the flexibility of fund transfers. In traditional systems, applications dedicated to fund transfers may need to be downloaded by devices and launched to conduct transfers. Such traditional applications also occupy valuable memory space that embodiments can reduce the use of (enabling less memory to be included in user devices and/or the memory to be used for other purposes). Furthermore, user devices may not be configured to communicate with one another because of differing operating systems. Certain embodiments described herein enable cross operating system communication to occur (e.g., using NFC).

[0143] Furthermore, since certain embodiments described herein may transmit account identifier information between user devices before generating and transmitting a funds transfer request, the rate of user interface input error can be reduced. For example, since a user of the first user device may not need to enter in account information (e.g., user name, account name, wallet address, etc.) of a second user of the second user device before transferring funds to the second user, input errors are not able to occur that could needlessly take up resources local to the user devices and/or remote to the user devices (e.g., of an authorizing entity computer, at a processing network computer) before an error in a transfer request is determined (e.g., username not found, funds transmitted to wrong account). Accordingly, embodiments can also enable security advantages. Since account identifiers can be shared between user devices, they may be transmitted in an encrypted format (e.g., compared to being exchanged via speaking between users).

[0144] Any of the software components or functions described in this application may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C, C++, C#, Objective-C, Swift, or scripting language such as Perl or Python using, for example, conventional or object-oriented techniques. The software code may be stored as a

series of instructions or commands on a computer readable medium for storage and/or transmission, suitable media include random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a compact disk (CD) or DVD (digital versatile disk), flash
5 memory, and the like. The computer readable medium may be any combination of such storage or transmission devices.

[0145] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined
10 not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0146] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the invention.

15 **[0147]** As used herein, the use of "a," "an," or "the" is intended to mean "at least one," unless specifically indicated to the contrary.

WHAT IS CLAIMED IS:

1 1. A method comprising:
2 receiving, at a first contactless communication device after a first near
3 field communication (NFC) coupling with a second contactless communication
4 device in an NFC range, an input for a funds transfer;
5 launching, on the first contactless communication device, one or more
6 of a digital wallet or a digital tag library including one or more account identifiers;
7 receiving, at the first contactless communication device, a selection of
8 a first account identifier to be used in the funds transfer;
9 receiving, at the first contactless communication device and via the
10 NFC, a second account identifier associated with the second contactless
11 communication device;
12 generating, at the first contactless communication device, a request for
13 the funds transfer including the first account identifier and the second account
14 identifier;
15 transmitting, by the first contactless communication device, the request
16 for the funds transfer to a processing computer; and
17 displaying, by the first contactless communication device, a notification
18 indicating a status of the funds transfer.

1 2. The method of claim 1, further comprising:
2 detecting, by the first contactless communication device, the second
3 contactless communication device in the NFC range;
4 establishing, by the first contactless communication device, the first
5 NFC coupling with the second contactless communication device;
6 displaying, after detecting the second contactless communication
7 device in the NFC range and at the first contactless communication device, a user
8 interface listing one or more actions configured to be performed over NFC, wherein
9 the one or more actions include an option for the funds transfer; and
10 receiving, at the first contactless communication device, the input for
11 the funds transfer upon selection of the option for the funds transfer.

1 3. The method of claim 1, further comprising:

2 launching the one or more of the digital wallet or the digital tag library
3 after receiving the input for the funds transfer via NFC with the second contactless
4 communication device;
5 establishing, after receiving the second account identifier, a second
6 NFC coupling with the second contactless communication device; and
7 transmitting the request for the funds transfer to the processing
8 computer after establishing the second NFC coupling with the second contactless
9 communication device.

1 4. The method of claim 1, wherein the selection of the first account
2 identifier is received by a first user interface of the first contactless communication
3 device from among a first plurality of account identifiers.

1 5. The method of claim 4, wherein the second account identifier is
2 included in a pull transaction request to transfer funds from a second account
3 associated with the second account identifier to a first account associated with the
4 first account identifier.

1 6. The method of claim 4, wherein the second account identifier is
2 included in a push transaction request to transfer funds from a first account
3 associated with the first account identifier to a second account associated with the
4 second account identifier.

1 7. The method of claim 1, wherein the second account identifier is
2 selected using a second user interface of the second contactless communication
3 device from among a second plurality of account identifiers.

1 8. The method of claim 6, wherein the input for the funds transfer
2 indicates the first account managed by a first authorizing entity computer to be
3 included in the request for the funds transfer.

1 9. The method of claim 1, wherein the method further includes:
2 receiving, at the first contactless communication device, an amount for
3 the funds transfer before receiving the second account identifier over NFC, the

4 amount including one or more of: a fiat currency, a digital currency, or a
5 cryptocurrency.

1 10. The method of claim 1, wherein the first contactless
2 communication device is a first mobile device associated with the first account
3 identifier and the second contactless communication device is a second mobile
4 device.

1 11. The method of claim 1, wherein the first account identifier is
2 associated with a first user account managed by a first authorizing entity computer,
3 wherein an amount is debited to a first account associated with the first account
4 identifier.

1 12. The method of claim 1, wherein the second account identifier
2 identifies receive-only credentials only valid to push funds to an account identified by
3 the second account identifier.

1 13. The method of claim 1, wherein the first contactless
2 communication device is a transferor device, the method further comprising:
3 transmitting, by the first contactless communication device, a second
4 request for the second account identifier to the second contactless communication
5 device; and
6 wherein the one or more of the digital wallet or the digital tag library
7 originates a push transaction to transfer funds from a first account associated with
8 the first account identifier to a second account association with the second account
9 identifier.

1 14. The method of claim 1, wherein the first contactless
2 communication device is a transferee device and the input for the funds transfer is a
3 request for payment, the method further comprising:
4 transmitting, by the first contactless communication device, the first
5 account identifier and a requested payment amount to the second contactless
6 communication device.

1 15. A first user device comprising:
2 an NFC antenna;
3 a processor; and
4 a memory storing instructions that, when executed by the processor,
5 cause the processor to perform operations comprising:
6 receiving after a first near field communication (NFC) coupling
7 with a second user device in an NFC range, an input for a funds transfer;
8 launching one or more of a digital wallet or a digital tag library
9 including one or more account identifiers;
10 receiving a selection of a first account identifier to be used in the
11 funds transfer;
12 receiving, via the NFC, a second account identifier associated
13 with the second user device;
14 generating a request for the funds transfer including the first
15 account identifier and the second account identifier;
16 transmitting the request for the funds transfer to a processing
17 computer; and
18 displaying a notification indicating a status of the funds transfer.

1 16. The first user device of claim 15, wherein the operations further
2 comprise:
3 detecting the second user device in the NFC range;
4 establishing the first NFC coupling with the second user device;
5 displaying, after detecting the second user device in the NFC range, a
6 user interface listing one or more actions configured to be performed over NFC,
7 wherein the one or more actions include an option for the funds transfer; and
8 receiving the input for the funds transfer upon selection of the option for
9 the funds transfer.

1 17. The first user device of claim 15, wherein the operations further
2 comprise:

3 launching the one or more of the digital wallet or the digital tag library
4 after receiving the input for the funds transfer via NFC with the second user device;
5 establishing, after receiving the second account identifier, a second
6 NFC coupling with the second user device; and
7 transmitting the request for the funds transfer to the processing
8 computer after establishing the second NFC coupling with the second user device.

1 18. The first user device of claim 15, wherein the selection of the
2 first account identifier is received by a first user interface of the first user device from
3 among a first plurality of account identifiers.

1 19. The first user device of claim 15, wherein the operations further
2 comprise:

3 receiving an amount for the funds transfer before receiving the second
4 account identifier over NFC, the amount including one or more of: a fiat currency, a
5 digital currency, or a cryptocurrency.

1 20. A system comprising:
2 a first user device comprising:
3 a first NFC antenna;
4 a first processor; and
5 first memory storing instructions that, when executed by the first
6 processor, cause the first processor to perform first operations comprising:
7 receiving after a first near field communication (NFC)
8 coupling with a second user device in an NFC range, a first input for a
9 funds transfer;
10 launching, on a first display of the first user device, one or
11 more of a first digital wallet or a first digital tag library including one or
12 more first account identifiers;
13 receiving a first selection of a first account identifier to be
14 used in the funds transfer;
15 receiving, via the NFC, a second account identifier
16 associated with the second user device;

17 generating, a request for the funds transfer including the
18 first account identifier and the second account identifier;
19 transmitting the request for the funds transfer to a
20 processing computer; and
21 displaying a notification indicating a status of the funds
22 transfer; and
23 the second user device comprising:
24 a second NFC antenna;
25 a second processor; and
26 second memory storing instructions that, when executed by the
27 second processor, cause the second processor to perform second operations
28 comprising:
29 receiving after the first NFC coupling with the first user
30 device in the NFC range, a second input for the funds transfer;
31 launching, on a second display of the second user
32 device, one or more of a second digital wallet or a second digital tag
33 library including one or more second account identifiers;
34 receiving a second selection of the second account
35 identifier to be used in the funds transfer; and
36 transmitting the second account identifier to the first user
37 device via the NFC.