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[Continued on next page]

(54) **Title**: TRANSACTION VISUAL CAPTURING APPARATUSES, METHODS AND SYSTEMS

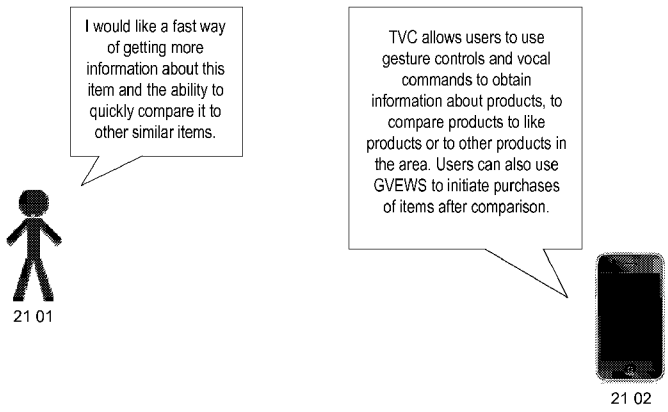

Figure 21

(57) **Abstract**: The transaction visual capturing apparatuses, methods and systems ("TVC") transform mobile device location coordinate information transmissions, real-time reality visual capturing, and mixed gesture capturing via TVC components into real-time behavior-sensitive product purchase related information, shopping purchase transaction notifications, and electronic receipts. In one implementation, the TVC obtains user check-in information from a user mobile device upon user entry into a store. The TVC extracts a user identifier based on the user check- in information, and accesses a database for a user profile. The TVC determines a user prior behavior pattern from the accessed user profile, and obtains user real-time in- store behavior data from the user mobile device.

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TRANSACTION VISUAL CAPTURING APPARATUSES, METHODS AND SYSTEMS

[0001] This patent for letters patent disclosure document describes inventive aspects that include various novel innovations (hereinafter "disclosure") and contains material that is subject to copyright, mask work, and/or other intellectual property protection. The respective owners of such intellectual property have no objection to the facsimile reproduction of the disclosure by anyone as it appears in published Patent Office file/records, but otherwise reserve all rights.

PRIORITY CLAIMS

[0002] This application claims priority under 35 USC §§ 119 and Patent Cooperation Treaty to United States provisional patent application serial no. 61/583,378 filed January 5, 2012, attorney docket no. 196US01|VISA-177/00US, United States provisional patent application serial no. 61/594,957, filed February 3, 2012, attorney docket no. 196US02|VISA-177/01US, and United States provisional patent application serial no. 61/620,365, filed April 4, 2012, attorney docket no. 196US03|VISA-177/02US, all entitled "Augmented Retail Shopping Apparatuses, Methods and Systems."

[0003] This application claims priority under 35 USC §§ 119 and Patent Cooperation Treaty to United States provisional patent application serial no. 61/625,170, filed April 17, 2012, attorney docket no. 268US01|VISA-189/00US, entitled "Payment Transaction Visual Capturing Apparatuses, Methods And Systems"; and United States provisional patent application serial no. 61/749,202, filed January 4, 2013, attorney docket no. 316US01|VISA-196/00US, and entitled "MULTI DISPARATE GESTURE ACTIONS AND TRANSACTIONS APPARATUSES, METHODS AND SYSTEMS."

[0004] This application claims priority to U.S. non-provisional patent application serial no. 13/434,818 filed March 29, 2012 and titled "Graduated Security Seasoning Apparatuses, Methods and Systems"; and PCT international application serial no. PCT/US12/66898, filed November 28, 2012, entitled “Transaction Security Graduated Seasoning And Risk Shifting Apparatuses, Methods And Systems.”

[0005] This application is related to United States utility patent application attorney docket no. 196US04|VISA-177/03US, entitled “TRANSACTION VISUAL CAPTURING Apparatuses, Methods And Systems,” with Ernest Borhan being the first inventor.

[0006] The aforementioned applications are all hereby expressly incorporated by reference.

OTHER APPLICATIONS

[0007] This application incorporates by reference, the entire contents of the following applications: (1) U.S. non-provisional patent application serial no. 13/327,740 filed on December 15, 2011 and titled "Social Media Payment Platform Apparatuses, Methods and Systems."

FIELD

[0008] The present innovations generally address apparatuses, methods, and systems for retail commerce, and more particularly, include TRANSACTION VISUAL CAPTURING APPARATUSES, METHODS AND SYSTEMS (“TVC”).

BACKGROUND

[0009] Consumer transactions typically require a customer to select a product

from a store shelf or website, and then to check it out at a checkout counter or webpage. Product information is typically selected from a webpage catalog or entered into a point-of-sale terminal device, or the information is automatically entered by scanning an item barcode with an integrated barcode scanner, and the customer is usually provided with a number of payment options, such as cash, check, credit card or debit card. Once payment is made and approved, the point-of-sale terminal memorializes the transaction in the merchant's computer system, and a receipt is generated indicating the satisfactory consummation of the transaction.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The accompanying appendices and/or drawings illustrate various non-limiting, example, inventive aspects in accordance with the present disclosure:

[0011] FIGURE 1 shows a block diagram illustrating example aspects of augmented retail shopping in some embodiments of the TVC;

[0012] FIGURES 2A-2D provide exemplary datagraphs illustrating data flows between the TVC server and its affiliated entities within embodiments of the TVC;

[0013] FIGURES 3A-3C provide exemplary logic flow diagrams illustrating TVC augmented shopping within embodiments of the TVC;

[0014] FIGURES 4A-4M provide exemplary user interface diagrams illustrating TVC augmented shopping within embodiments of the TVC;

[0015] FIGURE S 5A-5F provide exemplary UI diagrams illustrating TVC virtual shopping within embodiments of the TVC;

[0016] FIGURE 6 provides a diagram illustrating an example scenario of TVC users splitting a bill via different payment cards via visual capturing the bill and the physical cards within embodiments of the TVC;

[0017] FIGURE 7A-7C provides a diagram illustrating example virtual layers injections upon virtual capturing within embodiments of the TVC;

[0018] FIGURE 8 provides a diagram illustrating automatic layer injection within embodiments of the TVC;

[0019] FIGURES 9A-9E provide exemplary user interface diagrams illustrating card enrollment and funds transfer via TVC within embodiments of the TVC;

[0020] FIGURES 10-14 provide exemplary user interface diagrams illustrating various card capturing scenarios within embodiments of the TVC;

[0021] FIGURES 15A-15F provide exemplary user interface diagrams illustrating a user sharing bill scenario within embodiments of the TVC;

[0022] FIGURES 16A-16C provide exemplary user interface diagrams illustrating different layers of information label overlays within alternative embodiments of the TVC;

[0023] FIGURE 17 provides exemplary user interface diagrams illustrating in-store scanning scenarios within embodiments of the TVC;

[0024] FIGURES 18-19 provide exemplary user interface diagrams illustrating post-purchase restricted-use account reimbursement scenarios within embodiments of the TVC;

[0025] FIGURES 20A-20D provides a logic flow diagram illustrating TVC overlay label generation within embodiments of the TVC;

[0026] FIGURE 21 shows a schematic block diagram illustrating some embodiments of the TVC;

[0027] FIGURES 22a-b show data flow diagrams illustrating processing gesture and vocal commands in some embodiments of the TVC;

[0028] FIGURES 23a-3c show logic flow diagrams illustrating processing gesture and vocal commands in some embodiments of the TVC;

[0029] FIGURE 24a shows a data flow diagrams illustrating checking into a store in some embodiments of the TVC;

[0030] FIGURES 24b-c show data flow diagrams illustrating accessing a virtual store in some embodiments of the TVC;

[0031] FIGURE 25a shows a logic flow diagram illustrating checking into a store in some embodiments of the TVC;

[0032] FIGURE 25b shows a logic flow diagram illustrating accessing a virtual store in some embodiments of the TVC;

[0033] FIGURES 26a-d show schematic diagrams illustrating initiating transactions in some embodiments of the TVC;

[0034] FIGURE 27 shows a schematic diagram illustrating multiple parties initiating transactions in some embodiments of the TVC;

[0035] FIGURE 28 shows a schematic diagram illustrating a virtual closet in some embodiments of the TVC;

[0036] FIGURE 29 shows a schematic diagram illustrating an augmented reality interface for receipts in some embodiments of the TVC;

[0037] FIGURE 30 shows a schematic diagram illustrating an augmented reality interface for products in some embodiments of the TVC;

[0038] FIGURE 31 shows a user interface diagram illustrating an overview of example features of virtual wallet applications in some embodiments of the TVC;

[0039] FIGURES 32A-G show user interface diagrams illustrating example features of virtual wallet applications in a shopping mode, in some embodiments of the TVC;

[0040] FIGURES 33A-F show user interface diagrams illustrating example features of virtual wallet applications in a payment mode, in some embodiments of the TVC;

[0041] FIGURE 34 shows a user interface diagram illustrating example features of virtual wallet applications, in a history mode, in some embodiments of the TVC;

[0042] FIGURES 35A-E show user interface diagrams illustrating example features of virtual wallet applications in a snap mode, in some embodiments of the TVC;

[0043] FIGURE 36 shows a user interface diagram illustrating example features of virtual wallet applications, in an offers mode, in some embodiments of the TVC;

[0044] FIGURES 37A-B show user interface diagrams illustrating example features of virtual wallet applications, in a security and privacy mode, in some embodiments of the TVC;

[0045] FIGURE 38 shows a data flow diagram illustrating an example user purchase checkout procedure in some embodiments of the TVC;

[0046] FIGURE 39 shows a logic flow diagram illustrating example aspects of a user purchase checkout in some embodiments of the TVC, e.g., a User Purchase Checkout ("UPC") component 3900;

[0047] FIGURES 40A-B show data flow diagrams illustrating an example purchase transaction authorization procedure in some embodiments of the TVC;

[0048] FIGURES 41A-B show logic flow diagrams illustrating example aspects of purchase transaction authorization in some embodiments of the TVC, e.g., a Purchase Transaction Authorization ("PTA") component 4100;

[0049] FIGURES 42A-B show data flow diagrams illustrating an example purchase transaction clearance procedure in some embodiments of the TVC;

[0050] FIGURES 43A-B show logic flow diagrams illustrating example aspects of purchase transaction clearance in some embodiments of the TVC, e.g., a Purchase Transaction Clearance ("PTC") component 4300;

[0051] FIGURE 44 shows a block diagram illustrating embodiments of a TVC controller; and

[0052] The leading number of each reference number within the drawings indicates the figure in which that reference number is introduced and/or detailed. As such, a detailed discussion of reference number 101 would be found and/or introduced in Figure 1. Reference number 201 is introduced in Figure 2, etc.

DETAILED DESCRIPTION

TRANSACTION VISUAL CAPTURING (TVC)

[0053] The TRANSACTION VISUAL CAPTURING APPARATUSES, METHODS AND SYSTEMS (hereinafter "TVC") transform mobile device location coordinate information transmissions, real-time reality visual capturing, and mixed gesture capturing, via TVC components, into real-time behavior-sensitive product purchase related information, shopping purchase transaction notifications, and electronic receipts.

[0054] Within embodiments, the TVC may provide a merchant shopping assistance platform to facilitate consumers to engage their virtual mobile wallet to obtain shopping assistance at a merchant store, e.g., via a merchant mobile device user interface (UI). For example, a consumer may operate a mobile device (e.g., an Apple® iPhone, iPad, Google® Android, Microsoft® Surface, and/or the like) to "check-in" at a merchant store, e.g., by snapping a quick response (QR) code at a point of sale (PoS) terminal of the merchant store, by submitting GPS location information via the mobile device, etc. Upon being notified that a consumer is present in-store, the merchant may provide a mobile user interface (UI) to the consumer to assist the consumer's shopping experience, e.g., shopping item catalogue browsing, consumer offer recommendations, checkout assistance, and/or the like.

[0055] In one implementation, merchants may utilize the TVC mechanisms to create new TVC shopping experiences for their customers. For example, TVC may integrate with alert mechanisms (e.g., V.me wallet push systems, vNotify, etc.) for fraud preventions, and/or the like. As another example, TVC may provide/integrate with merchant-specific loyalty programs (e.g., levels, points, notes, etc.), facilitate merchants to provide personal shopping assistance to VIP customers. In further implementations, via the TVC merchant UI platform, merchants may integrate and/or synchronize a

consumer's wish list, shopping cart, referrals, loyalty, merchandise delivery options, and other shopping preference settings between online and in-store purchase.

[0056] Within implementations, TVC may employ a virtual wallet alert mechanisms (e.g., vNotify) to allow merchants to communicate with their customers without sharing customer's personal information (e.g., e-mail, mobile phone number, residential addresses, etc.). In one implementation, the consumer may engage a virtual wallet applications (e.g., Visa® V.me wallet) to complete purchases at the merchant PoS without revealing the consumer's payment information (e.g., a PAN number) to the merchant.

[0057] Integration of an electronic wallet, a desktop application, a plug-in to existing applications, a standalone mobile application, a web based application, a smart prepaid card, and/or the like in capturing payment transaction related objects such as purchase labels, payment cards, barcodes, receipts, and/or the like reduces the number of network transactions and messages that fulfill a transaction payment initiation and procurement of payment information (e.g., a user and/or a merchant does not need to generate paper bills or obtain and send digital images of paper bills, hand in a physical payment card to a cashier, etc., to initiate a payment transaction, fund transfer, and/or the like). In this way, with the reduction of network communications, the number of transactions that may be processed per day is increased, i.e., processing efficiency is improved, and bandwidth and network latency is reduced.

[0058] It should be noted that although a mobile wallet platform is depicted (e.g., see FIGURES 31-43B), a digital/electronic wallet, a smart/prepaid card linked to a user's various payment accounts, and/or other payment platforms are contemplated embodiments as well; as such, subset and superset features and data sets of each or a combination of the aforementioned shopping platforms (e.g., see FIGURES 2A-2D and 4A-4M) may be accessed, modified, provided, stored, etc. via cloud/server services and a number of varying client devices throughout the instant specification. Similarly, although mobile wallet user interface elements are depicted, alternative and/or complementary user interfaces are also contemplated including: desktop applications, plug-ins to existing applications, stand alone mobile applications, web based applications (e.g., applications with web objects/frames, HTML 5

applications/wrappers, web pages, etc.), and other interfaces are contemplated. It should be further noted that the TVC payment processing component may be integrated with an digital/electronic wallet (e.g., a Visa V-Wallet, etc.), comprise a separate stand alone component instantiated on a user device, comprise a server/cloud accessed component, be loaded on a smart/prepaid card that can be substantiated at a PoS terminal, an ATM, a kiosk, etc., which may be accessed through a physical card proxy, and/or the like.

[0059] FIGURE 1 shows a block diagram illustrating example aspects of augmented retail shopping in some embodiments of the TVC. In some embodiments, a user 101a may enter 111 into a store (e.g., a physical brick-and-mortar store, virtual online store [via a computing device], etc.) to engage in a shopping experience, 110. The user may have a user device 102. The user device 102 may have executing thereon a virtual wallet mobile app, including features such as those as described below with in the discussion with reference to FIGURES 31-43B. Upon entering the store, the user device 102 may communicate with a store management server 103. For example, the user device may communicate geographical location coordinates, user login information and/or like check-in information to check in automatically into the store, 120. In some embodiments, the TVC may inject the user into a virtual wallet store upon check in. For example, the virtual wallet app executing on the user device may provide features as described below to augment the user's in-store shopping experience. In some embodiments, the store management server 103 may inform a customer service representative 101b ("CSR") of the user's arrival into the store. In one implementation, the CSR may include a merchant store employee operating a CSR device 104, which may comprise a smart mobile device (e.g., an Apple® iPhone, iPad, Google® Android, Microsoft® Surface, and/or the like). The CSR may interact with the consumer in-person with the CSR device 104, or alternatively communicate with the consumer via video chat on the CSR device 104. In further implementations, the CSR may comprise an shopping assistant avatar instantiated on the CSR device, with which the consumer may interact with, or the consumer may access the CSR shopping avatar within the consumer mobile wallet by checking in the wallet with the merchant store.

[0060] For example, the CSR app may include features such as described below in

the discussion with reference to FIGURES 4A-4M. The CSR app may inform the CSR of the user's entry, including providing information about the user's profile, such as the user's identity, user's prior and recent purchases, the user's spending patterns at the current and/or other merchants, and/or the like, 130. In some embodiments, the store management server may have access to the user's prior purchasing behavior, the user's real-time in-store behavior (e.g., which items' barcode did the user scan using the user device, how many times did the user scan the barcodes, did the user engage in comparison shopping by scanning barcodes of similar types of items, and/or the like), the user's spending patterns (e.g., resolved across time, merchants, stores, geographical locations, etc.), and/or like user profile information. The store management system may utilize this information to provide offers/coupons, recommendations and/or the like to the CSR and/or the user, via the CSR device and/or user device, respectively, 140. In some embodiments, the CSR may assist the user in the shopping experience, 150. For example, the CSR may convey offers, coupons, recommendations, price comparisons, and/or the like, and may perform actions on behalf of the user, such as adding/removing items to the user's physical/virtual cart 151, applying/removing coupons to the user's purchases, searching for offers, recommendations, providing store maps, or store 3D immersion views (see, e.g., FIGURE 5C), and/or the like. In some embodiments, when the user is ready to checkout, the TVC may provide a checkout notification to the user's device and/or CSR device. The user may checkout using the user's virtual wallet app executing on the user device, or may utilize a communication mechanism (e.g., near field communication, card swipe, QR code scan, etc.) to provide payment information to the CSR device. Using the payment information, the TVC may initiate the purchase transaction(s) for the user, and provide an electronic receipt 162 to the user device and/or CSR device, 160. Using the electronic receipt, the user may exit the store 161 with proof of purchase payment.

[0061] Some embodiments of the TVC may feature a more streamlined login option for the consumer. For example, using a mobile device such as iPhone, the consumer may initially enter a device ID such as an Apple ID to get into the device. In one implementation, the device ID may be the ID used to gain access to the TVC application. As such, the TVC may use the device ID to identify the consumer and the

consumer need not enter another set of credentials. In another implementation, the TVC application may identify the consumer using the device ID via federation. Again, the consumer may not need to enter his credentials to launch the TVC application. In some implementations, the consumer may also use their wallet credentials (e.g., V.me credentials) to access the TVC application. In such situations, the wallet credentials may be synchronized with the device credentials.

[0062] Once in the TVC application, the consumer may see some graphics that provide the consumer various options such as checking in and for carrying items in the store. In one implementation, as shown in FIGURES 4A-4B, a consumer may check in with a merchant. Once checked in, the consumer may be provided with the merchant information (e.g., merchant name, address, etc.), as well as options within the shopping process (e.g., services, need help, ready to pay, store map, and/or the like). When the consumer is ready to checkout, the consumer may capture the payment code (e.g., QR code). Once, the payment code is captured, the TVC application may generate and display a safe locker (e.g., see 455 in FIGURE 4I). The consumer may move his fingers around the dial of the safe locker to enter the payment PIN to execute the purchase transaction. Because the consumer credentials are managed in such a way that the device and/or the consumer are pre-authenticated or identified, the payment PIN is requested only when needed to conduct a payment transaction, making the consumer experience simpler and more secure. The consumer credentials, in some implementations, may be transmitted to the merchant and/or TVC as a clear or hashed package. Upon verification of the entered payment PIN, the TVC application may display a transaction approval or denial message to the consumer. If the transaction is approved, a corresponding transaction receipt may be generated (e.g., see FIGURE 4K). In one implementation, the receipt on the consumer device may include information such as items total, item description, merchant information, tax, discounts, promotions or coupons, total, price, and/or the like. In a further implementation, the receipt may also include social media integration link via which the consumer may post or tweet their purchase (e.g., the entire purchase or selected items). Example social media integrated with the TVC application may include FACEBOOK, TWITTER, Google +, Four Squares, and/or the like. Details of the social media integration are discussed in

detail in U.S. patent application serial no. 13/327,740 filed on December 15, 2011 and titled "Social Media Payment Platform Apparatuses, Methods and Systems" which is herein expressly incorporated by reference. As a part of the receipt, a QR code generated from the list of items purchased may be included. The purchased items QR code may be used by the sales associates in the store to verify that the items being carried out of the store have actually been purchased.

[0063] Some embodiments of the TVC application may include a dynamic key lock configuration. For example, the TVC application may include a dynamic keyboard that displays numbers or other characters in different configuration every time. Such a dynamic keypad would generate a different key entry pattern every time such that the consumer would need to enter their PIN every time. Such dynamic keypad may be used, for example, for entry of device ID, wallet PIN, and/or the like, and may provide an extra layer of security. In some embodiments, the dial and scrambled keypad may be provided based on user preference and settings. In other embodiments, the more cumbersome and intricate authentication mechanisms can be supplied based on increased seasoning and security requirements discussed in greater detail in U.S. patent application serial no. 13/434,818 filed March 29, 2012 and titled "Graduated Security Seasoning Apparatuses, Methods and Systems," and PCT international application serial no. PCT/US12/66898, filed November 28, 2012, entitled "Transaction Security Graduated Seasoning And Risk Shifting Apparatuses, Methods And Systems," which are all herein expressly incorporated by reference. These dynamic seasoned PIN authentication mechanisms may be used to authorize a purchase, and also to gain access to a purchasing application (e.g., wallet), to gain access to the device, and/or the like. In one embodiment, the GPS location of the device and/or discerned merchant may be used to determine a risk assessment of any purchasing made at such location and/or merchant, and as such may ratchet up or down the type of mechanism to be used for authentication/authorization.

[0064] In some embodiments, the TVC may also facilitate an outsourced customer service model wherein the customer service provider (e.g., sales associate) is remote, and the consumer may request help from the remote customer service provider by opening a communication channel from their mobile device application. The remote

customer service provider may then guide the requesting user through the store and/or purchase.

[0065] FIGURES 2A-2B provide exemplary data flow diagrams illustrating data flows between TVC and its affiliated entities for in-store augmented retail shopping within embodiments of the TVC. Within embodiments, various TVC entities, including a consumer 202 operating a consumer mobile device 203, a merchant 220, a CSR 230 operating a CSR terminal 240, an TVC server 210, an TVC database 219, and/or the like may interact via a communication network 213.

[0066] With reference to FIGURE 2A, a user 202 may operate a mobile device 203, and check-in at a merchant store 220. In one implementation, various consumer check-in mechanisms may be employed. In one implementation, the consumer mobile device 203 may automatically handshake with a contactless plate installed at the merchant store when the consumer 202 walks into the merchant store 220 via Near Field Communication (NFC), 2.4GHz contactless, and/or the like, to submit consumer in-store check-in request 204 to the merchant 220, which may include consumer's wallet information. For example, an example listing of a consumer check-in message 204 to the merchant store, substantially in the form of eXtensible Markup Language ("XML"), is provided below:

```
<?XML version = "1.0" encoding = "UTF-8"?>
<checkin_data>
    <timestamp>2014-02-22 15:22:43</timestamp>
    <client_details>
          <client_IP>192.168.23.126</client_IP>
          <client_type>smartphone</client_type>
          <client_model>HTC Hero</client_model>
          <OS>Android 2.2</OS>
          <app_installed_flag>true</app_installed_flag>
    </client_details>
    <wallet_details>
          <wallet_type> V.me </wallet_type>
          <wallet_status> on </wallet_status>
          <wallet_name> JS_wallet </wallet_name>
          …
    </wallet_details>
<!--optional parameters-->
```

```
    <GPS>
        <latitude> 74° 11.92 </latitude>
        <longtitude> 42° 32.72 </longtitude>
    </GPS>
    <merchant>
        <MID> MACY00123 </MID>
        <MCC> MEN0123 </MCC>
        <merchant_name> la jolla shopping center </merchant_name>
        <address> 550 Palm spring ave </address>
        <city> la jolla </city>
        <zipcode> 00000 </zipcode>
        <division> 1st floor men's wear </division>
        <location>
                <GPS> 3423234  23423 </GPS>
                <floor> 1st floor </floor>
                <Aisle> 6 </aisle>
                <stack> 56 </stack>
                <shelf> 56 </shelf>
            </location>
        …
    </merchant>
    <QR_code>
        <type> 2D </type>
        <error_correction> L-7% </error_correction>
        <margin> 4 block </margin>
        <scale> 3X </scale>
        <color> 000000 </color>
        <content> &^NDELJDA%(##Q%DIHAF TDS23243^& </content>
    …
</checkin_data>
```

[0067] In an alternative implementation, a merchant 220 may optionally provide a store check-in information 206 so that the consumer may snap a picture of the provided store check-in information. The store check-in information 206 may include barcodes (e.g., UPC, 2D, QR code, etc.), a trademark logo, a street address plaque, and/or the like, displayed at the merchant store 220. The consumer mobile device may then generate a check-in request 208 including the snapped picture of store check-in information 206 to the TVC server 210. In further implementations, the store check-in information 206 may include a store floor plan transmitted to the consumer via MMS,

wallet push messages, email, and/or the like.

[0068] For example, the store information 206 to the TVCconsumer, substantially in the form of XML-formatted data, is provided below:

```
Content-Length: 867
<?XML version = "1.0" encoding = "UTF-8"?>
<store_information>
    <timestamp>2014-02-22 15:22:43</timestamp>
    <GPS>
        <latitude> 74° 11.92 </latitude>
        <longtitude> 42° 32.72 </longtitude>
    </GPS>
    <merchant>
        <MID> MACY00123 </MID>
        <MCC> MEN0123 </MCC>
        <merchant_name> la jolla shopping center </merchant_name>
        <address> 550 Palm spring ave </address>
        <city> la jolla </city>
        <zipcode> 00000 </zipcode>
        <division> 1st floor men's wear </division>
        …
    </merchant>
    <store_map> "MACYS_1st_floor_map.PDF" </store_map>
    …
</store_information>
```

[0069] As another example, the consumer mobile device 203 may generate a (Secure) Hypertext Transfer Protocol ("HTTP(S)") POST message including the consumer check-in information for the TVC server 210 in the form of data formatted according to the XML. An example listing of a checkout request 208 to the TVC server, substantially in the form of a HTTP(S) POST message including XML-formatted data, is provided below:

```
POST /checkinrequest.php HTTP/1.1
Host: 192.168.23.126
Content-Type: Application/XML
Content-Length: 867
<?XML version = "1.0" encoding = "UTF-8"?>
<checkin_request>
    <checkin_session_id> 4SDASDCHUF ^GD& </checkin_session_id>
```

```
<timestamp>2014-02-22 15:22:43</timestamp>
<client_details>
       <client_IP>192.168.23.126</client_IP>
       <client_type>smartphone</client_type>
       <client_model>HTC Hero</client_model>
       <OS>Android 2.2</OS>
       <app_installed_flag>true</app_installed_flag>
</client_details>
<wallet_details>
       <wallet_type> V.me </wallet_type>
       <wallet_account_number> 1234 12343 </wallet_account_number>
       <wallet_id> JS001 </wallet_id>
       <wallet_status> on </wallet_status>
       <wallet_name> JS_wallet </wallet_name>
       …
</wallet_details>
<merchant>
       <MID> MACY00123 </MID>
       <MCC> MEN0123 </MCC>
       <merchant_name> la jolla shopping center </merchant_name>
       <address> 550 Palm spring ave </address>
       <city> la jolla </city>
       <zipcode> 00000 </zipcode>
       <division> 1st floor men's wear </division>
       <location>
                    <GPS> 3423234  23423 </GPS>
                    <floor> 1st floor </floor>
                    <Aisle> 12 </aisle>
                    <stack> 4 </stack>
                    <shelf> 2 </shelf>
              </location>
       …
</merchant>
<image_info>
              <name> mycheckin </name>
              <format> JPEG </format>
              <compression> JPEG compression </compression>
              <size> 123456 bytes </size>
              <x-Resolution> 72.0 </x-Resolution>
              <y-Resolution> 72.0 </y-Resolution>
              <date_time> 2014:8:11 16:45:32 </date_time>
              …
```

```
                <content> ÿØÿà †JFIF     H H  ÿâ´ICC_PROFILE     ¤appl┐†
    mntrRGB XYZ •Ü  ‼  $  acspAPPL öÖÓ-appl
    ◄desc   P   bdscm   ´   Šcprt  └@   $wtpt  └d   ¶rXYZ  └x   ¶gXYZ  └Œ
    ¶bXYZ  └    ¶rTRC  └´  ◘aarg   À    vcgt …
                </content>
          …
    </image_info>
…
</checkout_request>
```

[0070] The above exemplary check-in request message includes a snapped image (e.g., QR code, trademark logo, storefront, etc.) for the TVC server 210 to process and extract merchant information 209. In another implementation, the mobile device 203 may snap and extract merchant information from the snapped QR code, and include such merchant information into the consumer check-in information 208.

[0071] In another implementation, the check-in message 208 may further include the consumer's GPS coordinates for the TVC server 210 to associate a merchant store with the consumer's location. In further implementations, the check-in message 208 may include additional information, such as, but not limited to biometrics (e.g., voice, fingerprint, facial, etc.), e.g., a consumer provides biometric information to a merchant PoS terminal, etc., mobile device identity (e.g., IMEI, ESN, SIMid, etc.), mobile component security identifying information, trusted execution environment (e.g., Intel TXT, TrustZone, etc.), and/or the like.

[0072] In one implementation, upon TVC server obtaining merchant information 209 from the consumer check-in request message 208, TVC server 210 may query for related consumer loyalty profile 218 from a database 219. In one implementation, the consumer profile query 218 may be performed at the TVC server 210, and/or at the merchant 220 based on merchant previously stored consumer loyalty profile database. For example, the TVC database 219 may be a relational database responsive to Structured Query Language ("SQL") commands. The TVC server may execute a hypertext preprocessor ("PHP") script including SQL commands to query a database table (such as FIGURE 44, Offer 4419m) for loyalty, offer data associated with the consumer and the merchant. An example offer data query 218, substantially in the form of PHP/SQL commands, is provided below:

```
<?PHP
header('Content-Type: text/plain');
mysql_connect("254.93.179.112",$DBserver,$password); // access database server
mysql_select_db("TVC_DB.SQL"); // select database table to search
//create query
$query = "SELECT offer_ID, offer_title, offer_attributes_list, offer_price,
   offer_expiry, related_products_ list, discounts_list, rewards_list, FROM
   OffersTable WHERE merchant_ID LIKE '%' "MACYS" AND consumer_ID LIKE '%'
   "JS001";
$result = mysql_query($query); // perform the search query
mysql_close("TVC_DB.SQL"); // close database access
?>
```

[0073] In one implementation, the TVC may obtain the query result including the consumer loyalty offers profile (e.g., loyalty points with the merchant, with related merchants, product items the consumer previously purchased, product items the consumer previously scanned, locations of such items, etc.) 220, and may optionally provide the consumer profile information 223 to the merchant. For example, in one implementation, the queried consumer loyalty profile 220 and/or the profile information provided to the merchant CSR 223, substantially in the form of XML-formatted data, is provided below:

```
<?XML version = "1.0" encoding = "UTF-8"?>
<consumer_loyalty>
   <user>
         <user_id> JS001 </user_id>
         <user_name> John Public </user_name>
         …
   </user>
   <merchant>
         <MID> MACY00123 </MID>
         <merchant_name> la jolla shopping center </merchant_name>
         <location> 550 Palm spring ave </location>
         <city> la jolla </city>
         <zipcode> 00000 </zipcode>
         <division> 1st floor men's wear </division>
         …
   </merchant>
   <loyalty>
         <level> 10 </level>
         <points> 5,000 </points>
```

```
            <in-store_cash> 4,00 </in-store_cash>
            …
      </loyalty>
      <offer>
            <offer_type> loyalty points </offer_type>
            <sponsor> merchant </sponsor>
            <trigger> 100 lolyalty points </trigger>
            <reward> 10% OFF next purchase </reward>
            …
      </offer>
      <checkin>
            <timestamp>2014-02-22 15:22:43</timestamp>
            <checkin_status> checked in </checkin_status>
            <location>
                  <GPS>
                  <latitude> 74° 11.92 </latitude>
                  <longtitude> 42° 32.72 </longtitude>
                  </GPS>
            <floor> 1st </floor>
            <department> men's wear </department>
            …
      </checkin>
   <!--optional parameters-->
      <interested_items>
            <item_1>
                  <item_id> Jean20132 </item_id>
                  <SKU> 0093424 </SKU>
                  <item_description> Michael Kors Flat Pants </item_description>
                  <history> scanned on 2014-01-22 15:22:43 </history>
                  <item_status> in stock </item_status>
                  <location> 1st floor Lane 6 Shelf 56 </location>
                  …
            </item_1>
            </item_2> … </item_2>
            …
   </consumer_loyalty>
```

[0074] In the above example, TVC may optionally provide information on the consumer's previously viewed or purchased items to the merchant. For example, the consumer has previously scanned the QR code of a product "Michael Kors Flat Pants" and such information including the inventory availability, SKU location, etc. may be provided to the merchant CSR, so that the merchant CSR may provide a

recommendation to the consumer. In one implementation, the consumer loyalty message 223 may not include sensitive information such as consumer's wallet account information, contact information, purchasing history, and/or the like, so that the consumer's private financial information is not exposed to the merchant.

[0075] Alternatively, the merchant 220 may query its local database for consumer loyalty profile associated with the merchant, and retrieve consumer loyalty profile information similar to message 223. For example, in one implementation, at the merchant 220, upon receiving consumer check-in information, the merchant may determine a CSR for the consumer 212. For example, the merchant may query a local consumer loyalty profile database to determine the consumer's status, e.g., whether the consumer is a returning customer, or a new customer, whether the consumer has been treated with a particular CSR, etc., to assign a CSR to the consumer. In one implementation, the CSR 230 may receive a consumer assignment 224 notification at a CSR terminal 240 (e.g., a PoS terminal, a mobile device, etc.). In one implementation, the consumer assignment notification message 224 may include consumer loyalty profile with the merchant, consumer's previous viewed or purchased item information, and/or the like (e.g., similar to that in message 223), and may be sent via email, SMS, instant messenger, PoS transmission, and/or the like. For example, in one implementation, the consumer assignment notification 224, substantially in the form of XML-formatted data, is provided below:

```
<?XML version = "1.0" encoding = "UTF-8"?>
<consumer_assignment>
    <consumer>
        <user_id> JS001 </user_id>
        <user_name> John Public </user_name>
        <level> 10 </level>
        <points> 5,000 </points>
        ...
    </consumer>
    <CSR>
        <CSR_id> JD34234 </CSR_id>
        <CSR_name> John Doe </CSR_name>
        <type> local </type>
        <current_location> 1st floor </current_location>
        <location>
```

```
                        <floor> 1st floor </floor>
                        <Aisle> 6 </aisle>
                        <stack> 56 </stack>
                        <shelf> 56 </shelf>
            </location>
            <in-person_availability> yes </in-person_availability>
            <specialty> men's wear, accessories </specialty>
            <language> English, German </language>
            <status> available </status>
            …
      </CSR>
      <consumer_loyalty> … </consumer_loyalty>
      …
   </consumer_assignment>
```

[0076] In the above example, the consumer assignment notification 224 includes basic consumer information, and CSR profile information (e.g., CSR specialty, availability, language support skills, etc.). Additionally, the consumer assignment notification 224 may include consumer loyalty profile that may take a form similar to that in 223.

[0077] In one implementation, the consumer may optionally submit in-store scanning information 225a to the CSR (e.g., the consumer may interact with the CSR so that the CSR may assist the scanning of an item, etc.), which may provide consumer interest indications to the CSR, and update the consumer's in-store location with the CSR. For example, in one implementation, the consumer scanning item message 225a, substantially in the form of XML-formatted data, is provided below:

```
   <?XML version = "1.0" encoding = "UTF-8"?>
   <consumer_scanning>
      <consumer>
            <user_id> JS001 </user_id>
            <user_name> John Public </user_name>
            <level> 10 </level>
            <points> 5,000 </points>
            …
      </consumer>
      <event> QR scanning </event>
      <product>
            <product_id> sda110 </Product_id>
            <sku> 874432 </sku>
```

```
            <product_name> CK flat jeans </product_name>
            <product_size> M </product_size>
            <price> 145.00 </price>
            …
      </product>
      <location>
                           <floor> 1st floor </floor>
                           <Aisle> 6 </aisle>
                           <stack> 56 </stack>
                           <shelf> 56 </shelf>
      </location>
   …<consumer_scanning>
```

[0078] Additionally, the consumer scanning information 225a may be provided to the TVC server to update consumer interests and location information.

[0079] Upon receiving consumer loyalty information and updated location information, the CSR terminal 240 may retrieve a list of complementary items for recommendations 225b, e.g., items close to the consumer's in-store location, items related to the consumer's previous viewed items, etc. In one implementation, the CSR may submit a selection of the retrieved items to recommend to the consumer 226, wherein such selection may be based on the real-time communication between the consumer and the CSR, e.g., in-person communication, SMS, video chat, TVC push messages (e.g., see 416a-b in FIGURE 4D), and/or the like.

[0080] In one implementation, upon receiving the consumer assignment notification, CSR may interact with the consumer 202 to assist shopping. For example, the CSR 230 may present recommended item/offer information 227 (e.g., see 434d-3 in FIGURE 4F) via the CSR terminal 240 to the consumer 202. For example, in one implementation, the consumer item/offer recommendation message 227, substantially in the form of XML-formatted data, is provided below:

```
   <?XML version = "1.0" encoding = "UTF-8"?>
   <consumer_item>
      <consumer>
            <user_id> JS001 </user_id>
            <user_name> John Public </user_name>
            <level> 10 </level>
            <points> 5,000 </points>
            …
```

```
    </consumer>
    <CSR>
        <CSR_id> JD34234 </CSR_id>
        <CSR_name> John Doe </CSR_name>
        …
    </CSR>
    <recommendation>
        <item_1>
            <item_id> Jean20132 </item_id>
            <SKU> 0093424 </SKU>
            <item_description> Michael Kors Flat Pants </item_description>
            <item_status> in stock </item_status>
            <offer> 10% OFF in store </offer>
            <location>
                <GPS> 3423234  23423 </GPS>
                <floor> 1st floor </floor>
                <Aisle> 12 </aisle>
                <stack> 4 </stack>
                <shelf> 2 </shelf>
            </location>
            …
        </item_1>
        </item_2> … </item_2>
  </recommendation>
        …
</consumer_recommendation>
```

[0081] In the above example, the location information included in the message 227 may be used to provide a store map, and directions to find the product item in the store floor plan (e.g., see FIGURE 5B), or via augmented reality highlighting while the consumer is performing in-store scanning (e.g., see FIGURE 5C).

[0082] Continuing on with FIGURE 2B, the consumer may provide an indication of interests 231a (e.g., see 427a-b in FIGURE 4E; tapping an "add to cart" button, etc.) in the CSR provided items/offers, e.g., via in-person communication, SMS, video chat, etc., and the CSR may in turn provide detailed information and/or add the item to shopping cart 233a (e.g., see 439 in FIUGRE 4G) to the consumer per consumer request. In one implementation, the consumer may submit a payment interest

indication 231b (e.g., by tapping on a "pay" button), and the CSR may present a purchasing page 233b (e.g., an item information checkout page with a QR code, see 442 in FIGURE 4H) to the consumer 202, who may indicate interests of a product item 231 with a CSR, e.g., by tapping on a mobile CSR terminal 240, by communicating with the CSR 230, etc. In one implementation, the consumer may snap the QR code of the interested product item and generate a purchase authorization request 236. For example, the purchase authorization request 236 may take a form similar to 3811 in FIGURE 38.

[0083] In one implementation, the consumer may continue to checkout with a virtual wallet instantiated on the mobile device 203, e.g., see 444b FIGURE 4I. For example, a transaction authorization request 237a may be sent to the TVC server 210, which may in turn process the payment 238 with a payment processing network and issuer networks (e.g., see FIGURES 41A-42B). Alternatively, the consumer may send the transaction request 237b to the merchant, e.g., the consumer may proceed to checkout with the merchant CSR. Upon completion of the payment transaction, the consumer may receive a push message of purchase receipt 245 (e.g., see 448 in FIGURE 4L) via the mobile wallet.

[0084] In one implementation, the TVC server 210 may optionally send a transaction confirmation message 241 to the merchant 220, wherein the transaction confirmation message 241 may have a data structure similar to the purchase receipt 245. The merchant 220 may confirm the completion of the purchase 242. In another implementation, as shown in FIGURE 2C, the TVC server 210 may provide the purchase completion receipt to a third party notification system 260, e.g., Apple® Push Notification Service, etc., which may in turn provide the transaction notification to the merchant, e.g., buy sending an instant message to the CSR terminal, etc.

[0085] FIGURES 2C-2D provide exemplary infrastructure diagrams of the TVC system and its affiliated entities within embodiments of the TVC. Within embodiments, the consumer 202, who operates an TVC mobile application 205a, may snap a picture of a store QR code 205b for consumer wallet check-in, as discussed at 204/208 in FIGURE 2A. In one implementation, the mobile component 205a may communicate with an TVC server 210 (e.g., being located with the Visa processing network) via wallet API calls

251a (e.g., PHP, JavaScript, etc.) to check-in with the TVC server. In one implementation, the TVC server 210 may retrieve consumer profile at an TVC database 219 (e.g., see 218/220 in FIGURE 2A).

[0086] In one implementation, merchant store clerks 230a may be notified to their iPad 240 with the customer's loyalty profile. For example, in one implementation, the TVC server 210 may communicate with the merchant payment system 220a (e.g., PoS terminal) via a wallet API 251b to load consumer profile. In one implementation, the TVC server 210 may keep private consumer information anonymous from the merchant, e.g., consumer payment account information, address, telephone number, email addresses, and/or the like. In one implementation, the merchant payment system 220a may retrieve product inventory information from the merchant inventory system 220b, and provide such information to the PoS application of the sales clerk 230a. For example, the sales clerk may assist customer in shopping and adding items to iPad shopping cart (e.g., see 439 in FIGURE 4G), and the consumer may check out with their mobile wallet. Purchase receipts may be pushed electronically to the consumer, e.g., via a third party notification system 260.

[0087] With reference to FIGURE 2D, in an alternative implementation, TVC may employ an Integrated collaboration environment (ICE) system 270 for platform deployment which may emulate a wallet subsystem and merchant PoS warehousing systems. For example, the ICE system 270 may comprise a web server 270a, an application server 270b, which interacts with the TVC database 219 to retrieve consumer profile and loyalty data. In one implementation, the consumer check-in messages may be transmitted from a mobile application 205a, to the web server 270a via representational state transfer protocols (REST) 252a, and the web server 270a may transmit consumer loyalty profile via REST 252b to the PoS application 240. In further implementations, the ICE environment 270 may generate virtual avatars based on a social media platform and deliver the avatars to the merchant PoS app 240 via REST 252b.

[0088] FIGURES 3A-3C provide exemplary logic flow diagrams illustrating consumer-merchant interactions for augmented shopping experiences within embodiments of the TVC. In one embodiment, as shown in FIGURE 3A, the consumer

302 may start the shopping experience by walking into a merchant store, and/or visit a merchant shopping site 303. The merchant 320 may provide a store check-in QR code via a user interface 304, e.g., an in-store display, a mobile device operated by the store clerks (see 401 in FIGURE 4A).

[0089] In one implementation, the consumer may snap the QR code and generate a check-in message to the TVC server 310, which may receive the consumer check-in message 309 (e.g., see 208 in FIGURE 2A; 251a in FIGURE 2C), retrieve consumer purchase profile (e.g., loyalty, etc.) 312. In one implementation, the consumer device may extract information from the captured QR code and incorporate such merchant store information into the check-in message. Alternatively, the consumer may include the scanned QR code image in the check-in message to the TVC server, which may process the scanned QR code to obtain merchant information. Within implementations, the consumer device, and/or the TVC server may adopt QR code decoding tools such as, but not limited to Apple® Scan for iPhone, Optiscan, QRafter, ScanLife, I-Nigma, Quickmark, Kaywa Reader, Nokia® Barcode Reader, Google® Zxing, Blackberry® Messenger, Esponce® QR Reader, and/or the like. In another implementation, the merchant 320 may receive consumer check-in notification 313, e.g., from the TVC server 310, and/or from the consumer directly, and then load the consumer loyalty profile from a merchant database 316.

[0090] In one implementation, if the consumer visit a merchant shopping site at 303, the consumer may similarly check-in with the merchant by snapping a QR code presented at the merchant site in a similar manner in 308-312. Alternatively, the consumer may log into a consumer account, e.g., a consumer account with the merchant, a consumer wallet account (e.g., V.me wallet payment account, etc.), to check-in with the merchant.

[0091] In one implementation, the merchant may receive consumer information from the TVC server (e.g., see 223 in FIGURE 2A; 251b in FIGURE 2C, etc.), and may query locally available CSRs 318. For example, the CSR allocation may be determined based on the consumer level. If the consumer is a returning consumer, a CSR who has previously worked with the consumer may be assigned; otherwise, a CSR who is experienced in first-time consumers may be assigned. As another example, one CSR

may handle multiple consumers simultaneously via a CSR platform (e.g., see FIGURE 4C); the higher loyalty level the consumer has with the merchant store, more attention the consumer may obtain from the CSR. For example, a consumer with a level 10 with the merchant store may be assigned to one CSR exclusively, while a consumer with a level 2 with the store may share a CSR with other consumers having a relatively low loyalty level. In further implementations, the CSR allocation may be determined on the consumer check-in department labeled by product category (e.g., men's wear, women's wear, beauty and cosmetics, electronics, etc.), consumer past interactions with the merchant CSR (e.g., demanding shopper that needs significant amount of assistance, independent shopper, etc.), special needs (e.g., foreign language supports, child care, etc.), and/or the like.

[0092] In one implementation, if a desired CSR match is not locally available 319 (e.g., not available at the merchant store, etc.), the TVC may expand the query to look for a remote CSR 321 which may communicate with the consumer via SMS, video chat, TVC push messages, etc., and allocate the CSR to the consumer based 322.

[0093] Alternatively, a pool of remote CSRs may be used to serve consumers and reduce overhead costs. In an alternative embodiment, online consumers may experience a store virtually by receiving a store floor plan for a designated location; and moving a consumer shopper avatar through the store floor plan to experience product offerings virtually, and the remote CSR may assist the virtual consumer, e.g., see FIGURES 5D-5F.

[0094] In one implementation, the consumer 302 may receive a check-in confirmation 324 (e.g., see 407 in FIGURE 4B), and start interacting with a CSR by submitting shopping assistance request 326. Continuing on with FIGURE 3B, the CSR may retrieve and recommend a list of complementary items to the consumer (e.g., items that are close to the consumer's location in-store, items that are related to consumer's previously viewed/purchased items, items that are related to the consumer's indicated shopping assistance request at 326, etc.). Upon consumer submitting an indication of interests 328 in response to the CSR recommended items, the CSR may determine a type of the shopping assistance request 329. For example, if the consumer requests to checkout (e.g., see 451 in FIGURE 4M), the CSR may conclude the session 333. In

anther implementation, if the request indicates a shopping request (e.g., consumer inquiry on shopping items, see 427a-c in FIGURE 4E, etc.), the CSR may retrieve shopping item information and add the item to a shopping cart 331, and provide such to the consumer 337 (e.g., see 434d-e in FIGURE 4F). The consumer may keep shopping or checkout with the shopping chart (e.g., see 444a-b in FIGURE 4I).

[0095] In another implementation, if the consumer has a transaction payment request (e.g., see 434g in FIGURE 4F), the CSR may generate a transaction receipt including a QR code summarizing the transaction payment 334, and present it to the consumer via a CSR UI (e.g., see 442 in FIGURE 4H). In one implementation, the consumer may snap the QR code and submit a payment request 338 (e.g., see 443 in FIGURE 4I).

[0096] In one implementation, TVC server may receive the payment request from the consumer and may request PIN verification 341. For example, the TVC server may provide a PIN security challenge UI for the consumer to enter a PIN number 342, e.g., see 464 in FIGURE 4J; 465a in FIGURE 4K. If the entered PIN number is correct, the TVC server may proceed to process the transaction request, and generate a transaction record 345 (further implementations of payment transaction authorization are discussed in FIGURES 41A-42B). If the entered PIN number is incorrect, the consumer may obtain a transaction denial notice 346 (e.g., see 465b in FIGURE 4K).

[0097] Continuing on with FIGURE 3C, upon completing the payment transaction, the merchant may receive a transaction receipt from the TVC 347, and present it to the consumer 348 (e.g., see 447 in FIGURE 4L). In one implementation, the consumer may view the receipt and select shipping method 351, for the merchant to process order delivery and complete the order 352. In one implementation, the consumer may receive a purchase receipt 355 via wallet push messages, and may optionally generate a social media posting 357 to publish the purchase, e.g., see 465 in FIGURE 4N.

[0098] FIGURES 4A-4M provide exemplary UI diagrams illustrating embodiments of in-store augmented shopping experience within embodiments of the TVC. With reference to FIGURE 4A, the merchant may provide a check-in page

including a QR code via a user interface. For example, a merchant sales representative may operate a mobile device such as an Apple iPad, a PoS terminal computer, and/or the like, and present a welcome check-in screen having a QR code 401 for the consumer to scan. In one implementation, the consumer may instantiate a mobile wallet on a personal mobile device, and see a list of options for person-to-person transactions 4021, wallet transaction alerts 402b, shopping experience 402c, offers 402d, and/or the like (further exemplary consumer wallet UIs are provided in FIGURES 31-37B).

[0099] In one implementation, the consumer may instantiate the shop 402c option, and check-in with a merchant store. For example, the consumer may operate the wallet application 403 to scan the merchant check-in QR code 404. Continuing on with FIGURE 4B, upon scanning the merchant QR code, the consumer wallet application may provide merchant information obtained from the QR code 405, and the consumer may elect to check-in 406. In one implementation, the wallet may submit a check-in message to the TVC server, and/or the merchant PoS terminal (e.g., see 204/208 in FIGURE 2A). Upon successful check-in, the consumer may receive a check-in confirmation screen 407, and proceed to shop with TVC 408.

[00100] FIGURES 4C-4D provide exemplary merchant UIs for augmented shopping assistance upon consumer check-in within embodiments of the TVC. For example, in one implementation, a merchant CSR may log into a CSR account 403 to view a UI at a mobile PoS (e.g., a iPad, etc.) 401. For example, the CSR may view a distribution of consumers who have logged into the merchant store 409, e.g., consumers who have logged into the 1st floor 411a, the 2nd floor 411b, and so on. In one implementation, for each checked in consumer, the CSR may view the consumer's profile 412a-h, including the consumer's shopping level (loyalty level) with the merchant store, in-store notes/points, and/or the like. In one implementation, the CSR may send messages to a particular consumer 415, or to send greeting messages, shopping information, etc., to all consumers 413.

[00101] For example, with reference to FIGURE 4D, in one implementation, a CSR may tap a "MSG" icon 413 with the profile photo of a customer 412a, and enter a dialogue line 416a. In another implementation, the CSR may communicate with multiple consumers, e.g., the CSR may receive dialogue responses from consumers

416b.

[00102] With reference to FIGURE 4E, a consumer may receive messages from a merchant CSR, e.g., greeting messages upon successful check-in at a merchant store 420, messages from a CSR to assist the shopping 421, and/ or the like. In one implementation, the consumer may interact with the CSR by entering text messages 422 (e.g., SMS, wallet push messages, instant messages, etc.).

[00103] In a further implementation, the consumer wallet may allow a consumer to include an image in the message with CSRs. In one implementation, the consumer may tap a camera icon 423 to snap a picture of an in-store advertisement, a front window display, a poster, etc., and submit the picture to the CSR to indicate the consumer's shopping interests. For example, the consumer may express interests in "Jeans" 427a, and may snap a picture of an in-store commercial poster of "men's jeans" 427b, and ask the CSR about "where to find" the jeans in display 427c.

[00104] With reference to FIUGRE 4F, a consumer may video chat with a CSR to obtain real-time shopping assistance 431. In one implementation, the CSR 432 may comprise a merchant sales clerk, or a virtual shopping assistant avatar. In further implementation, TVC may confirm the consumer's identity to prevent fraud via the video chat, as further discussed in FIGURE 37B. In one implementation, an TVC shopping CSR may communicate with the consumer 433 to provide a list of options for the consumer's TVC shopping assistance. For example, a consumer may elect to meet a CSR in person at the merchant store for shopping assistance 434a. As another example, TVC may provide a floor map of brands, products locations 434b to the consumer wallet (e.g., see 510 in FIGURE 5B). As another example, TVC may start an augmented reality in-store scanning experience to assist the consumer's shopping 434c, e.g., the consumer may capture a visual reality scene inside of the merchant store and view virtual labels overlay showing product information atop of the captured reality scene (e.g., see FIGURES 5C). As another example, TVC may provide a list of popular products 434d, popular offers 434e, popular products over social media 434f, comments/ratings, and/or the like. As another example, the consumer may elect to pay for an item when the consumer has already selected the product item 434g (e.g., further payment transaction details with a wallet application are discussed in FIGURES 41A-43B).

[00105] With reference to FIGURE 4G, a CSR may operate CSR mobile device to help a consumer to add an item to the shopping cart. For example, in one implementation, the CSR may search a product by the stock keeping unit (SKU) number 435 for the consumer 436a (with the loyalty profile 437b). In one implementation, the CSR may maintain a list of consumer interested products 439. The CSR may tap on a consumer interested product to obtain a QR code, and/or scan the QR code of a product 440 to add the product into the shopping list of the consumer. In one implementation, TVC may provide a payment amount summary for the items in the shopping cart 439.

[00106] With reference to FIGURE 4H, upon CSR tapping on a consumer interested product item and obtaining/scanning a QR code, the TVC may generate a QR code for the product item, e.g., as a floating window 442, etc. In one implementation, the consumer may operate the consumer wallet to snap a picture of the QR code 442 to proceed to purchase payment, e.g., see FIUGRES 35A-35E.

[00107] With reference to FIUGRE 4I, upon the consumer snapping a QR code 442, the consumer may obtain payment bill details obtained from the QR code 443. In one implementation, the consumer may elect to continue shopping 444a, and be directed back to the conversation with the CSR. In another implementation, the consumer may elect to pay for the transaction amount 444b.

[00108] In one implementation, upon submitting a "Pay" request 444b, the TVC may provide a PIN security challenge prior to payment processing to verify the consumer's identity. For example, the TVC may request a user to enter a PIN number 454 via a dial lock panel 455. In alternative implementations, as shown in FIGURE 4J, TVC may provide a dynamic keypad UI for the consumer to enter pass code 465a, e.g., the configuration of numbers and letters on the keypad are randomly distributed so that the consumer's pass code entry may not be captured by malicious spyware, instead of the traditional dialing keypad. In one implementation, if the pass code entered is incorrect, the consumer may receive a transaction denial message 465b. Further implementation of security challenges may be found in PCT international application serial no. PCT/US12/66898, filed November 28, 2012, entitled "Transaction Security Graduated Seasoning And Risk Shifting Apparatuses, Methods And Systems," which is hereby expressly incorporated by reference.

[00109] With reference to FIGURE 4K, upon the consumer completing the payment transaction, the CSR may generate a sales receipt 447, showing the purchase item and transaction amount paid. In one implementation, the CSR may send the sales receipt to the consumer wallet (e.g., via wallet push message system, etc.), and the consumer may elect to either pick up the purchased item in store 445a, or ship the purchased item to a previously stored address 445b.

[00110] With reference to FIGURE 4L, upon completing the transaction, the consumer may receive a purchase receipt 448 via wallet push message service, and may elect to continue shopping 449 with the CSR, and/or checkout 451. If the consumer elects to checkout, the consumer may receive a checkout confirmation message 454.

[00111] With reference to FIGURE 4M, a consumer may view the receipt of past purchases at any time after the transaction, wherein the receipt may comprise payment amount information 462, and purchase item information 463. In one implementation, the consumer may connect to social media 464 to publish the purchase. For example, if the consumer taps on a "tweet" icon, the consumer may edit a tweet about the purchase, wherein the tweet may be pre-populated with hash tags of the item and the merchant store 465.

[00112] FIGURES 5A-5C provide exemplary UI diagrams illustrating aspects of augmented reality shopping within embodiments of the TVC. In one implementation, a consumer may edit a shopping list 502 within the wallet. For example, the consumer may type in desired shopping items into a notepad application 503, engage a voice memo application 505a, engage a camera 505b to scan in shopping items from a previous sales receipt 507 (e.g., a consumer may periodically purchase similar product items, such as grocery, etc.), and/or the like. In one implementation, the consumer may scan a previous sales receipt 507, and TVC may recognize sales items 508, and the consumer may add desired product items to the shopping list by tapping on an "add" button 509. For example, the TVC may determine a product category and a product identifier for each product item on the shopping list, and obtain product inventory and stock keeping data of the merchant store (e.g., a datatable indicating the storing location of each item). The TVC may query the obtained product inventory and stock keeping data based on the product identifier and the product category for each product item, and

determine an in-store stock keeping location for each product item based on the query.

[00113] With reference to FIGURE 5B, the TVC may automatically load a store map and label product items from the shopping list on the store map. For example, a consumer may engage the TVC to check-in at a grocery store (e.g., in a similar manner as discussed in FIGURE 4A), and then select an option of "see store map" (e.g., see 434b in FIGURE 4F). The TVC may provide a store map 510 of the grocery store, and may provide tags 511a indicating locations of product items from the consumer's shopping list on the store map.

[00114] In another implementation, with reference to FIGURE 5C, when the consumer select the option of "start augmented reality shopping experience" (e.g., see 434c in FIGURE 4F), the consumer may engage the mobile device to scan an in-store reality scene 515, and TVC may provide virtual labels overlay on top of the reality scene to provide locations of product items on the shopping list. For example, virtual overlay labels may provide locations of "Apple Jam" 517 on the shelf, or provide directions for the consumer to locate other product items that are not located within the captured reality scene 516. In one implementation, the virtual overlay label 517 may comprise a transparent or semi-transparent block showing product name, covering the scanned products on the shelf. In one implementation, the TVC may receive the shopping list (e.g., at a remote server, at the merchant store, etc.), and may automatically provide the tagged store map described in FIGURE 5B, and/or the store augmented reality scene with virtual overlay in FIGURE 5C to the consumer device. Alternatively, such operations may be performed at the consumer mobile device locally.

[00115] FIGURES 5D-5F provide exemplary UIs illustrating virtual shopping experiences within embodiments of the TVC. In one embodiment, online consumers may experience a store virtually by receiving a store floor plan for a designated location; and moving a consumer shopper avatar through the store floor plan to experience product offerings virtually, and the remote CSR may assist the virtual consumer. See Figure 5D. For example, the virtual store may be comprised of stitched-together composite photographs having detailed GPS coordinates related to each individual photograph and having detailed accelerometer gyroscopic, positional/directional information, all of which may be used to allow TVC to stitch together a virtual and

continuous composite view of the store (e.g., akin to Google street view composite, etc.). For example, as shown in FIGURE 5E, in one implementation, a consumer may move their consumer shopper avatar 533 around the virtual composite view of the store, e.g., to move forward or backward, or turn left or right along the arrows 534 to obtain different views of the store. In some implementations, the store may position cameras 535 on the shelves in order to facilitate the virtual view of the store.

[00116] In an alternative implementation, every aisle and shelving stack may include a numerous, wide-angle cameras having a specified accelerometer gyroscopic, positional/directional orientation, periodically taking a photograph of the opposing aisle/area, which may be submitted to the TVC server, so that the virtual store map may be continually updated and be kept up to date. For example, as shown in FIGURE 5D, a store map including tags indicating a distribution view of in-store cameras (e.g., 530a-b, etc.) and the visual scope of each camera (e.g., 531a-b) may be provided to a consumer so that the consumer. In one implementation, such camera may be positioned to capture the view of an aisle and the shelves on both sides (e.g., see camera 530a and its visual scope 531a, etc.). Alternatively, the camera may be positioned to capture a front view of an opposing shelf (e.g., camera 530b and its visual scope 531b, etc.). In some implementations, as shown in FIGURE 5D(1), the cameras 532a may be positioned in a grid such that the visual scope 532b of the cameras overlap, allowing TVC to stitch together images to create a panoramic view of the store aisle.

[00117] In an alternative embodiment, such cameras may provide a continuous live video feed and still photos may be obtained from the live video frame grabs, which may be used to generate virtual store maps. In one implementation, a motion detection component may be used as a trigger to take still photos out of a live videos when the motion detection component detects no motion in the video and thereby provides unobstructed views for virtual map composition. In addition, when a consumer focuses on a particular shelf, aisle, stack, and/or region, e.g., a consumer turns their avatars parallel to a camera directional view, the consumer's view may then become filled with the live video feed of the camera closest to the consumer avatar's location.

[00118] In another implementation, as shown in FIGURE 5F, TVC may install robots 538 (e.g., Roombas and/or the like) in store, which are distributed among aisles

and stacks to obtain visual captures of the in-store scene using on-board cameras 539. For example, the robots may comprise mobile intelligent robots (e.g., iRobot® Create connected to a camera via the iRobot® Create open interface). In one implementation, when a consumer captures a robot via TVC in the reality scene, and/or see a robot during remote virtual shopping, the consumer may obtain a location of the robot 539a and a link to download a close-up image of the shelf 539b captured by the camera installed with the robot 538. In some implementations, the robots may capture the in-store scene while cleaning up aisles, arranging products, and/or the like. In some implementations, as shown in Figure 5F(1), the robots may comprise mobile intelligent robots 540 that may be able to physically shop/slect/package items for user delivery/pickup.

[00119] In further implementations, the consumer may be navigating a merchant's shopping site, having a shopping cart filled with product items, and the remote CSR may join the consumer's shopping session and provide assistance, allowing the CSR to provide the consumer with links to product items that may be of interests to the consumer; this may be achieved by having a CSR help/request button that may generate a pop-up window for audio/video chat with the CSR, and a dialogue box into which the CSR may place a link to the products. The consumer may click on the link provided by the CSR to be directed to a product page to view product details.

[00120] FIGURES 6A-19D provide example embodiments of an augmented reality platform which provides a user interface instantiated on a user device including option labels on top of a camera captured reality scene so that a user may tap on the option labels to select a service option. For example, when a user place a camera-enabled mobile device to capture a view of a payment card, the TVC may identify a card in the captured view and overlay a list of option labels related to the payment card, such as balance information, transfer funds, and/or the like.

[00121] FIGURE 6 provides a diagram illustrating an example scenario of TVC users splitting a bill via different payment cards via visual capturing the bill and the physical cards within embodiments of the TVC. As shown in FIGURE 6, when two consumers, e.g., user 611a and user 611b, receive a bill or invoice 615 for their consumption at a dining place (e.g., a restaurant, a bar, a lounge, etc.), the users 611a-b

may desire to split the bill 615 in different ways, e.g., share the bill equally per head counts, per their consumed portions, etc. One traditional way is for the users 611a-b to provide their payment cards (e.g., a credit card, a debit card, etc.) to the restaurant cashier (e.g., 617), and the cashier may split the bill 615 to generate separate bills for each card payment, wherein the amount due on each of the split bill may be allocated according to the preference of the users 611a-101b.

[00122] In a different embodiment, the users 611a-b may launch a TVC component instantiated on a camera-enabled mobile device 613a-103b to capture a view of the table, e.g., including the received invoice/bill 615 having a quick response (QR) code or barcode printed thereon, and a plurality of payment cards 619a-109b that the users 611a-b are going to pay for the bill. The users 611a-b may view virtual overlaid labels on top of the captured scene, so that they can tap on the option labels to split a bill equally, proportionally, and/or the like.

[00123] Within implementations, users 611a-b may facilitate payment from their payment cards upon TVC augmented reality capturing at the same mobile device/wallet. For example, user 611a may operate her mobile device 613a to capture a scene of the two payment cards 619a-b, while card 619b belongs to user 611b. In one implementation, the TVC component instantiated on the mobile device 613a may send an authorization request to a processing server, or a wallet management server to authorize split payment transaction on the payment card 613b. In such scenarios, users 611a-b may conduct a transaction including payments from two wallets on the same mobile device, without user 611b independently initiates a transaction using his mobile device 613b. Further implementations of restaurant bill payment scenarios are illustrated in FIGURES 15A-15F.

[00124] FIGURE 7A provides a diagram illustrating example virtual layers injections upon virtual capturing within embodiments of the TVC. In one embodiment, a TVC component may be instantiated at a consumer camera-enabled mobile device 713 to capture a scene of an object, e.g., a product item 712, a merchant store, and/or the like. Within implementations, the TVC component may provide multiple layers of augmented reality labels overlaid atop the captured camera scene, e.g., the product 712. For example, a consumer may select a merchant provided layer 715a to obtain product

information, product price, offers from the merchant, points options that apply to the product, price match, store inventory, and/or the like; a consumer wallet layer 715b to obtain wallet account information, payment history information, past purchases, wallet offers, loyalty points, and/or the like; a retailer layer 715b to obtain product information, product price, retailer discount information, in-store map, related products, store location, and/or the like; a social layer 715d to obtain social rating/review information, such as Amazon ratings, Facebook comments, Tweets, related products, friends ratings, top reviews, and/or the like.

[00125] Within embodiments, the different layers 715a-d may comprise interdependent information. For example, merchant layer 715a and/or retailer layer 715b may provide information of related products based on user reviews from the social payer 715d. A variety of commerce participants, such as, but not limited to manufacturers, merchants, retailers, distributors, transaction processing networks, issuers, acquirers, payment gateway servers, and/or the like, may bid for layer space in the augmented reality shopping experience.

[00126] FIGURES 7B-7C provide exemplary UI diagrams illustrating consumer configured layer injection within embodiments of the TVC. As shown in FIGURE 7C, when a consumer places a mobile device to capture a visual reality scene of an object, e.g., a barcode on a sales receipt 717, multiple information layers may be injected with regard to the barcode. For example, a social layer 716a may provide information about social ratings, comments from social media platforms about the product items, merchant reflected in the sales receipt; a receipt layer 716b may provides detailed information included in the sales receipt, e.g., total amount, tax amount, items, etc.; a wallet layer 716c may provide eligible account usage, e.g., healthcare products, etc.; a merchant layer 716d may provide merchant information; a product layer 716e may provide product item information that are listed on the sales receipt, etc. In one implementation, the multiple virtual labels overlay may be overly crowded for the consumer to view, and the consumer may configure virtual labels that are to be displayed. For example, as shown at 718a-c in FIGURE 7B and 718d-e in FIGURE 7C, the consumer may check on information labels that are desired.

[00127] In one implementation, as shown at 719 in FIGURE 7C, upon consumer

configurations, only virtual labels that have been selected by the consumer may be displayed. For example, per consumer selections, only merchant name but not merchant address is displayed in the merchant label; Facebook comments are displayed in the social layer; and wallet FSA eligibility usage is displayed.

[00128] FIGURE 8 provides diagrams illustrating example embodiments of automatic augmented reality layer injection within embodiments of the TVC. Within embodiments, virtual information layer overlays may be automatically injected based on consumer queries, consumer purchase context, consumer environment, object snaps, and/or the like. For example, when a consumer 811 searched for a product on the mobile device 813, e.g., "affordable wide-angle lens" 823, the digital wallet 823 may capture the query text and use it for automatic augmented layer injection; when the consumer mobile device 813 snaps a scene of a camera 824, the TVC may automatically inject a layer comprising price match information 825 of the snapped camera 824, based on consumer indicated interest on "affordable prices" during the consumer's query.

[00129] As another example, a consumer 811 may walk into a merchant store and the mobile device 813 may capture the consumer's GPS coordinates 826. The TVC may then determine the consumer is located at a retailer shop based on the GPS coordinates 827, and may provide a retailer layer of augmented reality overlay labels 829 to the mobile device captured in-store scenes, e.g., including retailer discounts, in-store map, related products inventories, and/or the like.

[00130] FIGURES 9A-9E provide exemplary user interface diagrams illustrating card enrollment and funds transfer via TVC within embodiments of the TVC. For example, as shown in FIGURE 9A, a user may instantiate a wallet visual capturing component 901 which employs an image/video capturing component coupled with the user's mobile device to capture views in reality. In one implementation, a user may configure settings 902 of the TVC visual capturing component.

[00131] For example, a user may move a sliding bar 907a to enable or disable a smart finger tip component 903a, e.g., when the smart finger tip component is enabled, the TVC may capture a human finger point within a captured reality scene (e.g., see also 912, etc.), etc. In one implementation, the smart finger tip component 903a may engage

fingertip motion detection component (e.g., see FIGURE 20C) to detect movement of the consumer's fingertips. For example, the TVC may generate visual frames from the video capturing of the reality scene, and compare a current frame with a previous frame to locate the position of a fingertip within the video frame, as further discussed in FIUGRE 20C.

[00132] In another example, a user may move the sliding bar 907b to enable or disable auto card detection 903b, e.g., when the auto card detection component is enabled, the TVC may automatically detect and identify whether any rectangular object in a captured reality scene comprise a payment card, etc. In another example, a user may move the sliding bar 907c to enable or disable facial recognition 903c, e.g., when the facial recognition component is enabled, the TVC may automatically recognize human faces (e.g., including a human, a printed facial image on a magazine, a friend's picture displayed on a digital screen, etc.) that are presented in the reality scene and identify whether the human face matches with any of previously stored contacts. In another example, a user may move the sliding bar 907d to enable or disable smart bill tender component 903d, e.g., when the smart bill tender component is enabled, the TVC may provide option labels based on a type of the bill. When the bill is a restaurant bill, the TVC may provide options to facilitate tip calculation, bill splitting per actual consumption, and/or the like. In another example, a user may move the sliding bar 907e to enable or barcode reading component 903e, e.g., the TVC may read a barcode, and/or a QR code printed on a purchase label, invoice or bill to provide payment information via overlaid labels on the captured reality scene.

[00133] In one implementation, the user may configure a maximum one-time payment amount 904 via the TVC initiated transaction, e.g., by sliding the bar 905 to select a maximum amount of $500.00. In another implementation, a user may select to include social connections 906 into the TVC capturing component, e.g., the TVC may obtain social data such as user reviews, ratings with regard to a capture purchase item in the reality scene (see 1435 in FIGURE 14). Additional wallet features may be integrated with the TVC such as a shopping cart 908a, a transfer funds mode 908b, a snap barcode mode 908c, a capture mode 908d, a social mode 909e, settings mode 909f, and/or the like.

[00134] Within implementations, when a user places a camera-enabled mobile device (e.g., 913) to capture a reality scene, a user may view a plurality of virtual labels overlaid on top of the captured reality scene. For example, the user may view a sliding bar 910 to control whether to enable the smart finger tip component. As shown in FIUGRE 9A, when the smart finger tip is on, the TVC may detect a human finger tip 912 in the reality scene, and detect an object that the finger tip is pointing at, e.g., 911. In this case, the TVC may determine the finger pointed rectangular object is a payment card with a card number printed thereon. Upon performing optical character recognition (OCR) on the payment card, the TVC may determine whether the payment card matches with an account enrolled in the user's wallet, e.g., a "Fidelity Visa *1234" account 913. The user may tap on the displayed option buttons 914a-b to indicate whether the TVC's card recognition result is accurate. For example, in one implementation, TVC may adopt OCR components such as, but not limited to Adobe OCR, AnyDoc Software, Microsoft Office OneNote, Microsoft Office Document Imaging, ReadSoft, Java OCR, SmartScore, and/or the like.

[00135] Continuing on with FIGURE 9B, when the finger pointed card 911 is not identified by the TVC as any enrolled account in the wallet, the TVC may prompt a message to inquire whether a user would like to add the identified card to the wallet, e.g., 915. In one implementation, the TVC may provide a wallet icon 916 overlaid on top of the captured reality scene, and prompt the user to "drag" the card into the wallet icon 917. In one implementation, when the smart finger tip component is on (e.g., 910), the user may move his real finger tip (e.g., 911) to the location of the wallet icon 916, wherein the TVC smart finger tip component may capture the finger point movement. In another implementation, the user may tap and move his finger on the touchable screen of his mobile device to "drag" the card 911 into the wallet icon 916 to indicate a card enrollment request.

[00136] With reference to FIGURE 9C, upon dragging a card to a wallet, the TVC may switch to a user interface to confirm and enter card enrollment information to add an account 920. For example, the user may need to enter and confirm card information 921, cardholder information 922 and view a confirmation page 923 to complete card enrollment. In one implementation, the TVC may automatically recognize card

information 924 from OCR the captured scene, including card type, cardholder name, expiration date, card number, and/or the like. In another implementation, the TVC may request a user to enter information that is not available upon scanning the captured scene, such as the CVV code 925, etc.

[00137] In one implementation, upon enrolling the card, the TVC may switch back to the visual capturing scene, with an overlaid notification showing the card is ready to use 926, and provide a plurality of overlaid option labels beneath the card 911, such as, but not limited to view balance 927a (e.g., a user may tap and see the current balance of the card), view history 927b (e.g., the user may tap and view recent transaction history associated with the card), transfer money from 927c (e.g., the user may select to transfer money from the card to another account), transfer money to 927d (e.g., the user may transfer money to the card from another account, etc.), pay shopping cart 927e (e.g., the user may engage the card to pay the current shopping cart 908a), and/or the like. Various other option labels related to the card may be contemplated.

[00138] In one implementation, if the user selects to tap on the "transfer $$ to" button 927d, with reference to FIGURE 9D, the TVC may prompt overlaid labels for fund transfer options, such as a few suggested default transfer amounts (e.g., $10.00, $20.00, $30.00, etc.) 928, or the user may choose other amounts 929 to enter a transfer amount 930.

[00139] In one implementation, the user may move his finger to point to another card in the real scene so that the smart finger tip component may capture the payee card. In another implementation, as shown in FIGURE 9D, when the smart finger tip component is turned off 931, the user may tap on the touchable screen to indicate a desired payee card. For example, the TVC may capture the object the user has tapped on the screen 932 and determine it is a metro card. The TVC may then retrieve a metro card account enrolled in the wallet and prompt the user to select whether to transfer or re-read the card selection 933. In one implementation, when the user selects "transfer," the TVC may provide a message to summarize the fund transfer request 933 and prompt the use to confirm payment. Fund transfer requests may be processed via the payment transaction component as discussed in FIGURES 42A-43B.

[00140] With reference to 9E, upon user confirming fund transfer, the TVC may provide a message notifying completion of the transaction 937, and the user may select to view the transaction receipt 938. In one implementation, the TVC may provide a virtual receipt 939 including a barcode 940 summarizing the transaction. In one implementation, the user may email 941 the virtual receipt (e.g., for reimbursement, etc.), or to earn points 942 from the transaction.

[00141] FIGURES 10-14 provide exemplary user interface diagrams illustrating various card capturing scenarios within embodiments of the TVC. With reference in FIGURE 10, the TVC may detect the user's finger point via the smart finger tip in the real scene, and determine a human face is presented 1002 when the facial recognition component is enabled. In one implementation, the TVC may determine whether the detected face matches with any of the existing contact, and provide a message 1002 for the user to confirm the match. In one implementation, the user may confirm the match if it is correct 1004, or to view the contact list to manually locate a contact when the match is inaccurate 1005, or to add a new contact 1006.

[00142] In one implementation, upon the facial recognition, the TVC may provide a plurality of option labels overlaid on top of the reality scene, so that the user may select to call the contact 1008a, send a SMS 1008b, email the contact 1008c, transfer funds to the contact 1008d, connect to the contact on social media 1008e, view the contact's published purchasing history 1008f, and/or the like. In one implementation, if the user selects to transfer money to the contact, the TVC may retrieve a previously stored account associated with the contact, or prompt the user to enter account information to facilitate the transfer.

[00143] With reference to FIGURE 11, a user may tap on the screen to point to a metro card 1111, and the TVC may determine the type of the selected card and provide a plurality of option labels, such as view balance 1112a, pay suggested amounts to the metro card 1112b-d, renew a monthly pass 1112e, and/or the like.

[00144] In another implementation, when the TVC determines the user tapped portion of the screen comprises a user's DMV license, 1113, the TVC may provide a plurality of option labels, such as view DMV profile 1114a, view pending tickets 1114b,

pay ticket 1114c, file a dispute request 1114d, and/or the like.

[00145] With reference to FIGURE 12, when the TVC determines the user tapped portion of the screen comprises a user's library membership card 1217, the TVC may provide a plurality of option labels, such as view books due 1218a, make a donation of suggested amounts 1218b-d, pay overdue fees 1218e, and/or the like.

[00146] In another implementation, when the TVC determines the user tapped portion comprises a store membership card 1220, e.g., a PF Chang's card, the TVC may provide a plurality of labels including viewpoints 1221a, pay with the card 1221b, buy points 1221d-e, call to order 1221e, and/or the like.

[00147] With reference to FIGURE 13, when the TVC determines the user tapped portion comprises an insurance card 1324, e.g., a Blue Cross Blue Shield card, the TVC may provide a plurality of labels including view profile 1325a, view claim history 1325b, file insurance claim 1325c, submit insurance information 1325c, view policy explanation 1325e, and/or the like.

[00148] In another implementation, when the TVC determines the user tapped portion comprises a bill including a barcode 1326, e.g., a purchase invoice, a restaurant bill, a utility bill, a medical bill, etc., the TVC may provide a plurality of labels including view bill details 1327a, pay the bill 1327b, request extension 1327c, dispute bill 1327d, insurance reimbursement 1327e (e.g., for medical bills, etc.), and/or the like.

[00149] With reference to FIGURE 14, when the TVC determines the user tapped portion comprises a purchase item 1431, e.g., a purchase item comprising a barcode, etc., the TVC may provide a plurality of labels including view product detail 1433a, compare price 143b (e.g., price match with online stores, etc.), where to buy 1433c, get rebate/points if the user has already purchased the item 1433d, pay for the item 1433e, view social rating 1433f, submit a social rating 1433g, and/or the like. In one implementation, if the user selects where to buy 1433c, the TVC may provide a list of nearby physical stores 1434a that features the product item based on the GPS information of the user mobile device. In another implementation, the TVC may provide a list of shopping sites 1434b that lists the purchase item.

[00150] In one implementation, if the user selects view social rating 1433f of the

product, the TVC may retrieve social data from various social media platforms (e.g., Facebook, Twitter, Tumblr, etc.) related to the featured product, so that the user may review other users' comments related to the product.

[00151] FIGURES 15A-15F provide exemplary user interface diagrams illustrating a user sharing bill scenario within embodiments of the TVC. With reference to FIGURE 15A, a user may place two or more payment cards with a restaurant bill and capture the view with the camera-enabled mobile device. When the TVC determines there is a restaurant bill (e.g., via the barcode reading 1502, etc.) and two payment cards 1503a and 1503b in the scene, the TVC may provide plurality of labels including view bill details 1504a, split bill 1504b (e.g., as there are more than one card presented, indicating an attempt to split bill), pay bill 1504c, calculate tip amount 1504d, update bill 1504e, and/or the like. In one implementation, if the user selects to split bill 1504b, the TVC may provide option labels such as equal share 1505a, prorate share 205b, share by actual consumption 1505c, and/or the like.

[00152] In one implementation, when the user selects action consumption 1505c, the PVTC may provide tags of the consumed items 1507a-b, e.g., by reading the bill barcode 1502, or by performing OCR on the bill image, etc. In one implementation, a user may drag the item 1507a, e.g., a "bloody Mary" 1508 into the "I Pay" bowl 1510. The user may tap on the plus sign 1509 to increase quantity of the consumed item. In one implementation, the user may tap on a card 1511 to indicate pay with this card for the item in the "I Pay" bowl 1510 as summarized in label 1512. In one implementation, the TVC may provide option labels for tips, including suggested tip percentage (e.g., 15% or 20%) 1513 or enter tip amount 1514.

[00153] Continuing on with FIGURE 15B, the user may manually enter a tip amount 1520. In one implementation, the TVC may prompt a message to the user summarizing the payment with the selected card 1521. Upon confirming payment with the first selected card, the TVC may automatically prompt the message to inquire whether the user would charge the remaining items on the bill to the second card 1522. In one implementation, the user may drag items for payment with the second card in a similar manner as described in FIGURE 15A.

[00154] With reference to FIGURE 15C, if the user selects equal share, the TVC may capture the card data and prompt a message 1531 showing payment information, and provide options of suggested tip amount 1532, or user manually enter tips 1533. In one implementation, if the user selects to manually enter tip amount, the user may enter different tip amounts for different cards, e.g., by tapping on one card and entering a tip amount 1534a-b.

[00155] With reference to FIGURE 15D, if the user selects prorate share, the user may tap on one card 1535, and the TVC may provide a plurality of labels including suggested share percentage 1536a, suggested share amount 1536c, or to enter a share 1536b. In one implementation, the user may enter a share for a selected card 1537, and view a message for a summary of the charge 1538. In one implementation, the user may select or enter a tip amount in a similar manner as in FIGURE 15C.

[00156] Continuing on with FIGURE 15E, when a consumer attempts to engage TVC to split a bill with two cards belonging to two different cardholders, e.g., sharing a restaurant bill between two friends' credit cards, TVC may require authentication credentials to proceed with a transaction request upon a card that is not enrolled with the current wallet, and/or associated with a different cardholder. For example, continuing on with TVC capturing two cards "*7899" and "*5493" to split a bill (438 in FIGURE 15D), the mobile device/wallet that is used to instantiate TVC component may belong to the cardholder of card *7899, and card *5493 belongs to a different cardholder. In one implementation, TVC may provide a message showing card *5493 is not currently enrolled with the wallet 1540, and in order to proceed with the transaction, requesting the consumer to either add card *5493 to the current wallet 1542, or to verify with authentication credentials 1541.

[00157] In one implementation, if the consumer elects "add card" 1542, the consumer may proceed with card enrollment in a similar manner as 215 in FIGURE 2B. In another implementation, the consumer may elect to provide authentication credentials 1541, such as entering a cardholder's PIN for the card *5493 (e.g., 1543), submitting the cardholder's fingerprint scan 1545, and/or the like.

[00158] Continuing on with FIGURE 15F, in one implementation, in addition to

the authentication credential inputs, the cardholder of card *5493 may optionally receive an alert message informing the attempted usage of the card 1551. In one implementation, the alert message 1551 may be a V.me wallet push message, a text message, an email message, and/or the like. The cardholder of card *5493 may elect to approve the transaction 1552, reject the transaction 1553, and/or report card fraud 1554. In one implementation, if the submitted authentication credentials do not satisfy the verification, or the cardholder of card *5493 rejects the transaction, the TVC may receive an alert indicating the failure to charge card *5493 1555, and the consumer may initiate a request for further authentication or transaction processing 1557, e.g., by filling out an application form, etc. In another implementation, if the authentication is successful, the TVC may provide a confirmation message 1558 summarizing the transaction with card *5493.

[00159] FIGURE 16A provide exemplary user interface diagrams illustrating a card offer comparison scenario within embodiments of the TVC. In one implementation, various payment cards, such as Visa, MasterCard, American Express, etc., may provide cash back rewards to purchase transactions of eligible goods, e.g., luxury products, etc. In one implementation, when a user use the camera-enabled mobile device to capture a scene of a luxury brand item, the TVC may identify the item, e.g., via trademark 1605, item certificate information 1606, and/or the like. The TVC may provide a tag label overlaid on top of the item showing product information 1607, e.g., product name, brief description, market retail price, etc. In another implementation, the TVC may provide a plurality of overlay labels including view product details, luxury exclusive offers, where to buy, price match, view social rating, add to wish list, and/or the like.

[00160] In one implementation, a user may place two payment cards in the scene so that the TVC may capture the cards. For example, the TVC may capture the type of the card, e.g., Visa 1608a and MasterCard 1608b, and provide labels to show rebate/rewards policy associated with each card for such a transaction 1609a-b. As such, the user may select to pay with a card to gain the provided rebate/rewards.

[00161] In an alternative embodiment, as shown in FIGURE 16B-16D, TVC may categorize information overlays into different layers, e.g., a merchant information layer to provide merchant information with regard to the captured items in the scene, a retail

information layer to provide retail inventory information with regard to the captured items in the scene, a social information layer to provide ratings, reviews, comments and/or other related social media feeds with regard to the captured items in the scene, and/or the like. For example, when TVC captures a scene that contains different objects, different layers of information with regard to different objects (e.g., a trademark logo, a physical object, a sales receipt, and/or the like) may be overlay on top of the captured scene.

[00162] With reference to FIGURE 16B, when TVC captured a trademark label in the scene, e.g., "Cartier" 1605, TVC may provide a merchant information layer 1611a with regard to the trademark "Cartier." For example, virtual overlays may include a brief description of the merchant 1612a, product collections of the merchant 1612b, offers and discounts for the merchant 1612c, and/or the like. As another example, TVC may provide a list of retail stores featuring the captured object 1605, e.g., a list of local stores 1613, and online shopping sites 1614, and/or the like.

[00163] In another implementation, a consumer may slide the information layer 1611a to obtain another layer, e.g., retail information 1611b, social information 1611c, item information 1611d, and/or the like. For example, PVTC may capture a receipt and/or certificate in the scene, and provide information including other Cartier products 1618, purchase item description and price information 1615, retail store inventory information (e.g., stores where the purchase item is available) including physical stores 1623 and online shopping sites 1625, and/or the like.

[00164] In further embodiments, a consumer may tap on the provided virtual label of a "Cartier" store, e.g., 1613, 1623, etc., and be directed to a store map including inventory information, e.g., as shown in FIGURE 5B. For example, a store map may provide distribution of product items, goods to facilitate a consumer to quickly locate their desired products in-store.

[00165] With reference to FIGURE 16C, a consumer may slide the virtual label overlay layer to view another layer of information labels, e.g., social information 1611c, item information 1611d, and/or the like. In one implementation, a social layer 1611c may provide virtual labels indicating social reviews, ratings, comments, activities

obtained from social media platforms (e.g., Facebook, twitter, etc.) related to captured object in the visual scene. For example, when TVC captures the trademark logo "Cartier" in the scene, TVC may provide virtual labels of social comments related to the trademark "Cartier," e.g., Facebook activities 1621, tweets 1622, etc. In another implementation, when TVC captures a sales receipt including product identifying information, TVC may provide virtual labels of social ratings/comments related to the product, e.g., tweets with the hash tag of the product name 1625, YouTube review videos that tag the product name 1626, and/or the like. In another implementation, the social information layer 1611c may further provide sample social comments, product reviews, ratings related to the related product information, e.g., Facebook comments, photo postings, etc. related to "Cartier" from the consumer's Facebook friends 1627.

[00166] In another implementation, for additional captured objects 1630 in the scene (e.g., objects without textual contents, etc.), TVC may perform a pattern recognition to provide information of the recognized object 1630. For example, the pattern recognition may be correlated with other contexts within the scene to determine what the captured object is, e.g., the ring shaped object 1630 may be a piece of "Cartier" branded jewelry as the "Cartier" logo is captured in the same scene. In one implementation, the TVC may provide identified item information 1631 in a virtual label, and alternative item recognition information 1632, 1633, 1634. For example, for the ring-shaped product 1630, the TVC may recognize it as a "Cartier" branded bracelet 1631/1632, or ring shaped jewelry products of related brands 1633, 1634, and/or provide an option to the consumer to see more similar products 1635.

[00167] FIGURES 17 provide exemplary user interface diagrams illustrating in-store scanning scenarios within embodiments of the TVC. In one implementation, TVC may facilitate a user to engage a restricted-use account for the cost of eligible items. A restricted-use account may be a financial account having funds that can only be used for payment of approved products (e.g., prescription drugs, vaccine, food, etc.) and/or services (e.g., healthcare treatment, physical examination, etc.). Examples of a restricted use account may comprise Flexible Savings Accounts (FSA), one or more Health Savings Accounts (HSA), Line of Credit (LOC), one or more health reimbursement accounts (HRA), one or more government insurance programs (i.e.,

Medicare or Medicaid), various private insurance - rules, various other restricted use favored payment accounts such as employment benefit plans or employee pharmacy benefit plans, and income deduction rules, and/or the like. In other examples, the restricted-use account may comprise a food voucher, a food stamp, and/or the like. Within implementations, the approval process of payment with a restricted use account may be administered by a third party, such as, but not limited to FSA/HSA administrator, government unemployment program administrator, and/or the like.

[00168] In one implementation, the TVC may automatically identify goods that are eligible for restricted-use accounts in a merchant store. For example, the TVC may allow a user to place a camera enabled device at a merchant store (e.g., scanning), and view a camera scene with augmented reality labels to indicate possible items eligible for a restricted-use account.

[00169] For example, in one implementation, when the user operate the camera enabled device to obtain a view inside the merchant store 1750, the user may also obtain augmented reality labels 1751 which identifies various products/items on the shelf, and show one or more possible eligible restricted-use accounts 1752. For example, over the counter drugs may be labeled as eligible for "FSA, HSA, HRA," etc., 1752; grocery products may be eligible for food stamp usage; and infant food may be eligible for a children nutrition benefit account, and/or the like.

[00170] FIGURES 18-19 provide exemplary user interface diagrams illustrating post-purchase restricted-use account reimbursement scenarios within embodiments of the TVC. In one implementation, a user may operate a camera enabled device to capture a view of a receipt 1861, and obtain augmented reality labels 1862 indicating items that are eligible for restricted-use accounts. For example, the TVC wallet component may perform an instant OCR to extract item information and determine items such as "Nyquil" is eligible for FSA/HSA/HRA 1864 usage, and grocery/food items are eligible for food stamp 1862 usages. In one implementation, if the user taps on the displayed account, the TVC may generate a virtual receipt and proceed to process reimbursement request with the selected restricted-use account.

[00171] In further implementation, if the TVC does not automatically determine an

item as eligible for any restricted-use accounts, e.g., an "Ester-C" supplement, a user may tap on the screen to select it, and may view a list of accounts 1863 to select a user desired reallocation account, e.g., any restricted-use account, loyalty account, and/or the like.

[00172] In further implementations, the TVC may identify a payment account that has been used to fulfill the transaction associated with the receipt, e.g., a Visa account 1866a, and/or obtain account information from the barcode printed on the receipt 1866b. In one implementation, the TVC may match the "*1234" Visa account with any of user's enrolled account in the wallet, and recommend the user to reimburse funds into an identified "Visa *1234" account if such account is identified from the wallet 1865. In another implementation, the TVC may prompt the user to select other accounts for depositing reimbursement funds 1865.

[00173] Continuing on with FIGURE 19, if the user has tapped on an account, e.g., "FSA" at 1964 in FIGURE 19 to reimburse an eligible item, the TVC may generate a reimbursement request 1971, e.g., showing the user is going to reimburse "Nyquil Lipcap" 1972 from the selected "FSA *123" account 1973. In one implementation, the user may indicate an account for depositing the reimbursement funds, e.g., the "Visa *1234" 1974 account auto-identified from the receipt (e.g., at 1966a-b in FIGURE 19H), and/or select other accounts.

[00174] In another implementation, if the user selects to tap on 1963 in FIGURE 19H to reimburse "Ester-C" 1975 for "FSA *123" account 1976, as the TVC does not identify "Ester-C" as an eligible FSA item, the TVC may generate a reimbursement request but with a notification to the user that such reimbursement is subject to FSA review and may not be approved 1978.

[00175] FIGURE 20A provides an exemplary logic flow diagram illustrating aspects of TVC overlay label generation within embodiments of the TVC. Within implementations, a user may instantiate a TVC component on a camera-enabled mobile device (e.g., an Apple iPhone, an Android, a BlackBerry, and/or the like) 2002, and place the camera to capture a reality scene (e.g., see 913 in FIGURE 9A). In one implementation, the user may point to an object (e.g., a card, a purchase item, etc.) in

the reality scene, or touch on the object image as shown on the screen 2004 (e.g., see 912 in FIGURE 9A).

[00176] In one implementation, upon receiving user finger indication, the TVC may obtain an image of the scene (or the user finger pointed portion) 2006, e.g., grabbing a video frame, etc. In one implementation, the TVC may detect fingertip position within the video frame, and determine an object around the fingertip position for recognition 2007. The TVC may then perform OCR and/or pattern recognition on the obtained image (e.g., around the fingertip position) 2008 to determine a type of the object in the image 2010. For example, in one implementation, the TVC may start from the finger point and scan outwardly to perform edge detection so as to determine a contour of the object. The TVC may then perform OCR within the determined contour to determine a type of the object, e.g., whether there is card number presented 2011, whether there is a barcode or QR code presented 2012, whether there is a human face 2013, and/or the like.

[00177] In one implementation, if there is a payment card in the reality scene 2011, the TVC may determine a type of the card 2015 and the card number 2017. For example, the TVC may determine whether the card is a payment card (e.g., a credit card, a debit card, etc.), a membership card (e.g., a metro card, a store points card, a library card, etc.), a personal ID (e.g., a driver's license, etc.), an insurance card, and/or the like, based on the obtained textual content via OCR from the card. In one implementation, the TVC may query the user wallet for the card information 2018 to determine whether the card matches with any enrolled user account, and may generate and present overlay labels 2030 based on the type of the card (e.g., see overlay labels 927a-e for an identified Visa credit card 911 in FIGURE 9C, overlay labels 1112a-e for an identified metro card and overlay labels 1114a-d for an identified DMV license 1113 in FIGURE 11, overlay labels 1218a-e for an identified library card 1217 and overlay labels 1221a-1221e for an identified restaurant membership card 1220 in FIGURE 12, overlay labels 1325a-e for an identified insurance card 1324 in FIGURE 13, and/or the like). In one implementation, the TVC may optionally capture mixed gestures within the captured reality scene 2029, e.g., consumer motion gestures, verbal gestures by articulating a command, etc. (see FIGURES 21-30).

[00178] In another implementation, if there is a barcode and/or QR code detected within the reality scene 2012, the TVC may extract information from the barcode/QR code 2022, and determine a type of the object 2023, e.g., the barcode information may indicate whether the object comprises a purchase item, a bill, an invoice, and/or the like. In one implementation, the TVC may retrieve merchant information when the object comprises a purchase item, and/or biller information when the object comprises a bill 2028, and generate overlay labels accordingly, e.g., see overlay labels 1327a-e for an identified invoice 1326 in FIGURE 13, overlay labels 1433a-g for an identified purchase item/product 1431 in FIGURE 14, and/or the like.

[00179] In another implementation, if there is a human face detected from the reality scene 2013, the TVC may perform facial recognition to identify whether the presented human face matches with an existing contact 2024. In one implementation, the TVC may retrieve contact information if the contact is located from a contact list 2026, and/or add a new contact 2027 per user selection if the human face does not match with any existing contact record. The TVC may then generate and present overlay labels for the detected human face, e.g., see overlay labels 1008a-f for an identified face 1002 in FIGURE 10, etc.

[00180] Upon user selection of the overlay labels, the TVC may proceed to transfer funds to an identified card, identified contact, and/or the like. The TVC may send financial transaction requests to an issuer network for processing, which may be performed in a similar manner as in FIGURES 41A-43B.

[00181] FIGURE 20B provides an exemplary logic flow diagram illustrating automatic layer injection within alternative embodiments of the TVC. In one implementation, TVC may inject a layer of virtual information labels (e.g., merchant information, retail information, social information, item information, etc.) to the captured reality scene based on intelligent mining of consumer's activities, e.g., GPS location, browsing history, search terms, and/or the like.

[00182] In one implementation, a consumer may engage in user interests indicative activities (e.g., web searches, wallet check-in, etc) 2031. For example, as shown in FIGURE 1C, a web search based on key terms "affordable wide-angle lens"

showed user interests in price comparison; wallet check event at a local retail store indicates the user's interests of information of the retail store. Within implementations, the TVC may parse the received activity record for key terms 2032, and generate a record with a timestamp of the user activity key terms 2034. In one implementation, the TVC may store the generated record at a local storage element at the user mobile device, or alternatively store the generated user activity record at a remote TVC server.

[00183] In one implementation, when a consumer uses a mobile device to capture a reality scene (e.g., 2003/2004), TVC may determine a type of the object in the captured visual scene 2036, e.g., an item, card, barcode, receipt, etc. In one implementation, the TVC may retrieve stored user interest record 2038, and obtain information in the stored record. If the user interests record comprise a search term 2041, TVC may correlate the search term with product information 2044 (e.g., include price comparison information if the user is interested in finding the lowest price of a product, etc.), and generate an information layer for the virtual overlay 2049. In one implementation, the TVC may optionally capture mixed gestures within the captured reality scene 2029, e.g., consumer motion gestures, verbal gestures by articulating a command, etc. (see FIGURES 21-30).

[00184] In another implementation, if the user interests record comprise a real-time wallet check-in information 2042 of the consumer checking in at a retail store, the TVC may insert a retailer layer of virtual labels 2046 to the consumer device. In another implementation, the TVC may parse the user activity record for user interests indicators 2048 for other types of user activity data, e.g., browsing history, recent purchases, and/or the like, and determine an information layer of virtual overlay 2047. The consumer may obtain an automatically recommended injected layer of virtual label overlays 2050, and may switch to another layer of information labels by sliding on the layer, e.g., see 1611a-d in FIGURES 16B-16C.

[00185] FIGURE 20C provides an exemplary logic flow illustrating aspects of fingertip motion detection within embodiments of the TVC. Within embodiments, TVC may employ motion detection components to detect fingertip movement within a live video reality scene. Such motion detection component may be comprised of, but not limited to FAST Corner Detection for iPhone, Lucas-Kanade (LK) Optical Flow for

iPhone, and/or the like. In other implementations, classes defined under iOS developer library such as AVMutableCompisition, UIImagePickerController, etc., may be used to develop video content control components.

[00186] As shown in FIGURE 20C, upon obtaining video capturing at 2006, the TVC may obtain two consecutive video frame grabs 2071 (e.g., every 100 ms, etc.). The TVC may convert the video frames into grayscale images 2073 for image analysis, e.g., via Adobe Photoshop, and/or the like. In one implementation, the TVC may compare the two consecutive video frames 2075 (e.g., via histogram comparison, etc.), and determine the difference region of the two frames 2078. In one implementation, the TVC may highlight the different region of the frames, which may indicate a "finger" or "pointer" shaped object has moved into the video scene to point to a desired object.

[00187] In one implementation, the TVC may determine whether the difference region has a "pointer" shape 2082, e.g., a fingertip, a pencil, etc. If not, e.g., the difference region may be noise caused by camera movement, etc., the TVC may determine whether the time lapse has exceeded a threshold. For example, if the TVC has been capturing the video scene for more than 10 seconds and detects no "pointer" shapes or "fingertip," TVC may proceed to OCR/pattern recognition of the entire image 2087. Otherwise, the TVC may re-generate video frames at 2071.

[00188] In one implementation, if a "fingertip" or a "pointer" is detected at 2082, the TVC may determine a center point of the fingertip, e.g., by taking a middle point of the X and Y coordinates of the "fingertip." The TVC may perform edge detection starting from the determined center point to determine the boundary of a consumer pointed object 2085. For example, the TVC may employ edge detection components such as, but not limited to Adobe Photoshop edge detection, Java edge detection package, and/or the like. Within implementations, upon TVC has defined boundaries of an object, the TVC may perform OCR and pattern recognition of the defined area 2088 to determine a type of the object.

[00189] FIGURE 20D provides an exemplary logic flow illustrating aspects of generation of a virtual label (e.g., 2030, 2049, etc.) within embodiments of the TVC. In one implementation, upon loading relevant information and mixed gestured within the

video reality scene with regard to a detected object (e.g., a credit card, a barcode, a QR code, a product item, etc.) at 2029 in FIGURE 20A, or 2047 in FIGURE 20B, the TVC may load live video of the reality scene 2052. If the camera is stable 2053, the TVC may obtain a still image 2054, e.g., by capturing a video frame from the live video, etc. In one implementation, the image may be obtained at 2006 in FIGURE 20A.

[00190] Within implementations, TVC may receive information related to the determined object 2057 (e.g., 2018, 2027, 2028 in FIGURE 20A), and filter the received information based on consumer configurations 2058 (e.g., the consumer may have elected to display only selected information labels, see FIGURES 1C-1D). For each virtual label 2059, the TVC may determine, if there is more information or more label to generate 2060, the TVC may retrieve a virtual label template 2061 based on the information type (e.g., a social rating label may have a social feeds template; a product information label may have a different template, etc.), and populate relevant information into the label template 2062. In one implementation, the TVC may determine a position of the virtual label (e.g., the X-Y coordinate values, etc.) 2063, e.g., the virtual label may be positioned close to the object, and inject the generated virtual label overlaying the live video at the position 2065.

[00191] For example, a data structure of a generated virtual label, substantially in the form of XML-formatted data, is provided below:

```
<?XML version = "1.0" encoding = "UTF-8"?>
<virtual_label>
    <label_id> 4NFU4RG94 </label_id>
    <timestamp>2014-02-22 15:22:41</timestamp>
    <user_id>john.q.public@gmail.com </user_id>
    <frame>
        <x-range> 1024 </x-range>
        <y-range> 768 </y-range>
    ...
    </frame>
    <object>
        <type> barcode </type>
        <position>
            <x_start> 102 <x_start>
            <x_end> 743</x_end>
            <y_start> 29 </y_start>
```

```
                    <y_end> 145 </y_end>
              </position>
              …
       </object>
       <information>
              <product_name> "McKey Chocolate Bar" </product_name>
              <product_brand> McKey </product_brand>
              <retail_price> 5.99 </retail_price>
              <engageability> enabled </engageability>
              <link> www.amazon.com/product_item/Mckeychoco/1234 </link>
              …
       </information>
       <orientation> horizontal </orientation>
       <format>
              <template_id> Product001 </template_id>
              <label_type> oval callout </label_type>
              <font> ariel </font>
              <font_size> 12 pt </font_size>
              <font_color> Orange </font_color>
              <overlay_type> on top </overlay_type>
              <transparency> 50% </transparency>
              <background_color> 255 255 0 </background_color>
              <label_size>
                    <shape> oval </shape>
                    <long_axis> 60 </long_axis>
                    <short_axis> 40 </short_axis>
                    <object_offset> 30 </object_offset>
                    …
              </label_size>
              …
       </format>
       <injection_position>
              <X_coordinate> 232 </X_coordinate>
              <Y_coordiante> 80 </Y_coordinate>
       </injection_position>
       …
  </virtual_label>
```

[00192] In the above example, the generated virtual label data structure includes fields such as size of the video frame, the captured object (e.g., the object is a barcode, etc.), information to be included in the virtual label, orientation of the label, format of the virtual label (e.g., template, font, background, transparency, etc.), injection position

of the label , and/or the like. In one implementation, the virtual label may contain an informational link, e.g., for the product information in the above example, an Amazon link may be provided, etc. In one implementation, the injection position may be determined based on the position of the object (e.g., X, Y coordinates of the area on the image, determined by a barcode detector, etc.).

[00193] FIGURE 21 shows a schematic block diagram illustrating some embodiments of the TVC. In some implementations, a user 2101 may wish to get more information about an item, compare an item to similar items, purchase an item, pay a bill, and/or the like. TVC 2102 may allow the user to provide instructions to do so using vocal commands combined with physical gestures. TVC allows for composite actions composed of multiple disparate inputs, actions and gestures (e.g., real world finger detection, touch screen gestures, voice/audio commands, video object detection, etc.) as a trigger to perform a TVC action (e.g., engage in a transaction, select a user desired item, engage in various consumer activities, and/or the like). In some implementations, the user may initiate an action by saying a command and making a gesture with the user's device, which may initiate a transaction, may provide information about the item, and/or the like. In some implementations, the user's device may be a mobile computing device, such as a tablet, mobile phone, portable game system, and/or the like. In other implementations, the user's device may be a payment device (e.g. a debit card, credit card, smart card, prepaid card, gift card, and/or the like), a pointer device (e.g. a stylus and/or the like), and/or a like device.

[00194] FIGURES 22a-b show data flow diagrams illustrating processing gesture and vocal commands in some embodiments of the TVC. In some implementations, the user 2201 may initiate an action by providing both a physical gesture 2202 and a vocal command 2203 to an electronic device 2206. In some implementations, the user may use the electronic device itself in the gesture; in other implementations, the user may use another device (such as a payment device), and may capture the gesture via a camera on the electronic device 2207, or an external camera 2204 separate from the electronic device 2205. In some implementations, the camera may record a video of the device; in other implementations, the camera may take a burst of photos. In some implementations, the recording may begin when the user presses a button on the

electronic device indicating that the user would like to initiate an action; in other implementations, the recording may begin as soon as the user enters a command application and begins to speak. The recording may end as soon as the user stops speaking, or as soon as the user presses a button to end the collection of video or image data. The electronic device may then send a command message 2208 to the TVC database, which may include the gesture and vocal command obtained from the user.

[00195] In some implementations, an exemplary XML-encoded command message 2208 may take a form similar to the following:

```
POST /command_message.php HTTP/1.1
Host: www.DCMCPproccess.com
Content-Type: Application/XML
Content-Length: 788
<?XML version = "1.0" encoding = "UTF-8"?>
<command_message>
<timestamp>2016-01-01 12:30:00</timestamp>
    <command_params>
         <gesture_accel>
            <x>1.0, 2.0, 3.1, 4.0, 5.2, 6.1, 7.1, 8.2, 9.2, 10.1</x>
            <y>1.5, 2.3, 3.3, 4.1, 5.2, 6.3, 7.2, 8.4, 9.1, 10.0</y>
        </gesture_accel>
         <gesture_gyro>1, 1, 1, 1, 1, 0,-1,-1,-1, -1</gesture_gyro >
        <gesture_finger>
               <finger_image>
                    <name> gesture1 </name>
                    <format> JPEG </format>
                    <compression> JPEG compression </compression>
                    <size> 123456 bytes </size>
                    <x-Resolution> 72.0 </x-Resolution>
                    <y-Resolution> 72.0 </y-Resolution>
                    <date_time> 2014:8:11 16:45:32 </date_time>
                   <color>greyscale</color>
                    …
                    <content> ÿØÿà JFIF  H H  ÿâ´ICC_PROFILE   ¤appl  mntrRGB XYZ Ü
       $  acspAPPL öÖÓ-appl                                          desc  P
       bdscm  ´  Šcprt  ————————————————————@   $wtpt
       ————————————————————d   rXYZ  ————————————————————x   gXYZ
       ————————————————————Œ   bXYZ  ————————————————————    rTRC
       ————————————————————´  aarg   À    vcgt …
                    </content>
```

```
1                …
2        </image_info>
3             <x>1.0, 2.0, 3.1, 4.0, 5.2, 6.1, 7.1, 8.2, 9.2, 10.1</x>
4             <y>1.5, 2.3, 3.3, 4.1, 5.2, 6.3, 7.2, 8.4, 9.1, 10.0</y>
5         </gesture_finger>
6          <gesture_video xml content-type="mp4">
7              <key>filename</key><string>gesture1.mp4</string>
8              <key>Kind</key><string>h.264/MPEG-4 video file</string>
9              <key>Size</key><integer>1248163264</integer>
10             <key>Total Time</key><integer>20</integer>
11             <key>Bit Rate</key><integer>9000</integer>
12             <content> Ã@ôÃ=∑\n¶à©™Ô[Û´´ifl˜ı'uu4Í¿û¡ú∂Û%nIy-
13  ″rõæCuŒ∑\ÿ%ı˘¡!z∫∫{%íñõ‡#)~>∂be"ı°l._Fœ&˘Áò∑,8Sãã¬íÅ:íè˘Aπ-
14 ≤‹¶Îı',£JvD_8‰6"ÎZü›vÃ√b∫%ªN™Ñwg®x$ôV§lQ—
15 j˙ãTlMCF)∑:Á¸xÀÛòÒÎΩkŒtΩ◊çÔO:∫ΩÂN″∏õ÷∑qt¯^jÃ€6^ƒ4.o  óöÀÎ Zuc't°`Tfi7ÂV⁄G~¶Ô[g©´FáªÍ.Ùo
16 ªiµ§⁄"∫AÅ`
17 ,˘ªÒ™/ë£wç
18             </content>
19         <gesture_video>
20         <command_audio content-type="mp4">
21             <key>filename</key><string>vocal_command1.mp4</string>
22             <key>Kind</key><string>MPEG-4 audio file</string>
23             <key>Size</key><integer>2468101</integer>
24             <key>Total Time</key><integer>20</integer>
25             <key>Bit Rate</key><integer>128</integer>
26             <key>Sample Rate</key><integer>44100</integer>
27             <content> Ã@ôÃ=∑\n¶à©™Ô[Û´´ifl˜ı'uu4Í¿û¡ú∂Û%nIy-
28  ″rõæCuŒ∑\ÿ%ı˘¡!z∫∫{%íñõ‡#)~>∂be"ı°l._Fœ&˘Áò∑,8Sãã¬íÅ:íè˘Aπ-
29 ≤‹¶Îı',£JvD_8‰6"ÎZü›vÃ√b∫%ªN™Ñwg®x$ôV§lQ—
30 j˙ãTlMCF)∑:Á¸xÀÛòÒÎΩkŒtΩ◊çÔO:∫ΩÂN″∏õ÷∑qt¯^jÃ€6^ƒ4.o  óöÀÎ Zuc't°`Tfi7ÂV⁄G~¶Ô[g©´FáªÍ.Ùo
31 ªiµ§⁄"∫AÅ`
32 ,˘ªÒ™/ë£wç
33             </content>
34         </command_audio>
35     </command_params>
36     </user_params>
37         <user_id>123456789</user_id>
38          <wallet_id>9988776655</wallet_id>
39         <device_id>j3h25j45gh647hj</device_id>
40         <date_of_request>2015-12-31</date_of_request>
41     </user_params>
42 </command_message>
```

[00196] In some implementations, the electronic device may reduce the size of the vocal file by cropping the audio file to when the user begins and ends the vocal command. In some implementations, the TVC may process the gesture and audio data 2210 in order to determine the type of gesture performed, as well as the words spoken by the user. In some implementations, a composite gesture generated from the processing of the gesture and audio data may be embodied in an XML-encoded data structure similar to the following:

```
<composite_gesture>
        <user_params>
            <user_id>123456789</user_id>
            <wallet_id>9988776655</wallet_id>
            <device_id>j3h25j45gh647hj</device_id>
        </user_params>
        <object_params></object_params>
        <finger_params>
            <finger_image>
            <name> gesture1 </name>
            <format> JPEG </format>
            <compression> JPEG compression </compression>
            <size> 123456 bytes </size>
            <x-Resolution> 72.0 </x-Resolution>
            <y-Resolution> 72.0 </y-Resolution>
            <date_time> 2014:8:11 16:45:32 </date_time>
            <color>greyscale</color>
            …
            <content> ÿØÿà JFIF  H H  ÿâ´ICC_PROFILE   ¤appl  mntrRGB XYZ Ü
$  acspAPPL öÖÓ-appl                                    desc  P
bdscm  ´  Šcprt  ————————————————@   $wtpt
————————————————d   rXYZ  ————————————————x   gXYZ
————————————————Œ   bXYZ  ————————————————    rTRC
————————————————´  aarg   À    vcgt …
            </content>
        …
        </finger_image>
        <x>1.0, 2.0, 3.1, 4.0, 5.2, 6.1, 7.1, 8.2, 9.2, 10.1</x>
        <y>1.5, 2.3, 3.3, 4.1, 5.2, 6.3, 7.2, 8.4, 9.1, 10.0</y>
```

```
            </finger_params>
            <touch_params></touch_params>
            <qr_object_params>
            <qr_image>
                  <name> qr1 </name>
                  <format> JPEG </format>
                  <compression> JPEG compression </compression>
                  <size> 123456 bytes </size>
                  <x-Resolution> 72.0 </x-Resolution>
                  <y-Resolution> 72.0 </y-Resolution>
                  <date_time> 2014:8:11 16:45:32 </date_time>
                  …
                  <content> ÿØÿà JFIF  H H  ÿâ´ICC_PROFILE   ¤appl  mntrRGB XYZ Ü
      $  acspAPPL öÖÓ-appl                                          desc  P
      bdscm  ´  Šcprt  ————————————————————@   $wtpt
      ————————————————————d   rXYZ  ————————————————————x   gXYZ
      ————————————————————Œ   bXYZ  ————————————————————    rTRC
      ————————————————————´  aarg   À    vcgt …
                  </content>
            …
      </qr_image>
      <QR_content>"John Doe, 1234567891011121, 2014:8:11, 098"</QR_content>
            </qr_object_params>
            <voice_params></voice_params>
</composite_gesture>
```

[00197] In some implementations, fields in the composite gesture data structure may be left blank depending on whether the particular gesture type (e.g., finger gesture, object gesture, and/or the like) has been made. The TVC may then match 2211 the gesture and the words to the various possible gesture types stored in the TVC database. In some implementations, the TVC may query the database for particular disparate gestures in a manner similar to the following:

```
<?php
   …
      $fingergesturex = "3.1, 4.0, 5.2, 6.1, 7.1, 8.2, 9.2";
      $fingergesturey = "3.3, 4.1, 5.2, 6.3, 7.2, 8.4, 9.1";
```

```
        $fingerresult = mysql_query("SELECT finger_gesture_type FROM finger_gesture
WHERE gesture_x='%s' AND gesture_y='%s'",  mysql_real_escape_string($fingergesturex),
    mysql_real_escape_string($fingergesturey));

        $objectgesturex = "6.1, 7.0, 8.2, 9.1, 10.1, 11.2, 12.2";
        $objectgesturey = "6.3, 7.1, 8.2, 9.3, 10.2, 11.4, 12.1";
        $objectresult = mysql_query("SELECT object_gesture_type FROM object_gesture
WHERE object_gesture_x='%s' AND object_gesture_y='%s'",
 mysql_real_escape_string($objectgesturex),
    mysql_real_escape_string($objectgesturey));

        $voicecommand = "Pay total with this device";
        $voiceresult = mysql_query("SELECT vc_name FROM vocal_command WHERE %s IN
vc_command_list",  mysql_real_escape_string($voicecommand));
>
```

[00198] In some implementations, the result of each query in the above example may be used to search for the composite gesture in the Multi-Disparate Gesture Action (MDGA) table of the database. For example, if $fingerresult is "tap check," $objectresult is "swipe," and $voiceresult is "pay total of check with this payment device," TVC may search the MDGA table using these three results to narrow down the precise composite action that has been performed. If a match is found, the TVC may request confirmation that the right action was found, and then may perform the action 2212 using the user's account. In some implementations, the TVC may access the user's financial information and account 2213 in order to perform the action. In some implementations, TVC may update a gesture table 2214 in the TVC database 2215 to refine models for usable gestures based on the user's input, to add new gestures the user has invented, and/or the like. In some implementations, an update 2214 for a finger gesture may be performed via a PHP/MySQL command similar to the following:

```
<?php
    ...

        $fingergesturex = "3.1, 4.0, 5.2, 6.1, 7.1, 8.2, 9.2";
        $fingergesturey = "3.3, 4.1, 5.2, 6.3, 7.2, 8.4, 9.1";
```

```
    $fingerresult = mysql_query("UPDATE gesture_x, gesture_y FROM finger_gesture WHERE
gesture_x='%s' AND gesture_y='%s'",  mysql_real_escape_string($fingergesturex),
    mysql_real_escape_string($fingergesturey));
>
```

[00199] After successfully updating the table 2216, the TVC may send the user to a confirmation page 2217 (or may provide an augmented reality (AR) overlay to the user) which may indicate that the action was successfully performed. In some implementations, the AR overlay may be provided to the user through use of smart glasses, contacts, and/or a like device (e.g. Google Glasses).

[00200] As shown in FIGURE 22b, in some implementations, the electronic device 2206 may process the audio and gesture data itself 2218, and may also have a library of possible gestures that it may match 2219 with the processed audio and gesture data to. The electronic device may then send in the command message 2220 the actions to be performed, rather than the raw gesture or audio data. In some implementations, the XML-encoded command message 2220 may take a form similar to the following:

```
POST /command_message.php HTTP/1.1
Host: www.DCMCPproccess.com
Content-Type: Application/XML
Content-Length: 788
<?XML version = "1.0" encoding = "UTF-8"?>
<command_message>
    <timestamp>2016-01-01 12:30:00</timestamp>
    <command_params>
            <gesture_video>swipe_over_receipt</gesture_video>
            <command_audio>"Pay total with active wallet."</command_audio>
    </command_params>
    </user_params>
            <user_id>123456789</user_id>
            <wallet_id>9988776655</wallet_id>
            <device_id>j3h25j45gh647hj</device_id>
```

```
            <date_of_request>2015-12-31</date_of_request>
    </user_params>
</command_message>
```

[00201] The TVC may then perform the action specified 2221, accessing any information necessary to conduct the action 2222, and may send a confirmation page or AR overlay to the user 2223. In some implementations, the XML-encoded data structure for the AR overlay may take a form similar to the following:

```
<?XML version = "1.0" encoding = "UTF-8"?>
<virtual_label>
   <label_id> 4NFU4RG94 </label_id>
   <timestamp>2014-02-22 15:22:41</timestamp>
   <user_id>123456789</user_id>
   <frame>
      <x-range> 1024 </x-range>
      <y-range> 768 </y-range>
      …
   </frame>
   <object>
      <type> confirmation </type>
      <position>
        <x_start> 102 <x_start>
        <x_end> 743</x_end>
        <y_start> 29 </y_start>
        <y_end> 145 </y_end>
      </position>
      …
   </object>
   <information>
      <text> "You have successfully paid the total using your active wallet." </text>
       …
   </information>
   <orientation> horizontal </orientation>
   <format>
      <template_id> Confirm001 </template_id>
      <label_type> oval callout </label_type>
      <font> ariel </font>
      <font_size> 12 pt </font_size>
      <font_color> Orange </font_color>
      <overlay_type> on top </overlay_type>
```

```
      <transparency> 50% </transparency>
      <background_color> 255 255 0 </background_color>
      <label_size>
         <shape> oval </shape>
         <long_axis> 60 </long_axis>
         <short_axis> 40 </short_axis>
         <object_offset> 30 </object_offset>
          …
     </label_size>
         …
   </format>
   <injection_position>
      <X_coordinate> 232 </X_coordinate>
      <Y_coordiante> 80 </Y_coordinate>
   </injection_position>
   …
</virtual_label>
```

[00202] FIGURES 23a-23c show logic flow diagrams illustrating processing gesture and vocal commands in some embodiments of the TVC. In some implementations, the user 201 may perform a gesture and a vocal command 2301 equating to an action to be performed by TVC. The user's device 206 may capture the gesture 2302 via a set of images or a full video recorded by an on-board camera, or via an external camera-enabled device connected to the user's device, and may capture the vocal command via an on-board microphone, or via an external microphone connected to the user's device. The device may determine when both the gesture and the vocal command starts and ends 2303 based on when movement in the video or images starts and ends, based on when the user's voice starts and ends the vocal command, when the user presses a button in an action interface on the device, and/or the like. In some implementations, the user's device may then use the start and end points determined in order to package the gesture and voice data 2304, while keeping the packaged data a reasonable size. For example, in some implementations, the user's device may eliminate some accelerometer or gyroscope data, may eliminate images or crop the video of the gesture, based on the start and end points determined for the gesture. The user's device may also crop the audio file of the vocal command, based on the start and end points for the vocal command. This may be performed in order to reduce the size of the data

and/or to better isolate the gesture or the vocal command. In some implementations, the user's device may package the data without reducing it based on start and end points.

[00203] In some implementations, TVC may receive 2305 the data from the user's device, which may include accelerometer and/or gyroscope data pertaining to the gesture, a video and/or images of the gesture, an audio file of the vocal command, and/or the like. In some implementations, TVC may determine what sort of data was sent by the user's device in order to determine how to process it. For example, if the user's device provides accelerometer and/or gyroscope data 2306, TVC may determine the gesture performed by matching the accelerometer and/or gyroscope data points with pre-determined mathematical gesture models 2309. For example, if a particular gesture would generate accelerometer and/or gyroscope data that would fit a linear gesture model, TVC will determine whether the received accelerometer and/or gyroscope data matches a linear model.

[00204] If the user's device provides a video and/or images of the gesture 2307, TVC may use an image processing component in order to process the video and/or images 2310 and determine what the gesture is. In some implementations, if a video is provided, the video may also be used to determine the vocal command provided by the user. As shown in FIGURE 23c, in one example implementation, the image processing component may scan the images and/or the video 2326 for a Quick Response (QR) code. If the QR code is found 2327, then the image processing component may scan the rest of the images and/or the video for the same QR code, and may generate data points for the gesture based on the movement of the QR code 2328. These gesture data points may then be compared with pre-determined gesture models 2329 in order to determine which gesture was made by the item with the QR code. In some implementations, if multiple QR codes are found in the image, the image processing component may ask the user to specify which code corresponds to the user's receipt, payment device, and/or other items which may possess the QR code. In some implementations, the image processing component may, instead of prompting the user to choose which QR code to track, generate gesture data points for all QR codes found, and may choose which is the correct code to track based on how each QR code moves (e.g., which one moves at all,

which one moves the most, and/or the like). In some implementations, if the image processing component does not find a QR code, the image processing component may scan the images and/or the vide for a payment device 2330, such as a credit card, debit card, transportation card (e.g., a New York City Metro Card), gift card, and/or the like. If a payment device can be found 2331, the image processing component may scan 2332 the rest of the images and/or the rest of the video for the same payment device, and may determine gesture data points based on the movement of the payment device. If multiple payment devices are found, either the user may be prompted to choose which device is relevant to the user's gesture, or the image processing component, similar to the QR code discussed above, may determine itself which payment device should be tracked for the gesture. If no payment device can be found, then the image processing component may instead scan the images and/or the video for a hand 2333, and may determine gesture data points based on its movement. If multiple hands are detected, the image processing component may handle them similarly to how it may handle QR codes or payment devices. The image processing component may match the gesture data points generated from any of these tracked objects to one of the pre-determined gesture models in the TVC database in order to determine the gesture made.

[00205] If the user's device provides an audio file 2308, then TVC may determine the vocal command given using an audio analytics component 2311. In some implementations, the audio analytics component may process the audio file and produce a text translation of the vocal command. As discussed above, in some implementations, the audio analytics component may also use a video, if provided, as input to produce a text translation of the user's vocal command.

[00206] As shown in FIGURE 23b, TVC may, after determining the gesture and vocal command made, query an action table of a TVC database 2312 to determine which of the actions matches the provided gesture and vocal command combination. If a matching action is not found 2313, then TVC may prompt the user to retry the vocal command and the gesture they originally performed 2314. If a matching action is found, then TVC may determine what type of action is requested from the user. If the action is a multi-party payment-related action 2315 (i.e., between more than one person and/or entity), TVC may retrieve the user's account information 2316, as well as the account

information of the merchant, other user, and/or other like entity involved in the transaction. TVC may then use the account information to perform the transaction between the two parties 2317, which may include using the account IDs stored in each entity's account to contact their payment issuer in order to transfer funds, and/or the like. For example, if one user is transferring funds to another person (e.g., the first user owes the second person money, and/or the like), TVC may use the account information of the first user, along with information from the second person, to initiate a transfer transaction between the two entities.

[00207] If the action is a single-party payment-related action 2318 (i.e., concerning one person and/or entity transferring funds to his/her/itself), TVC may retrieve the account information of the one user 2319, and may use it to access the relevant financial and/or other accounts associated in the transaction. For example, if one user is transferring funds from a bank account to a refillable gift card owned by the same user, then TVC would access the user's account in order to obtain information about both the bank account and the gift card, and would use the information to transfer funds from the bank account to the gift card 2320.

[00208] In either the multi-party or the single-party action, TVC may update 2321 the data of the affected accounts (including: saving a record of the transaction, which may include to whom the money was given to, the date and time of the transaction, the size of the transaction, and/or the like), and may send a confirmation of this update 2322 to the user.

[00209] If the action is related to obtaining information about a product and/or service 2323, TVC may send a request 2324 to the relevant merchant database(s) in order to get information about the product and/or service the user would like to know more about. TVC may provide any information obtained from the merchant to the user 2325. In some implementations, TVC may provide the information via an AR overlay, or via an information page or pop-up which displays all the retrieved information.

[00210] FIGURE 24a shows a data flow diagram illustrating checking into a store or a venue in some embodiments of the TVC. In some implementations, the user 2401 may scan a QR code 2402 using their electronic device 2403 in order to check-in to a

store. The electronic device may send check-in message 2404 to TVC server 2405, which may allow TVC to store information 2406 about the user based on their active e-wallet profile. In some implementations, an exemplary XML-encoded check-in message 2404 may take a form similar to the following:

```
POST /checkin_message.php HTTP/1.1
Host: www.DCMCPproccess.com
Content-Type: Application/XML
Content-Length: 788
<?XML version = "1.0" encoding = "UTF-8"?>
<checkin _message>
  <timestamp>2016-01-01 12:30:00</timestamp>
    <checkin_params>
      <merchant_params>
          <merchant_id>1122334455</merchant_id>
          <merchant_salesrep>1357911</merchant_salesrep>
      </merchant_params>
      <user_params>
            <user_id>123456789</user_id>
            <wallet_id>9988776655</wallet_id>
            <GPS>40.71872,-73.98905, 100</GPS>
            <device_id>j3h25j45gh647hj</device_id>
            <date_of_request>2015-12-31</date_of_request>
       </user_params>
      <qr_object_params>
      <qr_image>
                  <name> qr5 </name>
                  <format> JPEG </format>
                  <compression> JPEG compression </compression>
                  <size> 123456 bytes </size>
                  <x-Resolution> 72.0 </x-Resolution>
                  <y-Resolution> 72.0 </y-Resolution>
                  <date_time> 2014:8:11 16:45:32 </date_time>
                  …
                  <content> ÿØÿà JFIF  H H  ÿâ´ICC_PROFILE   ¤appl  mntrRGB XYZ Ü
      $  acspAPPL öÖÓ-appl                                          desc  P
      bdscm  ´  Šcprt  ————————————————————@   $wtpt
      ————————————————————d   rXYZ  ————————————————————x   gXYZ
      ————————————————————Œ   bXYZ  ————————————————————    rTRC
      ————————————————————´  aarg   À    vcgt …
                  </content>
```

```
            ...
       </qr_image>
           <QR_content>"URL:http://www.examplestore.com mailto:rep@examplestore.com
geo:52.45170,4.81118 mailto:salesrep@examplestore.com&subject=Check-
in!body=The%20user%20with%id%20123456789%20has%20just%20checked%20in!"</QR_content>
       </qr_object_params>
   </checkin_params>
</checkin_message>
```

[00211] In some implementations, the user, while shopping through the store, may also scan 2407 items with the user's electronic device, in order to obtain more information about them, in order to add them to the user's cart, and/or the like. In such implementations, the user's electronic device may send a scanned item message 2408 to the TVC server. In some implementations, an exemplary XML-encoded scanned item message 2408 may take a form similar to the following:

```
POST /scanned_item_message.php HTTP/1.1
Host: www.DCMCPproccess.com
Content-Type: Application/XML
Content-Length: 788
<?XML version = "1.0" encoding = "UTF-8"?>
<scanned_item_message>
   <timestamp>2016-01-01 12:30:00</timestamp>
     <scanned_item_params>
        <item_params>
             <item_id>1122334455</item_id>
             <item_aisle>12</item_aisle>
             <item_stack>4</item_stack>
             <item_shelf>2</item_shelf>
             <item_attributes>"orange juice", "calcium", "Tropicana"</item_attributes>
             <item_price>5</item_price>
            <item_product_code>1A2B3C4D56</item_product_code>
            <item_manufacturer>Tropicana Manufacturing Company,
Inc</item_manufacturer>
       <qr_image>
                    <name> qr5 </name>
                    <format> JPEG </format>
                    <compression> JPEG compression </compression>
                    <size> 123456 bytes </size>
                    <x-Resolution> 72.0 </x-Resolution>
```

```
                    <y-Resolution> 72.0 </y-Resolution>
                    <date_time> 2014:8:11 16:45:32 </date_time>
                    …
                    <content> ÿØÿà JFIF  H H  ÿâ´ICC_PROFILE   ¤appl  mntrRGB XYZ Ü
      $  acspAPPL öÖÓ-appl                                          desc  P
      bdscm  ´  Šcprt  ————————————————————@   $wtpt
      ————————————————————d   rXYZ  ————————————————————x   gXYZ
      ————————————————————Œ   bXYZ  ————————————————————    rTRC
      ————————————————————´  aarg   À    vcgt …
                    </content>
            …
      </qr_image>
          <QR_content>"URL:http://www.examplestore.com mailto:rep@examplestore.com
geo:52.45170,4.81118
mailto:salesrep@examplestore.com&subject=Scan!body=The%20user%20with%id%20123456789%20
has%20just%20scanned%20product%201122334455!"</QR_content>
     </item_params>
       <user_params>
              <user_id>123456789</user_id>
               <wallet_id>9988776655</wallet_id>
              <GPS>40.71872,-73.98905, 100</GPS>
              <device_id>j3h25j45gh647hj</device_id>
              <date_of_request>2015-12-31</date_of_request>
      </user_params>
  </scanned_item_params>
</scanned_item_message>
```

[00212] In some implementations, TVC may then determine the location 2409 of the user based on the location of the scanned item, and may send a notification 2410 to a sale's representative 2411 indicating that a user has checked into the store and is browsing items in the store. In some implementations, an exemplary XML-encoded notification message 2410 may comprise of the scanned item message of scanned item message 2408.

[00213] The sale's representative may use the information in the notification message to determine products and/or services to recommend 2412 to the user, based on the user's profile, location in the store, items scanned, and/or the like. Once the sale's representative has chosen at least one product and/or service to suggest, it may send the

suggestion 2413 to the TVC server. In some implementations, an exemplary XML-encoded suggestion 2413 may take a form similar to the following:

```
POST /recommendation_message.php HTTP/1.1
Host: www.DCMCPproccess.com
Content-Type: Application/XML
Content-Length: 788
<?XML version = "1.0" encoding = "UTF-8"?>
<recommendation_message>
   <timestamp>2016-01-01 12:30:00</timestamp>
     <recommendation_params>
        <item_params>
             <item_id>1122334455</item_id>
             <item_aisle>12</item_aisle>
             <item_stack>4</item_stack>
             <item_shelf>1</item_shelf>
             <item_attributes>"orange juice", "omega-3", "Tropicana"</item_attributes>
             <item_price>5</item_price>
            <item_product_code>0P9K8U7H76</item_product_code>
            <item_manufacturer>Tropicana Manufacturing Company,
Inc</item_manufacturer>
       <qr_image>
                    <name> qr12 </name>
                    <format> JPEG </format>
                    <compression> JPEG compression </compression>
                    <size> 123456 bytes </size>
                    <x-Resolution> 72.0 </x-Resolution>
                    <y-Resolution> 72.0 </y-Resolution>
                    <date_time> 2014:8:11 16:45:32 </date_time>
                    …
                    <content> ÿØÿà JFIF  H H  ÿâ´ICC_PROFILE   ¤appl  mntrRGB XYZ Ü
       $  acspAPPL öÖÓ-appl                                          desc  P
       bdscm  ´  Šcprt  ————————————————————@   $wtpt
       ————————————————————d   rXYZ  ————————————————————x   gXYZ
       ————————————————————Œ   bXYZ  ————————————————————    rTRC
       ————————————————————´  aarg   À    vcgt …
                    </content>
             …
       </qr_image>
           <QR_content>"URL:http://www.examplestore.com mailto:rep@examplestore.com
geo:52.45170,4.81118
```

```
mailto:salesrep@examplestore.com&subject=Scan!body=The%20user%20with%id%20123456789%20
has%20just%20scanned%20product%1122334455!"</QR_content>
      </item_params>
        <user_params>
               <user_id>123456789</user_id>
               <wallet_id>9988776655</wallet_id>
               <GPS>40.71872,-73.98905, 100</GPS>
               <device_id>j3h25j45gh647hj</device_id>
               <date_of_request>2015-12-31</date_of_request>
       </user_params>
  </recommendation_params>
</recommendation_message>
```

[00214] In some implementations, TVC may also use the user's profile information, location, scanned items, and/or the like to determine its own products and/or services to recommend 2414 to the user. In some implementations, TVC may determine where in the store any suggested product and/or service is 2415, based on aisle information in the item data structure, and may generate a map from the user's location to the location of the suggested product and/or service. In some implementations, the map overlays a colored path on a store map from the user's location to the suggested product and/or service. TVC may send 2416 this map, along with the suggested product and/or item, to the user, who may use it to find the suggested item, and add the suggested item to its shopping cart 2440 if the user would like to purchase it.

[00215] FIGURES 24b-c show data flow diagrams illustrating accessing a virtual store in some embodiments of the TVC. In some implementations, a user 2417 may have a camera (either within an electronic device 2420 or an external camera 2419, such as an Xbox Kinect device) take a picture 2418 of the user. The user may also choose to provide various user attributes, such as the user's clothing size, the item(s) the user wishes to search for, and/or like information. The electronic device 2420 may also obtain 2421 stored attributes (such as a previously-submitted clothing size, color preference, and/or the like) from the TVC database, including whenever the user chooses not to provide attribute information. The electronic device may send a request 2422 to the TVC database 2423, and may receive all the stored attributes 2424 in the database. The electronic device may then send an apparel preview request 2425 to the

TVC server 2426, which may include the photo of the user, the attributes provided, and/or the like. In some implementations, an exemplary XML-encoded apparel preview request 2425 may take a form similar to the following:

```
POST /apparel_preview_request.php HTTP/1.1
Host: www.DCMCPproccess.com
Content-Type: Application/XML
Content-Length: 788
<?XML version = "1.0" encoding = "UTF-8"?>
<apparel_preview_message>
<timestamp>2016-01-01 12:30:00</timestamp>
            <user_image>
                <name> user_image </name>
                <format> JPEG </format>
                 <compression> JPEG compression </compression>
                <size> 123456 bytes </size>
                <x-Resolution> 72.0 </x-Resolution>
                <y-Resolution> 72.0 </y-Resolution>
                <date_time> 2014:8:11 16:45:32 </date_time>
                 <color>rbg</color>
                …
                <content> ÿØÿà JFIF  H H  ÿâ´ICC_PROFILE   ¤appl  mntrRGB XYZ Ü    $
acspAPPL öÖÓ-appl                                          desc  P   bdscm  ´  Šcprt
————————————————@   $wtpt  ————————————————d   rXYZ
————————————————x   gXYZ  ————————————————Œ   bXYZ
————————————————    rTRC  ————————————————´  aarg   À    vcgt …
                </content>
                …
            </user_image>

            </user_params>
                <user_id>123456789</user_id>
                 <user_wallet_id>9988776655</wallet_id>
                 <user_device_id>j3h25j45gh647hj</device_id>
                 <user_size>4</user_size>
                <user_gender>F</user_gender>

                 <user_body_type></user_body_type>
                <search_criteria>"dresses"</search_criteria>
                <date_of_request>2015-12-31</date_of_request>
            </user_params>
</apparel_preview_message>
```

[00216] In some implementations, TVC may conduct its own analysis of the user based on the photo 2427, including analyzing the image to determine the user's body size, body shape, complexion, and/or the like. In some implementations, TVC may use these attributes, along with any provided through the apparel preview request, to search the database 2428 for clothing that matches the user's attributes and search criteria. In some implementations, TVC may also update 2429 the user's attributes stored in the database, based on the attributes provided in the apparel preview request or based on TVC' analysis of the user's photo. After TVC receives confirmation that the update is successful 2430, TVC may send a virtual closet 2431 to the user, comprising a user interface for previewing clothing, accessories, and/or the like chosen for the user based on the user's attributes and search criteria. In some implementations, the virtual closet may be implemented via HTML and Javascript.

[00217] In some implementations, as shown in FIGURE 24c, the user may then interact with the virtual closet in order to choose items 2432 to preview virtually. In some implementations, the virtual closet may scale any chosen items to match the user's picture 2433, and may format the item's image (e.g., blur the image, change lighting on the image, and/or the like) in order for it to blend properly with the user image. In some implementations, the user may be able to choose a number of different items to preview at once (e.g., a user may be able to preview a dress and a necklace at the same time, or a shirt and a pair of pants at the same time, and/or the like), and may be able to specify other properties of the items, such as the color or pattern to be previewed, and/or the like. The user may also be able to change the properties of the virtual closet itself, such as changing the background color of the virtual closet, the lighting in the virtual closet, and/or the like. In some implementations, once the user has found at least one article of clothing that the user likes, the user can choose the item(s) for purchase 2434. The electronic device may initiate a transaction 2425 by sending a transaction message 2436 to the TVC server, which may contain user account information that it may use to obtain the user's financial account information 2437 from the TVC database. Once the information has been successfully obtained 2438, TVC may initiate the purchase transaction using the obtained user data 2439.

[00218] FIGURE 25a shows a logic flow diagram illustrating checking into a store in some embodiments of the TVC. In some implementations, the user may scan a check-in code 2501, which may allow TVC to receive a notification 2502 that the user has checked in, and may allow TVC to use the user profile identification information provided to create a store profile for the user. In some implementations, the user may scan a product 2503, which may cause TVC to receive notification of the user's item scan 2504, and may prompt TVC to determine where the user is based on the location of the scanned item 2505. In some implementations, TVC may then send a notification of the check-in and/or the item scan to a sale's representative 2506. TVC may then determine (or may receive from the sale's representative) at least one product and/or service to recommend to the user 2507, based on the user's profile, shopping cart, scanned item, and/or the like. TVC may then determine the location of the recommended product and/or service 2508, and may use the user's location and the location of the recommended product and/or service to generate a map from the user's location to the recommended product and/or service 2509. TVC may then send the recommmended product and/or service, along with the generated map, to the user 2510, so that the user may find its way to the recommended product and add it to a shopping cart if desired.

[00219] FIGURE 25b shows a logic flow diagram illustrating accessing a virtual store in some embodiments of the TVC. In some implementations, the user's device may take a picture 2511 of the user, and may request from the user attribute data 2512, such as clothing size, clothing type, and/or like information. If the user chooses not to provide information 2513, the electronic device may access the user profile in the TVC database in order to see if any previously-entered user attribute data exists 2514. In some implementations, anything found is sent with the user image to TVC 2515. If little to no user attribute information is provided, TVC may use an image processing component to predict the user's clothing size, complexion, body type, and/or the like 2516, and may retrieve clothing from the database 2517. In some implementations, if the user chose to provide information 2513, then TVC automatically searches the database 2517 for clothing without attempting to predict the user's clothing size and/or the like. In some implementations, TVC may use the user attributes and search criteria to search the retrieved clothing 2518 for any clothing tagged with attributes matching that of the

user (e.g. clothing tagged with a similar size as the user, and/or the like). TVC may send the matching clothing to the user 2519 as recommended items to preview via a virtual closet interface. Depending upon further search parameters provided by the user (e.g., new colors, higher or lower prices, and/or the like), TVC may update the clothing loaded into the virtual closet 2520 based on the further search parameters (e.g., may only load red clothing if the user chooses to only see the red clothing in the virtual closet, and/or the like).

[00220] In some implementations, the user may provide a selection of at least one article of clothing to try on 2521, prompting TVC to determine body and/or joint locations and markers in the user photo 2522, and to scale the image of the article of clothing to match the user image 2523, based on those body and/or joint locations and markers. In some implementations, TVC may also format the clothing image 2524, including altering shadows in the image, blurring the image, and/or the like, in order to match the look of the clothing image to the look of the user image. TVC may superimpose 2525 the clothing image on the user image to allow the user to virtually preview the article of clothing on the user, and may allow the user to change options such as the clothing color, size, and/or the like while the article of clothing is being previewed on the user. In some implementations, TVC may receive a request to purchase at least one article of clothing 2526, and may retrieve user information 2527, including the user's ID, shipping address, and/or the like. TVC may further retrieve the user's payment information 2528, including the user's preferred payment device or account, and/or the like, and may contact the user's issuer (and that of the merchant) 2529 in order to process the transaction. TVC may send a confirmation to the user when the transaction is completed 2530.

[00221] FIGURES 26a-d show schematic diagrams illustrating initiating transactions in some embodiments of the TVC. In some implementations, as shown in FIGURE 26a, the user 2604 may have an electronic device 2601 which may be a camera-enabled device. In some implementations, the user may also have a receipt 2602 for the transaction, which may include a QR code 2603. The user may give the vocal command "Pay the total with the active wallet" 2605, and may swipe the electronic device over the receipt 2606 in order to perform a gesture. In such implementations, the electronic

device may record both the audio of the vocal command and a video (or a set of images) for the gesture, and TVC may track the position of the QR code in the recorded video and/or images in order to determine the attempted gesture. TVC may then prompt the user to confirm that the user would like to pay the total on the receipt using the active wallet on the electronic device and, if the user confirms the action, may carry out the transaction using the user's account information.

[00222] As shown in FIGURE 26b, in some implementations, the user may have a payment device 2608, which they want to use to transfer funds to another payment device 2609. Instead of gesturing with the electronic device 2610, the user may use the electronic device to record a gesture involving swiping the payment device 2608 over payment device 2609, while giving a vocal command such as "Add $20 to Metro Card using this credit card" 2607. In such implementations, TVC will determine which payment device is the credit card, and which is the Metro Card, and will transfer funds from the account of the former to the account of the latter using the user's account information, provided the user confirms the transaction.

[00223] As shown in FIGURE 26c, in some implementations, the user may wish to use a specific payment device 2612 to pay the balance of a receipt 2613. In such implementations, the user may use electronic device 2614 to record the gesture of tapping the payment device on the receipt, along with a vocal command such as "Pay this bill using this credit card" 2611. In such implementations, TVC will use the payment device specified (i.e., the credit card) to pay the entirety of the bill specified in the receipt.

[00224] FIGURE 27 shows a schematic diagram illustrating multiple parties initiating transactions in some embodiments of the TVC. In some implementations, one user with a payment device 2703, which has its own QR code 2704, may wish to only pay for part of a bill on a receipt 2705. In such implementations, the user may tap only the part(s) of the bill which contains the items the user ordered or wishes to pay for, and may give a vocal command such as "Pay this part of the bill using this credit card" 2701. In such implementations, a second user with a second payment device 2706, may also choose to pay for a part of the bill, and may also tap the part of the bill that the second user wishes to pay for. In such implementations, the electronic device 2708 may not

only record the gestures, but may create an AR overlay on its display, highlighting the parts of the bill that each person is agreeing to pay for 2705 in a different color representative of each user who has made a gesture and/or a vocal command. In such implementations, TVC may use the gestures recorded to determine which payment device to charge which items to, may calculate the total for each payment device, and may initiate the transactions for each payment device.

[00225] FIGURE 28 shows a schematic diagram illustrating a virtual closet in some embodiments of the TVC. In some implementations, the virtual closet 2801 may display an image 2802 of the user, as well as a selection of clothing 2803, accessories 2804, and/or the like. In some implementations, if the user selects an item 2805, a box will encompass the selection to indicate that it has been selected, and an image of the selection (scaled to the size of the user and edited in order to match the appearance of the user's image) may be superimposed on the image of the user. In some implementations, the user may have a real-time video feed of his/herself shown rather than an image, and the video feed may allow for the user to move and simulate the movement of the selected clothing on his or her body. In some implementations, TVC may be able to use images of the article of clothing, taken at different angles, to create a 3-dimensional model of the piece of clothing, such that the user may be able to see it move accurately as the user moves in the camera view, based on the clothing's type of cloth, length, and/or the like. In some implementations, the user may use buttons 2806 to scroll through the various options available based on the user's search criteria. The user may also be able to choose multiple options per article of clothing, such as other colors 2808, other sizes, other lengths, and/or the like.

[00226] FIGURE 29 shows a schematic diagram illustrating an augmented reality interface for receipts in some embodiments of the TVC. In some implementations, the user may use smart glasses, contacts, and/or a like device 2901 to interact with TVC using an AR interface 2902. The user may see in a heads-up display (HUD) overlay at the top of the user's view a set of buttons 2904 that may allow the user to choose a variety of different applications to use in conjunction with the viewed item (e.g., the user may be able to use a social network button to post the receipt, or another viewed item, to their social network profile, may use a store button to purchase a viewed item, and/or

the like). The user may be able to use the smart glasses to capture a gesture involving an electronic device and a receipt 2903. In some implementations, the user may also see an action prompt 2905, which may allow the user to capture the gesture and provide a voice command to the smart glasses, which may then inform TVC so that it may carry out the transaction.

[00227] FIGURE 30 shows a schematic diagram illustrating an augmented reality interface for products in some embodiments of the TVC. In some implementations, the user may use smart glasses 3001 in order to use AR overlay view 3002. In some implementations, a user may, after making a gesture with the user's electronic device and a vocal command indicating a desire to purchase a clothing item 3003, see a prompt in their AR HUD overlay 3004 which confirms their desire to purchase the clothing item, using the payment method specified. The user may be able to give the vocal command "Yes," which may prompt TVC to initiate the purchase of the specified clothing.

Additional Features of a TVC Electronic Wallet

[00228] FIGURE 31 shows a user interface diagram illustrating an overview of example features of virtual wallet applications in some embodiments of the TVC. FIGURE 31 shows an illustration of various exemplary features of a virtual wallet mobile application 3100. Some of the features displayed include a wallet 3101, social integration via TWITTER, FACEBOOK, etc., offers and loyalty 3103, snap mobile purchase 3104, alerts 3105 and security, setting and analytics 3196. These features are explored in further detail below. It is to be understood that the various example features described herein may be implemented on a consumer device and/or on a device of a consumer service representative assisting a consumer user during the consumer's shopping experience in a physical or virtual store. Examples of consumer devices and/or customer service representative device include, without limitation: personal computer(s), and/or various mobile device(s) including, but not limited to, cellular telephone(s), Smartphone(s) (e.g., iPhone®, Blackberry®, Android OS-based phones etc.), tablet computer(s) (e.g., Apple iPad™, HP Slate™, Motorola Xoom™, etc.), eBook

reader(s) (e.g., Amazon Kindle™, Barnes and Noble's Nook™ eReader, etc.), laptop computer(s), notebook(s), netbook(s), gaming console(s) (e.g., XBOX Live™, Nintendo® DS, Sony PlayStation® Portable, etc.), and/or the like. In various embodiments, a subset of the features described herein may be implemented on a consumer device, while another subset (which may have some overlapping features with those, in some embodiments) may be implemented on a consumer service representative's device.

[00229] FIGURES 32A-G show user interface diagrams illustrating example features of virtual wallet applications in a shopping mode, in some embodiments of the TVC. With reference to FIGURE 32A, some embodiments of the virtual wallet mobile app facilitate and greatly enhance the shopping experience of consumers. A variety of shopping modes, as shown in FIGURE 32A, may be available for a consumer to peruse. In one implementation, for example, a user may launch the shopping mode by selecting the shop icon 3210 at the bottom of the user interface. A user may type in an item in the search field 3212 to search and/or add an item to a cart 3211. A user may also use a voice activated shopping mode by saying the name or description of an item to be searched and/or added to the cart into a microphone 3213. In a further implementation, a user may also select other shopping options 3214 such as current items 3215, bills 3216, address book 3217, merchants 3218 and local proximity 3219.

[00230] In one embodiment, for example, a user may select the option current items 3215, as shown in the left most user interface of FIGURE 32A. When the current items 3215 option is selected, the middle user interface may be displayed. As shown, the middle user interface may provide a current list of items 3215a-h in a user's shopping cart 3211. A user may select an item, for example item 3215a, to view product description 3215j of the selected item and/or other items from the same merchant. The price and total payable information may also be displayed, along with a QR code 3215k that captures the information necessary to effect a snap mobile purchase transaction.

[00231] With reference to FIGURE 32B, in another embodiment, a user may select the bills 3216 option. Upon selecting the bills 3216 option, the user interface may display a list of bills and/or receipts 3216a-h from one or more merchants. Next to each of the bills, additional information such as date of visit, whether items from multiple stores are

present, last bill payment date, auto-payment, number of items, and/or the like may be displayed. In one example, the wallet shop bill 3216a dated January 20, 2011 may be selected. The wallet shop bill selection may display a user interface that provides a variety of information regarding the selected bill. For example, the user interface may display a list of items 3216k purchased, <<3216i>>, a total number of items and the corresponding value. For example, 7 items worth $102.54 were in the selected wallet shop bill. A user may now select any of the items and select buy again to add purchase the items. The user may also refresh offers 3216j to clear any invalid offers from last time and/or search for new offers that may be applicable for the current purchase. As shown in FIGURE 32B, a user may select two items for repeat purchase. Upon addition, a message 3216l may be displayed to confirm the addition of the two items, which makes the total number of items in the cart 14.

[00232] With reference to FIGURE 32C, in yet another embodiment, a user may select the address book option 3217 to view the address book 3217a which includes a list of contacts 3217b and make any money transfers or payments. In one embodiment, the address book may identify each contact using their names and available and/or preferred modes of payment. For example, a contact Amanda G. may be paid via social pay (e.g., via FACEBOOK) as indicated by the icon 3217c. In another example, money may be transferred to Brian S. via QR code as indicated by the QR code icon 3217d. In yet another example, Charles B. may accept payment via near field communication 3217e, Bluetooth 3217f and email 3217g. Payment may also be made via USB 3217h (e.g., by physically connecting two mobile devices) as well as other social channels such as TWITTER.

[00233] In one implementation, a user may select Joe P. for payment. Joe P., as shown in the user interface, has an email icon 3217g next to his name indicating that Joe P. accepts payment via email. When his name is selected, the user interface may display his contact information such as email, phone, etc. If a user wishes to make a payment to Joe P. by a method other than email, the user may add another transfer mode 3217j to his contact information and make a payment transfer. With reference to FIGURE 32D, the user may be provided with a screen 3217k where the user can enter an amount to send Joe, as well as add other text to provide Joe with context for the payment

transaction 3217l. The user can choose modes (e.g., SMS, email, social networking) via which Joe may be contacted via graphical user interface elements, 3217m. As the user types, the text entered may be provided for review within a GUI element 3217n. When the user has completed entering in the necessary information, the user can press the send button 3217o to send the social message to Joe. If Joe also has a virtual wallet application, Joe may be able to review 3217p social pay message within the app, or directly at the website of the social network (e.g., for Twitter™, Facebook®, etc.). Messages may be aggregated from the various social networks and other sources (e.g., SMS, email). The method of redemption appropriate for each messaging mode may be indicated along with the social pay message. In the illustration in FIGURE 32D, the SMS 3217q Joe received indicates that Joe can redeem the $5 obtained via SMS by replying to the SMS and entering the hash tag value '#1234'. In the same illustration, Joe has also received a message 3217r via Facebook®, which includes a URL link that Joe can activate to initiate redemption of the $25 payment.

[00234] With reference to FIGURE 32E, in some other embodiments, a user may select merchants 3218 from the list of options in the shopping mode to view a select list of merchants 3218a-e. In one implementation, the merchants in the list may be affiliated to the wallet, or have affinity relationship with the wallet. In another implementation, the merchants may include a list of merchants meeting a user-defined or other criteria. For example, the list may be one that is curated by the user, merchants where the user most frequently shops or spends more than an x amount of sum or shopped for three consecutive months, and/or the like. In one implementation, the user may further select one of the merchants, Amazon 3218a for example. The user may then navigate through the merchant's listings to find items of interest such as 3218f-j. Directly through the wallet and without visiting the merchant site from a separate page, the user may make a selection of an item 3218j from the catalog of Amazon 3218a. As shown in the right most user interface of FIGURE 32D, the selected item may then be added to cart. The message 3218k indicates that the selected item has been added to the cart, and updated number of items in the cart is now 13.

[00235] With reference to FIGURE 32F, in one embodiment, there may be a local proximity option 3219 which may be selected by a user to view a list of merchants that

are geographically in close proximity to the user. For example, the list of merchants 3219a-e may be the merchants that are located close to the user. In one implementation, the mobile application may further identify when the user in a store based on the user's location. For example, position icon 3219d may be displayed next to a store (e.g., Walgreens) when the user is in close proximity to the store. In one implementation, the mobile application may refresh its location periodically in case the user moved away from the store (e.g., Walgreens). In a further implementation, the user may navigate the offerings of the selected Walgreens store through the mobile application. For example, the user may navigate, using the mobile application, to items 3219f-j available on aisle 5 of Walgreens. In one implementation, the user may select corn 3219i from his or her mobile application to add to cart 3219k.

[00236] With reference to FIGURE 32G, in another embodiment, the local proximity option 3219 may include a store map and a real time map features among others. For example, upon selecting the Walgreens store, the user may launch an aisle map 3219l which displays a map 3219m showing the organization of the store and the position of the user (indicated by a yellow circle). In one implementation, the user may easily configure the map to add one or more other users (e.g., user's kids) to share each other's location within the store. In another implementation, the user may have the option to launch a "store view" similar to street views in maps. The store view 3219n may display images/video of the user's surrounding. For example, if the user is about to enter aisle 5, the store view map may show the view of aisle 5. Further the user may manipulate the orientation of the map using the navigation tool 3219o to move the store view forwards, backwards, right, left as well clockwise and counterclockwise rotation

[00237] FIGURES 33A-F show user interface diagrams illustrating example features of virtual wallet applications in a payment mode, in some embodiments of the TVC. With reference to FIGURE 33A, in one embodiment, the wallet mobile application may provide a user with a number of options for paying for a transaction via the wallet mode 3310. In one implementation, an example user interface 3311 for making a payment is shown. The user interface may clearly identify the amount 3312 and the currency 3313 for the transaction. The amount may be the amount payable and the currency may include real currencies such as dollars and euros, as well as virtual

currencies such as reward points. The amount of the transaction 3314 may also be prominently displayed on the user interface. The user may select the funds tab 3316 to select one or more forms of payment 3317, which may include various credit, debit, gift, rewards and/or prepaid cards. The user may also have the option of paying, wholly or in part, with reward points. For example, the graphical indicator 3318 on the user interface shows the number of points available, the graphical indicator 3319 shows the number of points to be used towards the amount due 234.56 and the equivalent 3320 of the number of points in a selected currency (USD, for example).

[00238] In one implementation, the user may combine funds from multiple sources to pay for the transaction. The amount 3315 displayed on the user interface may provide an indication of the amount of total funds covered so far by the selected forms of payment (e.g., Discover card and rewards points). The user may choose another form of payment or adjust the amount to be debited from one or more forms of payment until the amount 3315 matches the amount payable 3314. Once the amounts to be debited from one or more forms of payment are finalized by the user, payment authorization may begin.

[00239] In one implementation, the user may select a secure authorization of the transaction by selecting the cloak button 3322 to effectively cloak or anonymize some (e.g., pre-configured) or all identifying information such that when the user selects pay button 3321, the transaction authorization is conducted in a secure and anonymous manner. In another implementation, the user may select the pay button 3321 which may use standard authorization techniques for transaction processing. In yet another implementation, when the user selects the social button 3323, a message regarding the transaction may be communicated to one of more social networks (set up by the user) which may post or announce the purchase transaction in a social forum such as a wall post or a tweet. In one implementation, the user may select a social payment processing option 3323. The indicator 3324 may show the authorizing and sending social share data in progress.

[00240] In another implementation, a restricted payment mode 3325 may be activated for certain purchase activities such as prescription purchases. The mode may be activated in accordance with rules defined by issuers, insurers, merchants, payment

processor and/or other entities to facilitate processing of specialized goods and services. In this mode, the user may scroll down the list of forms of payments 3326 under the funds tab to select specialized accounts such as a flexible spending account (FSA) 3327, health savings account (HAS), and/or the like and amounts to be debited to the selected accounts. In one implementation, such restricted payment mode 1925 processing may disable social sharing of purchase information.

[00241] In one embodiment, the wallet mobile application may facilitate importing of funds via the import funds user interface 3328. For example, a user who is unemployed may obtain unemployment benefit fund 3329 via the wallet mobile application. In one implementation, the entity providing the funds may also configure rules for using the fund as shown by the processing indicator message 3330. The wallet may read and apply the rules prior, and may reject any purchases with the unemployment funds that fail to meet the criteria set by the rules. Example criteria may include, for example, merchant category code (MCC), time of transaction, location of transaction, and/or the like. As an example, a transaction with a grocery merchant having MCC 5411 may be approved, while a transaction with a bar merchant having an MCC 5813 may be refused.

[00242] With reference to FIGURE 33B, in one embodiment, the wallet mobile application may facilitate dynamic payment optimization based on factors such as user location, preferences and currency value preferences among others. For example, when a user is in the United States, the country indicator 3331 may display a flag of the United States and may set the currency 3333 to the United States. In a further implementation, the wallet mobile application may automatically rearrange the order in which the forms of payments 3335 are listed to reflect the popularity or acceptability of various forms of payment. In one implementation, the arrangement may reflect the user's preference, which may not be changed by the wallet mobile application.

[00243] Similarly, when a German user operates a wallet in Germany, the mobile wallet application user interface may be dynamically updated to reflect the country of operation 3332 and the currency 3334. In a further implementation, the wallet application may rearrange the order in which different forms of payment 3336 are listed based on their acceptance level in that country. Of course, the order of these forms of

payments may be modified by the user to suit his or her own preferences.

[00244] With reference to FIGURE 33C, in one embodiment, the payee tab 3337 in the wallet mobile application user interface may facilitate user selection of one or more payees receiving the funds selected in the funds tab. In one implementation, the user interface may show a list of all payees 3338 with whom the user has previously transacted or available to transact. The user may then select one or more payees. The payees 3338 may include larger merchants such as Amazon.com Inc., and individuals such as Jane P. Doe. Next to each payee name, a list of accepted payment modes for the payee may be displayed. In one implementation, the user may select the payee Jane P. Doe 3339 for receiving payment. Upon selection, the user interface may display additional identifying information relating to the payee.

[00245] With reference to FIGURE 33D, in one embodiment, the mode tab 1940 may facilitate selection of a payment mode accepted by the payee. A number of payment modes may be available for selection. Example modes include, blue tooth 3341, wireless 3342, snap mobile by user-obtained QR code 3343, secure chip 3344, TWITTER 3345, near-field communication (NFC) 3346, cellular 3347, snap mobile by user-provided QR code 3348, USB 3349 and FACEBOOK 3350, among others. In one implementation, only the payment modes that are accepted by the payee may be selectable by the user. Other non-accepted payment modes may be disabled.

[00246] With reference to FIGURE 33E, in one embodiment, the offers tab 3351 may provide real-time offers that are relevant to items in a user's cart for selection by the user. The user may select one or more offers from the list of applicable offers 3352 for redemption. In one implementation, some offers may be combined, while others may not. When the user selects an offer that may not be combined with another offer, the unselected offers may be disabled. In a further implementation, offers that are recommended by the wallet application's recommendation engine may be identified by an indicator, such as the one shown by 3353. In a further implementation, the user may read the details of the offer by expanding the offer row as shown by 3354 in the user interface.

[00247] With reference to FIGURE 33F, in one embodiment, the social tab 3355

may facilitate integration of the wallet application with social channels 3356. In one implementation, a user may select one or more social channels 3356 and may sign in to the selected social channel from the wallet application by providing to the wallet application the social channel user name and password 3357 and signing in 3358. The user may then use the social button 3359 to send or receive money through the integrated social channels. In a further implementation, the user may send social share data such as purchase information or links through integrated social channels. In another embodiment, the user supplied login credentials may allow TVC to engage in interception parsing.

[00248] FIGURE 34 shows a user interface diagram illustrating example features of virtual wallet applications, in a history mode, in some embodiments of the TVC. In one embodiment, a user may select the history mode 3410 to view a history of prior purchases and perform various actions on those prior purchases. For example, a user may enter a merchant identifying information such as name, product, MCC, and/or the like in the search bar 3411. In another implementation, the user may use voice activated search feature by clicking on the microphone icon 3414. The wallet application may query the storage areas in the mobile device or elsewhere (e.g., one or more databases and/or tables remote from the mobile device) for transactions matching the search keywords. The user interface may then display the results of the query such as transaction 3415. The user interface may also identify the date 3412 of the transaction, the merchants and items 3413 relating to the transaction, a barcode of the receipt confirming that a transaction was made, the amount of the transaction and any other relevant information.

[00249] In one implementation, the user may select a transaction, for example transaction 3415, to view the details of the transaction. For example, the user may view the details of the items associated with the transaction and the amounts 3416 of each item. In a further implementation, the user may select the show option 3417 to view actions 3418 that the user may take in regards to the transaction or the items in the transaction. For example, the user may add a photo to the transaction (e.g., a picture of the user and the iPad the user bought). In a further implementation, if the user previously shared the purchase via social channels, a post including the photo may be

generated and sent to the social channels for publishing. In one implementation, any sharing may be optional, and the user, who did not share the purchase via social channels, may still share the photo through one or more social channels of his or her choice directly from the history mode of the wallet application. In another implementation, the user may add the transaction to a group such as company expense, home expense, travel expense or other categories set up by the user. Such grouping may facilitate year-end accounting of expenses, submission of work expense reports, submission for value added tax (VAT) refunds, personal expenses, and/or the like. In yet another implementation, the user may buy one or more items purchased in the transaction. The user may then execute a transaction without going to the merchant catalog or site to find the items. In a further implementation, the user may also cart one or more items in the transaction for later purchase.

[00250] The history mode, in another embodiment, may offer facilities for obtaining and displaying ratings 3419 of the items in the transaction. The source of the ratings may be the user, the user's friends (e.g., from social channels, contacts, etc.), reviews aggregated from the web, and/or the like. The user interface in some implementations may also allow the user to post messages to other users of social channels (e.g., TWITTER or FACEBOOK). For example, the display area 3420 shows FACEBOOK message exchanges between two users. In one implementation, a user may share a link via a message 3421. Selection of such a message having embedded link to a product may allow the user to view a description of the product and/or purchase the product directly from the history mode.

[00251] In one embodiment, the history mode may also include facilities for exporting receipts. The export receipts pop up 3422 may provide a number of options for exporting the receipts of transactions in the history. For example, a user may use one or more of the options 3425, which include save (to local mobile memory, to server, to a cloud account, and/or the like), print to a printer, fax, email, and/or the like. The user may utilize his or her address book 3423 to look up email or fax number for exporting. The user may also specify format options 3424 for exporting receipts. Example format options may include, without limitation, text files (.doc, .txt, .rtf, iif, etc.), spreadsheet (.csv, .xls, etc.), image files (.jpg, .tff, .png, etc.), portable document format (.pdf),

postscript (.ps), and/or the like. The user may then click or tap the export button 3427 to initiate export of receipts.

[00252] FIGURES 35A-E show user interface diagrams illustrating example features of virtual wallet applications in a snap mode, in some embodiments of the TVC. With reference to FIGURE 35A, in one embodiment, a user may select the snap mode 2110 to access its snap features. The snap mode may handle any machine-readable representation of data. Examples of such data may include linear and 2D bar codes such as UPC code and QR codes. These codes may be found on receipts, product packaging, and/or the like. The snap mode may also process and handle pictures of receipts, products, offers, credit cards or other payment devices, and/or the like. An example user interface in snap mode is shown in FIGURE 35A. A user may use his or her mobile phone to take a picture of a QR code 3515 and/or a barcode 3514. In one implementation, the bar 3513 and snap frame 3515 may assist the user in snapping codes properly. For example, the snap frame 3515, as shown, does not capture the entirety of the code 3516. As such, the code captured in this view may not be resolvable as information in the code may be incomplete. This is indicated by the message on the bar 3513 that indicates that the snap mode is still seeking the code. When the code 3516 is completely framed by the snap frame 3515, the bar message may be updated to, for example, "snap found." Upon finding the code, in one implementation, the user may initiate code capture using the mobile device camera. In another implementation, the snap mode may automatically snap the code using the mobile device camera.

[00253] With reference to FIGURE 35B, in one embodiment, the snap mode may facilitate payment reallocation post transaction. For example, a user may buy grocery and prescription items from a retailer Acme Supermarket. The user may, inadvertently or for ease of checkout for example, use his or her Visa card to pay for both grocery and prescription items. However, the user may have an FSA account that could be used to pay for prescription items, and which would provide the user tax benefits. In such a situation, the user may use the snap mode to initiate transaction reallocation.

[00254] As shown, the user may enter a search term (e.g., bills) in the search bar 2121. The user may then identify in the tab 3522 the receipt 3523 the user wants to reallocate. Alternatively, the user may directly snap a picture of a barcode on a receipt,

and the snap mode may generate and display a receipt 3523 using information from the barcode. The user may now reallocate 3525. In some implementations, the user may also dispute the transaction 3524 or archive the receipt 3526.

[00255] In one implementation, when the reallocate button 3525 is selected, the wallet application may perform optical character recognition (OCR) of the receipt. Each of the items in the receipt may then be examined to identify one or more items which could be charged to which payment device or account for tax or other benefits such as cash back, reward points, etc. In this example, there is a tax benefit if the prescription medication charged to the user's Visa card is charged to the user's FSA. The wallet application may then perform the reallocation as the back end. The reallocation process may include the wallet contacting the payment processor to credit the amount of the prescription medication to the Visa card and debit the same amount to the user's FSA account. In an alternate implementation, the payment processor (e.g., Visa or MasterCard) may obtain and OCR the receipt, identify items and payment accounts for reallocation and perform the reallocation. In one implementation, the wallet application may request the user to confirm reallocation of charges for the selected items to another payment account. The receipt 3527 may be generated after the completion of the reallocation process. As discussed, the receipt shows that some charges have been moved from the Visa account to the FSA.

[00256] With reference to FIGURE 35C, in one embodiment, the snap mode may facilitate payment via pay code such as barcodes or QR codes. For example, a user may snap a QR code of a transaction that is not yet complete. The QR code may be displayed at a merchant POS terminal, a web site, or a web application and may be encoded with information identifying items for purchase, merchant details and other relevant information. When the user snaps such as a QR code, the snap mode may decode the information in the QR code and may use the decoded information to generate a receipt 3532. Once the QR code is identified, the navigation bar 3531 may indicate that the pay code is identified. The user may now have an option to add to cart 3533, pay with a default payment account 3534 or pay with wallet 3535.

[00257] In one implementation, the user may decide to pay with default 3534. The wallet application may then use the user's default method of payment, in this example

the wallet, to complete the purchase transaction. Upon completion of the transaction, a receipt may be automatically generated for proof of purchase. The user interface may also be updated to provide other options for handling a completed transaction. Example options include social 3537 to share purchase information with others, reallocate 3538 as discussed with regard to FIGURE 35B, and archive 3539 to store the receipt.

[00258] With reference to FIGURE 35D, in one embodiment, the snap mode may also facilitate offer identification, application and storage for future use. For example, in one implementation, a user may snap an offer code 3541 (e.g., a bar code, a QR code, and/or the like). The wallet application may then generate an offer text 3542 from the information encoded in the offer code. The user may perform a number of actions on the offer code. For example, the user use the find button 3543 to find all merchants who accept the offer code, merchants in the proximity who accept the offer code, products from merchants that qualify for the offer code, and/or the like. The user may also apply the offer code to items that are currently in the cart using the add to cart button 3544. Furthermore, the user may also save the offer for future use by selecting the save button 3545.

[00259] In one implementation, after the offer or coupon 3546 is applied, the user may have the option to find qualifying merchants and/or products using find, the user may go to the wallet using 3548, and the user may also save the offer or coupon 3546 for later use.

[00260] With reference to FIGURE 35E, in one embodiment, the snap mode may also offer facilities for adding a funding source to the wallet application. In one implementation, a pay card such as a credit card, debit card, pre-paid card, smart card and other pay accounts may have an associated code such as a bar code or QR code. Such a code may have encoded therein pay card information including, but not limited to, name, address, pay card type, pay card account details, balance amount, spending limit, rewards balance, and/or the like. In one implementation, the code may be found on a face of the physical pay card. In another implementation, the code may be obtained by accessing an associated online account or another secure location. In yet another implementation, the code may be printed on a letter accompanying the pay card. A user, in one implementation, may snap a picture of the code. The wallet application may

identify the pay card 3551 and may display the textual information 3552 encoded in the pay card. The user may then perform verification of the information 3552 by selecting the verify button 3553. In one implementation, the verification may include contacting the issuer of the pay card for confirmation of the decoded information 3552 and any other relevant information. In one implementation, the user may add the pay card to the wallet by selecting the 'add to wallet' button 3554. The instruction to add the pay card to the wallet may cause the pay card to appear as one of the forms of payment under the funds tab 3316 discussed in FIGURE 33A. The user may also cancel importing of the pay card as a funding source by selecting the cancel button 3555. When the pay card has been added to the wallet, the user interface may be updated to indicate that the importing is complete via the notification display 3556. The user may then access the wallet 3557 to begin using the added pay card as a funding source.

[00261] FIGURE 36 shows a user interface diagram illustrating example features of virtual wallet applications, in an offers mode, in some embodiments of the TVC. In some implementations, the TVC may allow a user to search for offers for products and/or services from within the virtual wallet mobile application. For example, the user may enter text into a graphical user interface ("GUI") element 3611, or issue voice commands by activating GUI element 3612 and speaking commands into the device. In some implementations, the TVC may provide offers based on the user's prior behavior, demographics, current location, current cart selection or purchase items, and/or the like. For example, if a user is in a brick-and-mortar store, or an online shopping website, and leaves the (virtual) store, then the merchant associated with the store may desire to provide a sweetener deal to entice the consumer back into the (virtual) store. The merchant may provide such an offer 3613. For example, the offer may provide a discount, and may include an expiry time. In some implementations, other users may provide gifts (e.g., 3614) to the user, which the user may redeem. In some implementations, the offers section may include alerts as to payment of funds outstanding to other users (e.g., 3615). In some implementations, the offers section may include alerts as to requesting receipt of funds from other users (e.g., 3616). For example, such a feature may identify funds receivable from other applications (e.g., mail, calendar, tasks, notes, reminder programs, alarm, etc.), or by a manual entry by

the user into the virtual wallet application. In some implementations, the offers section may provide offers from participating merchants in the TVC, e.g., 3617-3619, 3620. These offers may sometimes be assembled using a combination of participating merchants, e.g., 3617. In some implementations, the TVC itself may provide offers for users contingent on the user utilizing particular payment forms from within the virtual wallet application, e.g., 3620.

[00262] FIGURES 37A-B show user interface diagrams illustrating example features of virtual wallet applications, in a security and privacy mode, in some embodiments of the TVC. With reference to FIGURE 37A, in some implementations, the user may be able to view and/or modify the user profile and/or settings of the user, e.g., by activating a user interface element. For example, the user may be able to view/modify a user name (e.g., 3711a-b), account number (e.g., 3712a-b), user security access code (e.g., 3713-b), user pin (e.g., 3714-b), user address (e.g., 3715-b), social security number associated with the user (e.g., 3716-b), current device GPS location (e.g., 3717-b), user account of the merchant in whose store the user currently is (e.g., 3718-b), the user's rewards accounts (e.g., 3719-b), and/or the like. In some implementations, the user may be able to select which of the data fields and their associated values should be transmitted to facilitate the purchase transaction, thus providing enhanced data security for the user. For example, in the example illustration in FIGURE 37A, the user has selected the name 3711a, account number 3712a, security code 3713a, merchant account ID 3718a and rewards account ID 3719a as the fields to be sent as part of the notification to process the purchase transaction. In some implementations, the user may toggle the fields and/or data values that are sent as part of the notification to process the purchase transactions. In some implementations, the app may provide multiple screens of data fields and/or associated values stored for the user to select as part of the purchase order transmission. In some implementations, the app may provide the TVC with the GPS location of the user. Based on the GPS location of the user, the TVC may determine the context of the user (e.g., whether the user is in a store, doctor's office, hospital, postal service office, etc.). Based on the context, the user app may present the appropriate fields to the user, from which the user may select fields and/or field values to send as part of the purchase order transmission.

[00263] For example, a user may go to doctor's office and desire to pay the co-pay for doctor's appointment. In addition to basic transactional information such as account number and name, the app may provide the user the ability to select to transfer medical records, health information, which may be provided to the medical provider, insurance company, as well as the transaction processor to reconcile payments between the parties. In some implementations, the records may be sent in a Health Insurance Portability and Accountability Act (HIPAA)-compliant data format and encrypted, and only the recipients who are authorized to view such records may have appropriate decryption keys to decrypt and view the private user information.

[00264] With reference to FIGURE 37B, in some implementations, the app executing on the user's device may provide a "VerifyChat" feature for fraud prevention. For example, the TVC may detect an unusual and/or suspicious transaction. The TVC may utilize the VerifyChat feature to communicate with the user, and verify the authenticity of the originator of the purchase transaction. In various implementations, the TVC may send electronic mail message, text (SMS) messages, Facebook® messages, Twitter™ tweets, text chat, voice chat, video chat (e.g., Apple FaceTime), and/or the like to communicate with the user. For example, the TVC may initiate a video challenge for the user, e.g., 3721. For example, the user may need to present him/her-self via a video chat, e.g., 3722. In some implementations, a customer service representative, e.g., agent 3724, may manually determine the authenticity of the user using the video of the user. In some implementations, the TVC may utilize face, biometric and/or like recognition (e.g., using pattern classification techniques) to determine the identity of the user. In some implementations, the app may provide reference marker (e.g., cross-hairs, target box, etc.), e.g., 3723, so that the user may the video to facilitate the TVC's automated recognition of the user. In some implementations, the user may not have initiated the transaction, e.g., the transaction is fraudulent. In such implementations, the user may cancel the challenge. The TVC may then cancel the transaction, and/or initiate fraud investigation procedures on behalf of the user.

[00265] In some implementations, the TVC may utilize a text challenge procedure to verify the authenticity of the user, e.g., 3725. For example, the TVC may communicate with the user via text chat, SMS messages, electronic mail, Facebook®

messages, Twitter™ tweets, and/or the like. The TVC may pose a challenge question, e.g., 3726, for the user. The app may provide a user input interface element(s) (e.g., virtual keyboard 3728) to answer the challenge question posed by the TVC. In some implementations, the challenge question may be randomly selected by the TVC automatically; in some implementations, a customer service representative may manually communicate with the user. In some implementations, the user may not have initiated the transaction, e.g., the transaction is fraudulent. In such implementations, the user may cancel the text challenge. The TVC may cancel the transaction, and/or initiate fraud investigation on behalf of the user.

[00266] FIGURE 38 shows a data flow diagram illustrating an example user purchase checkout procedure in some embodiments of the TVC. In some embodiments, a user, e.g., 3801a, may desire to purchase a product, service, offering, and/or the like ("product"), from a merchant via a merchant online site or in the merchant's store. In some embodiments, the user 3801a may be a customer service representative in a store, assisting a consumer in their shopping experience. The user may communicate with a merchant/acquirer ("merchant") server, e.g., 3803a, via a client such as, but not limited to: a personal computer, mobile device, television, point-of-sale terminal, kiosk, ATM, and/or the like (e.g., 3802). For example, the user may provide user input, e.g., checkout input 3811, into the client indicating the user's desire to purchase the product. In various embodiments, the user input may include, but not be limited to: a single tap (e.g., a one-tap mobile app purchasing embodiment) of a touchscreen interface, keyboard entry, card swipe, activating a RFID/NFC enabled hardware device (e.g., electronic card having multiple accounts, smartphone, tablet, etc.) within the user device, mouse clicks, depressing buttons on a joystick/game console, voice commands, single/multi-touch gestures on a touch-sensitive interface, touching user interface elements on a touch-sensitive display, and/or the like. As an example, a user in a merchant store may scan a product barcode of the product via a barcode scanner at a point-of-sale terminal. As another example, the user may select a product from a webpage catalog on the merchant's website, and add the product to a virtual shopping cart on the merchant's website. The user may then indicate the user's desire to checkout the items in the (virtual) shopping cart. For example, the user may activate a user

interface element provided by the client to indicate the user's desire to complete the user purchase checkout. The client may generate a checkout request, e.g., 3812, and provide the checkout request, e.g., 3813, to the merchant server. For example, the client may provide a (Secure) Hypertext Transfer Protocol ("HTTP(S)") POST message including the product details for the merchant server in the form of data formatted according to the eXtensible Markup Language ("XML"). An example listing of a checkout request 3812, substantially in the form of a HTTP(S) POST message including XML-formatted data, is provided below:

```
POST /checkoutrequest.php HTTP/1.1
Host: www.merchant.com
Content-Type: Application/XML
Content-Length: 667
<?XML version = "1.0" encoding = "UTF-8"?>
<checkout_request>
    <checkout_ID>4NFU4RG94</checkout_ID>
    <timestamp>2011-02-22 15:22:43</timestamp>
    <purchase_detail>
          <num_products>5</num_products>
          <product_ID>AE95049324</product_ID>
          <product_ID>MD09808755</product_ID>
          <product_ID>OC12345764</product_ID>
          <product_ID>KE76549043</product_ID>
          <product_ID>SP27674509</product_ID>
    </purchase_detail>
<!--optional parameters-->
    <user_ID>john.q.public@gmail.com</user_ID>
    <PoS_client_detail>
          <client_IP>192.168.23.126</client_IP>
          <client_type>smartphone</client_type>
          <client_model>HTC Hero</client_model>
          <OS>Android 2.2</OS>
          <app_installed_flag>true</app_installed_flag>
    </PoS_client_detail>
</checkout_request>
```

[00267] In some embodiments, the merchant server may obtain the checkout request from the client, and extract the checkout detail (e.g., XML data) from the checkout request. For example, the merchant server may utilize a parser such as the

example parsers described below in the discussion with reference to FIGURE 44. Based on parsing the checkout request 3812, the merchant server may extract product data (e.g., product identifiers), as well as available PoS client data, from the checkout request. In some embodiments, using the product data, the merchant server may query, e.g., 3814, a merchant/acquirer ("merchant") database, e.g., 3803b, to obtain product data, e.g., 3815, such as product information, product pricing, sales tax, offers, discounts, rewards, and/or other information to process the purchase transaction and/or provide value-added services for the user. For example, the merchant database may be a relational database responsive to Structured Query Language ("SQL") commands. The merchant server may execute a hypertext preprocessor ("PHP") script including SQL commands to query a database table (such as FIGURE 44, Products 4419l) for product data. An example product data query 3814, substantially in the form of PHP/SQL commands, is provided below:

```
<?PHP
header('Content-Type: text/plain');
mysql_connect("254.93.179.112",$DBserver,$password); // access database server
mysql_select_db("TVC_DB.SQL"); // select database table to search
//create query
$query = "SELECT product_title product_attributes_list product_price
    tax_info_list related_products_list offers_list discounts_list rewards_list
    merchants_list merchant_availability_list FROM ProductsTable WHERE
    product_ID LIKE '%' $prodID";
$result = mysql_query($query); // perform the search query
mysql_close("TVC_DB.SQL"); // close database access
?>
```

[00268] In some embodiments, in response to obtaining the product data, the merchant server may generate, e.g., 3816, checkout data to provide for the PoS client. In some embodiments, such checkout data, e.g., 3817, may be embodied, in part, in a HyperText Markup Language ("HTML") page including data for display, such as product detail, product pricing, total pricing, tax information, shipping information, offers, discounts, rewards, value-added service information, etc., and input fields to provide payment information to process the purchase transaction, such as account holder name, account number, billing address, shipping address, tip amount, etc. In some embodiments, the checkout data may be embodied, in part, in a Quick Response

("QR") code image that the PoS client can display, so that the user may capture the QR code using a user's device to obtain merchant and/or product data for generating a purchase transaction processing request. In some embodiments, a user alert mechanism may be built into the checkout data. For example, the merchant server may embed a URL specific to the transaction into the checkout data. In some embodiments, the alerts URL may further be embedded into optional level 3 data in card authorization requests, such as those discussed further below with reference to FIGURES 40-41. The URL may point to a webpage, data file, executable script, etc., stored on the merchant's server dedicated to the transaction that is the subject of the card authorization request. For example, the object pointed to by the URL may include details on the purchase transaction, e.g., products being purchased, purchase cost, time expiry, status of order processing, and/or the like. Thus, the merchant server may provide to the payment network the details of the transaction by passing the URL of the webpage to the payment network. In some embodiments, the payment network may provide notifications to the user, such as a payment receipt, transaction authorization confirmation message, shipping notification and/or the like. In such messages, the payment network may provide the URL to the user device. The user may navigate to the URL on the user's device to obtain alerts regarding the user's purchase, as well as other information such as offers, coupons, related products, rewards notifications, and/or the like. An example listing of a checkout data 3817, substantially in the form of XML-formatted data, is provided below:

```
<?XML version = "1.0" encoding = "UTF-8"?>
<checkout_data>
    <session_ID>4NFU4RG94</session_ID>
    <timestamp>2011-02-22 15:22:43</timestamp>
    <expiry_lapse>00:00:30</expiry_lapse>
    <transaction_cost>$34.78</transaction_cost>
    <alerts_URL>www.merchant.com/shopcarts.php?sessionID=4NFU4RG94</alerts_URL>
    <!--optional data-->
    <user_ID>john.q.public@gmail.com</user_ID>
    <client_details>
          <client_IP>192.168.23.126</client_IP>
          <client_type>smartphone</client_type>
          <client_model>HTC Hero</client_model>
          <OS>Android 2.2</OS>
```

```
            <app_installed_flag>true</app_installed_flag>
      </client_details>
      <purchase_details>
            <num_products>1</num_products>
            <product>
                  <product_type>book</product_type>
                  <product_params>
                        <product_title>XML for dummies</product_title>
                        <ISBN>938-2-14-168710-0</ISBN>
                        <edition>2nd ed.</edition>
                        <cover>hardbound</cover>
                        <seller>bestbuybooks</seller>
                  </product_params>
                  <quantity>1</quantity>
            </product>
      </purchase_details>
      <offers_details>
            <num_offers>1</num_offers>
            <product>
                  <product_type>book</product_type>
                  <product_params>
                        <product_title>Here's more XML</product_title>
                        <ISBN>922-7-14-165720-1</ISBN>
                        <edition>1nd ed.</edition>
                        <cover>hardbound</cover>
                        <seller>digibooks</seller>
                  </product_params>
                  <quantity>1</quantity>
            </product>
      </offers_details>
      <secure_element>www.merchant.com/securedyn/0394733/123.png</secure_element>
      <merchant_params>
            <merchant_id>3FBCR4INC</merchant_id>
            <merchant_name>Books & Things, Inc.</merchant_name>
            <merchant_auth_key>1NNF484MCP59CHB27365</merchant_auth_key>
      </merchant_params>
  <checkout_data>
```

[00269] Upon obtaining the checkout data, e.g., 3817, the PoS client may render and display, e.g., 3818, the checkout data for the user.

[00270] FIGURE 39 shows a logic flow diagram illustrating example aspects of a

user purchase checkout in some embodiments of the TVC, e.g., a User Purchase Checkout ("UPC") component 3900. In some embodiments, a user may desire to purchase a product, service, offering, and/or the like ("product"), from a merchant via a merchant online site or in the merchant's store. The user may communicate with a merchant/acquirer ("merchant") server via a PoS client. For example, the user may provide user input, e.g., 3901, into the client indicating the user's desire to purchase the product. The client may generate a checkout request, e.g., 3902, and provide the checkout request to the merchant server. In some embodiments, the merchant server may obtain the checkout request from the client, and extract the checkout detail (e.g., XML data) from the checkout request. For example, the merchant server may utilize a parser such as the example parsers described below in the discussion with reference to FIGURE 44. Based on parsing the checkout request, the merchant server may extract product data (e.g., product identifiers), as well as available PoS client data, from the checkout request. In some embodiments, using the product data, the merchant server may query, e.g., 3903, a merchant/acquirer ("merchant") database to obtain product data, e.g., 3904, such as product information, product pricing, sales tax, offers, discounts, rewards, and/or other information to process the purchase transaction and/or provide value-added services for the user. In some embodiments, in response to obtaining the product data, the merchant server may generate, e.g., 3905, checkout data to provide, e.g., 3906, for the PoS client. Upon obtaining the checkout data, the PoS client may render and display, e.g., 3907, the checkout data for the user.

[00271] FIGURES 40A-B show data flow diagrams illustrating an example purchase transaction authorization procedure in some embodiments of the TVC. With reference to FIGURE 40A, in some embodiments, a user, e.g., 4001a, may wish to utilize a virtual wallet account to purchase a product, service, offering, and/or the like ("product"), from a merchant via a merchant online site or in the merchant's store. The user may utilize a physical card, or a user wallet device, e.g., 4001b, to access the user's virtual wallet account. For example, the user wallet device may be a personal/laptop computer, cellular telephone, smartphone, tablet, eBook reader, netbook, gaming console, and/or the like. The user may provide a wallet access input, e.g., 4011 into the user wallet device. In various embodiments, the user input may include, but not be

limited to: a single tap (e.g., a one-tap mobile app purchasing embodiment) of a touchscreen interface, keyboard entry, card swipe, activating a RFID/NFC enabled hardware device (e.g., electronic card having multiple accounts, smartphone, tablet, etc.) within the user device, mouse clicks, depressing buttons on a joystick/game console, voice commands, single/multi-touch gestures on a touch-sensitive interface, touching user interface elements on a touch-sensitive display, and/or the like. In some embodiments, the user wallet device may authenticate the user based on the user's wallet access input, and provide virtual wallet features for the user.

[00272] In some embodiments, upon authenticating the user for access to virtual wallet features, the user wallet device may provide a transaction authorization input, e.g., 4014, to a point-of-sale ("PoS") client, e.g., 4002. For example, the user wallet device may communicate with the PoS client via Bluetooth, Wi-Fi, cellular communication, one- or two-way near-field communication ("NFC"), and/or the like. In embodiments where the user utilizes a plastic card instead of the user wallet device, the user may swipe the plastic card at the PoS client to transfer information from the plastic card into the PoS client. For example, the PoS client may obtain, as transaction authorization input 4014, track 1 data from the user's plastic card (e.g., credit card, debit card, prepaid card, charge card, etc.), such as the example track 1 data provided below:

```
%B123456789012345^PUBLIC/J.Q.^99011200000000000000**901******?*
(wherein '123456789012345' is the card number of 'J.Q. Public' and has a CVV
   number of 901. '990112' is a service code, and *** represents decimal digits
   which change randomly each time the card is used.)
```

[00273] In embodiments where the user utilizes a user wallet device, the user wallet device may provide payment information to the PoS client, formatted according to a data formatting protocol appropriate to the communication mechanism employed in the communication between the user wallet device and the PoS client. An example listing of transaction authorization input 4014, substantially in the form of XML-formatted data, is provided below:

```
<?XML version = "1.0" encoding = "UTF-8"?>
<transaction_authorization_input>
   <payment_data>
         <account>
```

```
                    <charge_priority>1</charge_priority>
                    <charge_ratio>40%</charge_ratio>
                    <account_number>123456789012345</account_number>
                    <account_name>John Q. Public</account_name>
                    <bill_add>987 Green St #456, Chicago, IL 94652</bill_add>
                    <ship_add>987 Green St #456, Chicago, IL 94652</ship_add>
                    <CVV>123</CVV>
             </account>
             <account>
                    <charge_priority>1</charge_priority>
                    <charge_ratio>60%</charge_ratio>
                    <account_number>234567890123456</account_number>
                    <account_name>John Q. Public</account_name>
                    <bill_add>987 Green St #456, Chicago, IL 94652</bill_add>
                    <ship_add>987 Green St #456, Chicago, IL 94652</ship_add>
                    <CVV>173</CVV>
             </account>
             <account>
                    <charge_priority>2</charge_priority>
                    <charge_ratio>100%</charge_ratio>
                    <account_number>345678901234567</account_number>
                    <account_name>John Q. Public</account_name>
                    <bill_add>987 Green St #456, Chicago, IL 94652</bill_add>
                    <ship_add>987 Green St #456, Chicago, IL 94652</ship_add>
                    <CVV>695</CVV>
             </account>
      </payment_data>
      <!--optional data-->
      <timestamp>2011-02-22 15:22:43</timestamp>
      <expiry_lapse>00:00:30</expiry_lapse>
      <secure_key>044532907059862348795654332 2</secure_key>
      <alerts_track_flag>TRUE</alerts_track_flag>
      <wallet_device_details>
             <device_IP>192.168.23.126</client_IP>
             <device_type>smartphone</client_type>
             <device_model>HTC Hero</client_model>
             <OS>Android 2.2</OS>
             <wallet_app_installed_flag>true</wallet_app_installed_flag>
      </wallet_device_details>
</transaction_authorization_input>
```

[00274] In some embodiments, the PoS client may generate a card authorization

request, e.g., 4015, using the obtained transaction authorization input from the user wallet device, and/or product/checkout data (see, e.g., FIGURE 38, 3815-3817). An example listing of a card authorization request 4015, substantially in the form of a HTTP(S) POST message including XML-formatted data, is provided below:

```
POST /authorizationrequests.php HTTP/1.1
Host: www.acquirer.com
Content-Type: Application/XML
Content-Length: 1306
<?XML version = "1.0" encoding = "UTF-8"?>
<card_authorization_request>
    <session_ID>4NFU4RG94</order_ID>
    <timestamp>2011-02-22 15:22:43</timestamp>
    <expiry>00:00:30</expiry>
    <alerts_URL>www.merchant.com/shopcarts.php?sessionID=AEBB4356</alerts_URL>
    <!--optional data-->
    <user_ID>john.q.public@gmail.com</user_ID>
    <PoS__details>
        <PoS_IP>192.168.23.126</client_IP>
        <PoS_type>smartphone</client_type>
        <PoS_model>HTC Hero</client_model>
        <OS>Android 2.2</OS>
        <app_installed_flag>true</app_installed_flag>
    </PoS_details>
    <purchase_details>
        <num_products>1</num_products>
        <product>
            <product_type>book</product_type>
            <product_params>
                <product_title>XML for dummies</product_title>
                <ISBN>938-2-14-168710-0</ISBN>
                <edition>2nd ed.</edition>
                <cover>hardbound</cover>
                <seller>bestbuybooks</seller>
            </product_params>
            <quantity>1</quantity>
        </product>
    </purchase_details>
    <merchant_params>
        <merchant_id>3FBCR4INC</merchant_id>
        <merchant_name>Books & Things, Inc.</merchant_name>
```

```
            <merchant_auth_key>1NNF484MCP59CHB27365</merchant_auth_key>
      </merchant_params>
      <account_params>
            <account_name>John Q. Public</account_name>
            <account_type>credit</account_type>
            <account_num>123456789012345</account_num>
            <billing_address>123 Green St., Norman, OK 98765</billing_address>
            <phone>123-456-7809</phone>
            <sign>/jqp/</sign>
            <confirm_type>email</confirm_type>
            <contact_info>john.q.public@gmail.com</contact_info>
      </account_params>
      <shipping_info>
            <shipping_adress>same as billing</shipping_address>
            <ship_type>expedited</ship_type>
            <ship_carrier>FedEx</ship_carrier>
            <ship_account>123-45-678</ship_account>
            <tracking_flag>true</tracking_flag>
            <sign_flag>false</sign_flag>
      </shipping_info>
  </card_authorization_request>
```

[00275] In some embodiments, the card authorization request generated by the user device may include a minimum of information required to process the purchase transaction. For example, this may improve the efficiency of communicating the purchase transaction request, and may also advantageously improve the privacy protections provided to the user and/or merchant. For example, in some embodiments, the card authorization request may include at least a session ID for the user's shopping session with the merchant. The session ID may be utilized by any component and/or entity having the appropriate access authority to access a secure site on the merchant server to obtain alerts, reminders, and/or other data about the transaction(s) within that shopping session between the user and the merchant. In some embodiments, the PoS client may provide the generated card authorization request to the merchant server, e.g., 4016. The merchant server may forward the card authorization request to a pay gateway server, e.g., 4004a, for routing the card authorization request to the appropriate payment network for payment processing. For example, the pay gateway server may be able to select from payment networks, such as Visa, Mastercard, American Express,

Paypal, etc., to process various types of transactions including, but not limited to: credit card, debit card, prepaid card, B2B and/or like transactions. In some embodiments, the merchant server may query a database, e.g., merchant/acquirer database 4003b, for a network address of the payment gateway server, for example by using a portion of a user payment card number, or a user ID (such as an email address) as a keyword for the database query. For example, the merchant server may issue PHP/SQL commands to query a database table (such as FIGURE 44, Pay Gateways 4419h) for a URL of the pay gateway server. An example payment gateway address query 4017, substantially in the form of PHP/SQL commands, is provided below:

```
<?PHP
header('Content-Type: text/plain');
mysql_connect("254.93.179.112",$DBserver,$password); // access database server
mysql_select_db("TVC_DB.SQL"); // select database table to search
//create query
$query = "SELECT paygate_id paygate_address paygate_URL paygate_name FROM
    PayGatewayTable WHERE card_num LIKE '%' $cardnum";
$result = mysql_query($query); // perform the search query
mysql_close("TVC_DB.SQL"); // close database access
?>
```

[00276] In response, the merchant/acquirer database may provide the requested payment gateway address, e.g., 4018. The merchant server may forward the card authorization request to the pay gateway server using the provided address, e.g., 4019. In some embodiments, upon receiving the card authorization request from the merchant server, the pay gateway server may invoke a component to provide one or more services associated with purchase transaction authorization. For example, the pay gateway server may invoke components for fraud prevention, loyalty and/or rewards, and/or other services for which the user-merchant combination is authorized. The pay gateway server may forward the card authorization request to a pay network server, e.g., 4005a, for payment processing. For example, the pay gateway server may be able to select from payment networks, such as Visa, Mastercard, American Express, Paypal, etc., to process various types of transactions including, but not limited to: credit card, debit card, prepaid card, B2B and/or like transactions. In some embodiments, the pay gateway server may query a database, e.g., pay gateway database 4004b, for a network

address of the payment network server, for example by using a portion of a user payment card number, or a user ID (such as an email address) as a keyword for the database query. For example, the pay gateway server may issue PHP/SQL commands to query a database table (such as FIGURE 44, Pay Gateways 4419h) for a URL of the pay network server. An example payment network address query 4021, substantially in the form of PHP/SQL commands, is provided below:

```
<?PHP
header('Content-Type: text/plain');
mysql_connect("254.93.179.112",$DBserver,$password); // access database server
mysql_select_db("TVC_DB.SQL"); // select database table to search
//create query
$query = "SELECT payNET_id payNET_address payNET_URL payNET_name FROM
   PayGatewayTable WHERE card_num LIKE '%' $cardnum";
$result = mysql_query($query); // perform the search query
mysql_close("TVC_DB.SQL"); // close database access
?>
```

[00277] In response, the payment gateway database may provide the requested payment network address, e.g., 4022. The pay gateway server may forward the card authorization request to the pay network server using the provided address, e.g., 4023.

[00278] With reference to FIGURE 40B, in some embodiments, the pay network server may process the transaction so as to transfer funds for the purchase into an account stored on an acquirer of the merchant. For example, the acquirer may be a financial institution maintaining an account of the merchant. For example, the proceeds of transactions processed by the merchant may be deposited into an account maintained by at a server of the acquirer.

[00279] In some embodiments, the pay network server may generate a query, e.g., 4024, for issuer server(s) corresponding to the user-selected payment options. For example, the user's account may be linked to one or more issuer financial institutions ("issuers"), such as banking institutions, which issued the account(s) for the user. For example, such accounts may include, but not be limited to: credit card, debit card, prepaid card, checking, savings, money market, certificates of deposit, stored (cash) value accounts and/or the like. Issuer server(s), e.g., 4006a, of the issuer(s) may

maintain details of the user's account(s). In some embodiments, a database, e.g., pay network database 4005b, may store details of the issuer server(s) associated with the issuer(s). In some embodiments, the pay network server may query a database, e.g., pay network database 4005b, for a network address of the issuer(s) server(s), for example by using a portion of a user payment card number, or a user ID (such as an email address) as a keyword for the database query. For example, the merchant server may issue PHP/SQL commands to query a database table (such as FIGURE 44, Issuers 4419f) for network address(es) of the issuer(s) server(s). An example issuer server address(es) query 4024, substantially in the form of PHP/SQL commands, is provided below:

```
<?PHP
header('Content-Type: text/plain');
mysql_connect("254.93.179.112",$DBserver,$password); // access database server
mysql_select_db("TVC_DB.SQL"); // select database table to search
//create query
$query = "SELECT issuer_id issuer_address issuer_URL issuer_name FROM
   IssuersTable WHERE card_num LIKE '%' $cardnum";
$result = mysql_query($query); // perform the search query
mysql_close("TVC_DB.SQL"); // close database access
?>
```

[00280] In response to obtaining the issuer server query, e.g., 4024, the pay network database may provide, e.g., 4025, the requested issuer server data to the pay network server. In some embodiments, the pay network server may utilize the issuer server data to generate funds authorization request(s), e.g., 4026, for each of the issuer server(s) selected based on the pre-defined payment settings associated with the user's virtual wallet, and/or the user's payment options input, and provide the funds authorization request(s) to the issuer server(s). In some embodiments, the funds authorization request(s) may include details such as, but not limited to: the costs to the user involved in the transaction, card account details of the user, user billing and/or shipping information, and/or the like. An example listing of a funds authorization request 4026, substantially in the form of a HTTP(S) POST message including XML-formatted data, is provided below:

```
POST /fundsauthorizationrequest.php HTTP/1.1
Host: www.issuer.com
```

```
Content-Type: Application/XML
Content-Length: 624
<?XML version = "1.0" encoding = "UTF-8"?>
<funds_authorization_request>
    <query_ID>VNEI39FK</query_ID>
    <timestamp>2011-02-22 15:22:44</timestamp>
    <transaction_cost>$22.61</transaction_cost>
    <account_params>
        <account_type>checking</account_type>
        <account_num>1234567890123456</account_num>
    </account_params>
    <!--optional parameters-->
    <purchase_summary>
        <num_products>1</num_products>
        <product>
            <product_summary>Book - XML for dummies</product_summary>
            <product_quantity>1</product_quantity?
        </product>
    </purchase_summary>
    <merchant_params>
        <merchant_id>3FBCR4INC</merchant_id>
        <merchant_name>Books & Things, Inc.</merchant_name>
        <merchant_auth_key>1NNF484MCP59CHB27365</merchant_auth_key>
    </merchant_params>
</funds_authorization_request>
```

[00281] In some embodiments, an issuer server may parse the authorization request(s), and based on the request details may query a database, e.g., user profile database 4006b, for data associated with an account linked to the user. For example, the merchant server may issue PHP/SQL commands to query a database table (such as FIGURE 44, Accounts 4419d) for user account(s) data. An example user account(s) query 4027, substantially in the form of PHP/SQL commands, is provided below:

```
<?PHP
header('Content-Type: text/plain');
mysql_connect("254.93.179.112",$DBserver,$password); // access database server
mysql_select_db("TVC_DB.SQL"); // select database table to search
//create query
$query = "SELECT issuer user_id user_name user_balance account_type FROM
   AccountsTable WHERE account_num LIKE '%' $accountnum";
$result = mysql_query($query); // perform the search query
```

```
mysql_close("TVC_DB.SQL"); // close database access
?>
```

[00282] In some embodiments, on obtaining the user account(s) data, e.g., 4028, the issuer server may determine whether the user can pay for the transaction using funds available in the account, 4029. For example, the issuer server may determine whether the user has a sufficient balance remaining in the account, sufficient credit associated with the account, and/or the like. Based on the determination, the issuer server(s) may provide a funds authorization response, e.g., 4030, to the pay network server. For example, the issuer server(s) may provide a HTTP(S) POST message similar to the examples above. In some embodiments, if at least one issuer server determines that the user cannot pay for the transaction using the funds available in the account, the pay network server may request payment options again from the user (e.g., by providing an authorization fail message to the user device and requesting the user device to provide new payment options), and re-attempt authorization for the purchase transaction. In some embodiments, if the number of failed authorization attempts exceeds a threshold, the pay network server may abort the authorization process, and provide an "authorization fail" message to the merchant server, user device and/or client.

[00283] In some embodiments, the pay network server may obtain the funds authorization response including a notification of successful authorization, and parse the message to extract authorization details. Upon determining that the user possesses sufficient funds for the transaction, e.g., 4031, the pay network server may invoke a component to provide value-add services for the user.

[00284] In some embodiments, the pay network server may generate a transaction data record from the authorization request and/or authorization response, and store the details of the transaction and authorization relating to the transaction in a transactions database. For example, the pay network server may issue PHP/SQL commands to store the data to a database table (such as FIGURE 44, Transactions 4419i). An example transaction store command, substantially in the form of PHP/SQL commands, is provided below:

```
<?PHP
```

```
header('Content-Type: text/plain');
mysql_connect("254.92.185.103",$DBserver,$password); // access database server
mysql_select("TVC_DB.SQL"); // select database to append
mysql_query("INSERT INTO TransactionsTable (PurchasesTable (timestamp,
    purchase_summary_list, num_products, product_summary, product_quantity,
    transaction_cost, account_params_list, account_name, account_type,
    account_num, billing_addres, zipcode, phone, sign, merchant_params_list,
    merchant_id, merchant_name, merchant_auth_key)
VALUES (time(), $purchase_summary_list, $num_products, $product_summary,
    $product_quantity, $transaction_cost, $account_params_list, $account_name,
    $account_type, $account_num, $billing_addres, $zipcode, $phone, $sign,
    $merchant_params_list, $merchant_id, $merchant_name, $merchant_auth_key)");
    // add data to table in database
mysql_close("TVC_DB.SQL"); // close connection to database
?>
```

[00285] In some embodiments, the pay network server may forward a transaction authorization response, e.g., 4032, to the user wallet device, PoS client, and/or merchant server. The merchant may obtain the transaction authorization response, and determine from it that the user possesses sufficient funds in the card account to conduct the transaction. The merchant server may add a record of the transaction for the user to a batch of transaction data relating to authorized transactions. For example, the merchant may append the XML data pertaining to the user transaction to an XML data file comprising XML data for transactions that have been authorized for various users, e.g., 4033, and store the XML data file, e.g., 4034, in a database, e.g., merchant database 404. For example, a batch XML data file may be structured similar to the example XML data structure template provided below:

```
<?XML version = "1.0" encoding = "UTF-8"?>
<merchant_data>
    <merchant_id>3FBCR4INC</merchant_id>
    <merchant_name>Books & Things, Inc.</merchant_name>
    <merchant_auth_key>1NNF484MCP59CHB27365</merchant_auth_key>
    <account_number>123456789</account_number>
</merchant_data>
<transaction_data>
    <transaction 1>
        ...
    </transaction 1>
```

```
    <transaction 2>
            ...
    </transaction 2>
            .
            .
            .
    <transaction n>
            ...
    </transaction n>
</transaction_data>
```

[00286] In some embodiments, the server may also generate a purchase receipt, e.g., 4033, and provide the purchase receipt to the client, e.g., 4035. The client may render and display, e.g., 4036, the purchase receipt for the user. In some embodiments, the user's wallet device may also provide a notification of successful authorization to the user. For example, the PoS client/user device may render a webpage, electronic message, text / SMS message, buffer a voicemail, emit a ring tone, and/or play an audio message, etc., and provide output including, but not limited to: sounds, music, audio, video, images, tactile feedback, vibration alerts (e.g., on vibration-capable client devices such as a smartphone etc.), and/or the like.

[00287] FIGURES 41A-B show logic flow diagrams illustrating example aspects of purchase transaction authorization in some embodiments of the TVC, e.g., a Purchase Transaction Authorization ("PTA") component 4100. With reference to FIGURE 41A, in some embodiments, a user may wish to utilize a virtual wallet account to purchase a product, service, offering, and/or the like ("product"), from a merchant via a merchant online site or in the merchant's store. The user may utilize a physical card, or a user wallet device to access the user's virtual wallet account. For example, the user wallet device may be a personal/laptop computer, cellular telephone, smartphone, tablet, eBook reader, netbook, gaming console, and/or the like. The user may provide a wallet access input, e.g., 4101, into the user wallet device. In various embodiments, the user input may include, but not be limited to: a single tap (e.g., a one-tap mobile app purchasing embodiment) of a touchscreen interface, keyboard entry, card swipe, activating a RFID/NFC enabled hardware device (e.g., electronic card having multiple accounts, smartphone, tablet, etc.) within the user device, mouse clicks, depressing

buttons on a joystick/game console, voice commands, single/multi-touch gestures on a touch-sensitive interface, touching user interface elements on a touch-sensitive display, and/or the like. In some embodiments, the user wallet device may authenticate the user based on the user's wallet access input, and provide virtual wallet features for the user, e.g., 4102-4103.

[00288] In some embodiments, upon authenticating the user for access to virtual wallet features, the user wallet device may provide a transaction authorization input, e.g., 4104, to a point-of-sale ("PoS") client. For example, the user wallet device may communicate with the PoS client via Bluetooth, Wi-Fi, cellular communication, one- or two-way near-field communication ("NFC"), and/or the like. In embodiments where the user utilizes a plastic card instead of the user wallet device, the user may swipe the plastic card at the PoS client to transfer information from the plastic card into the PoS client. In embodiments where the user utilizes a user wallet device, the user wallet device may provide payment information to the PoS client, formatted according to a data formatting protocol appropriate to the communication mechanism employed in the communication between the user wallet device and the PoS client.

[00289] In some embodiments, the PoS client may obtain the transaction authorization input, and parse the input to extract payment information from the transaction authorization input, e.g., 4105. For example, the PoS client may utilize a parser, such as the example parsers provided below in the discussion with reference to FIGURE 44. The PoS client may generate a card authorization request, e.g., 4106, using the obtained transaction authorization input from the user wallet device, and/or product/checkout data (see, e.g., FIGURE 38, 3815-3817).

[00290] In some embodiments, the PoS client may provide the generated card authorization request to the merchant server. The merchant server may forward the card authorization request to a pay gateway server, for routing the card authorization request to the appropriate payment network for payment processing. For example, the pay gateway server may be able to select from payment networks, such as Visa, Mastercard, American Express, Paypal, etc., to process various types of transactions including, but not limited to: credit card, debit card, prepaid card, B2B and/or like transactions. In some embodiments, the merchant server may query a database, e.g.,

4108, for a network address of the payment gateway server, for example by using a portion of a user payment card number, or a user ID (such as an email address) as a keyword for the database query. In response, the merchant/acquirer database may provide the requested payment gateway address, e.g., 4110. The merchant server may forward the card authorization request to the pay gateway server using the provided address. In some embodiments, upon receiving the card authorization request from the merchant server, the pay gateway server may invoke a component to provide one or more service associated with purchase transaction authorization, e.g., 4111. For example, the pay gateway server may invoke components for fraud prevention (see e.g., VerifyChat, FIGURE 3E), loyalty and/or rewards, and/or other services for which the user-merchant combination is authorized.

[00291] The pay gateway server may forward the card authorization request to a pay network server for payment processing, e.g., 4114. For example, the pay gateway server may be able to select from payment networks, such as Visa, Mastercard, American Express, Paypal, etc., to process various types of transactions including, but not limited to: credit card, debit card, prepaid card, B2B and/or like transactions. In some embodiments, the pay gateway server may query a database, e.g., 4112, for a network address of the payment network server, for example by using a portion of a user payment card number, or a user ID (such as an email address) as a keyword for the database query. In response, the payment gateway database may provide the requested payment network address, e.g., 4113. The pay gateway server may forward the card authorization request to the pay network server using the provided address, e.g., 4114.

[00292] With reference to FIGURE 41B, in some embodiments, the pay network server may process the transaction so as to transfer funds for the purchase into an account stored on an acquirer of the merchant. For example, the acquirer may be a financial institution maintaining an account of the merchant. For example, the proceeds of transactions processed by the merchant may be deposited into an account maintained by at a server of the acquirer. In some embodiments, the pay network server may generate a query, e.g., 4115, for issuer server(s) corresponding to the user-selected payment options. For example, the user's account may be linked to one or more issuer financial institutions ("issuers"), such as banking institutions, which issued

the account(s) for the user. For example, such accounts may include, but not be limited to: credit card, debit card, prepaid card, checking, savings, money market, certificates of deposit, stored (cash) value accounts and/or the like. Issuer server(s) of the issuer(s) may maintain details of the user's account(s). In some embodiments, a database, e.g., a pay network database, may store details of the issuer server(s) associated with the issuer(s). In some embodiments, the pay network server may query a database, e.g., 4115, for a network address of the issuer(s) server(s), for example by using a portion of a user payment card number, or a user ID (such as an email address) as a keyword for the database query.

[00293] In response to obtaining the issuer server query, the pay network database may provide, e.g., 4116, the requested issuer server data to the pay network server. In some embodiments, the pay network server may utilize the issuer server data to generate funds authorization request(s), e.g., 4117, for each of the issuer server(s) selected based on the pre-defined payment settings associated with the user's virtual wallet, and/or the user's payment options input, and provide the funds authorization request(s) to the issuer server(s). In some embodiments, the funds authorization request(s) may include details such as, but not limited to: the costs to the user involved in the transaction, card account details of the user, user billing and/or shipping information, and/or the like. In some embodiments, an issuer server may parse the authorization request(s), e.g., 4118, and based on the request details may query a database, e.g., 4119, for data associated with an account linked to the user.

[00294] In some embodiments, on obtaining the user account(s) data, e.g., 4120, the issuer server may determine whether the user can pay for the transaction using funds available in the account, e.g., 4121. For example, the issuer server may determine whether the user has a sufficient balance remaining in the account, sufficient credit associated with the account, and/or the like. Based on the determination, the issuer server(s) may provide a funds authorization response, e.g., 4122, to the pay network server. In some embodiments, if at least one issuer server determines that the user cannot pay for the transaction using the funds available in the account, the pay network server may request payment options again from the user (e.g., by providing an authorization fail message to the user device and requesting the user device to provide

new payment options), and re-attempt authorization for the purchase transaction. In some embodiments, if the number of failed authorization attempts exceeds a threshold, the pay network server may abort the authorization process, and provide an "authorization fail" message to the merchant server, user device and/or client.

[00295] In some embodiments, the pay network server may obtain the funds authorization response including a notification of successful authorization, and parse the message to extract authorization details. Upon determining that the user possesses sufficient funds for the transaction, e.g., 4123, the pay network server may invoke a component to provide value-add services for the user, e.g., 4123.

[00296] In some embodiments, the pay network server may forward a transaction authorization response to the user wallet device, PoS client, and/or merchant server. The merchant may parse, e.g., 4124, the transaction authorization response, and determine from it that the user possesses sufficient funds in the card account to conduct the transaction, e.g., 4125, option"Yes." The merchant server may add a record of the transaction for the user to a batch of transaction data relating to authorized transactions. For example, the merchant may append the XML data pertaining to the user transaction to an XML data file comprising XML data for transactions that have been authorized for various users, e.g., 4126, and store the XML data file, e.g., 4127, in a database. In some embodiments, the server may also generate a purchase receipt, e.g., 4128, and provide the purchase receipt to the client. The client may render and display, e.g., 4129, the purchase receipt for the user. In some embodiments, the user's wallet device may also provide a notification of successful authorization to the user. For example, the PoS client/user device may render a webpage, electronic message, text / SMS message, buffer a voicemail, emit a ring tone, and/or play an audio message, etc., and provide output including, but not limited to: sounds, music, audio, video, images, tactile feedback, vibration alerts (e.g., on vibration-capable client devices such as a smartphone etc.), and/or the like.

[00297] FIGURES 42A-B show data flow diagrams illustrating an example purchase transaction clearance procedure in some embodiments of the TVC. With reference to FIGURE 42A, in some embodiments, a merchant server, e.g., 4203a, may initiate clearance of a batch of authorized transactions. For example, the merchant

server may generate a batch data request, e.g., 4211, and provide the request, to a merchant database, e.g., 4203b. For example, the merchant server may utilize PHP/SQL commands similar to the examples provided above to query a relational database. In response to the batch data request, the database may provide the requested batch data, e.g., 4212. The server may generate a batch clearance request, e.g., 4213, using the batch data obtained from the database, and provide, e.g., 4214, the batch clearance request to an acquirer server, e.g., 4207a. For example, the merchant server may provide a HTTP(S) POST message including XML-formatted batch data in the message body for the acquirer server. The acquirer server may generate, e.g., 4215, a batch payment request using the obtained batch clearance request, and provide, e.g., 4218, the batch payment request to the pay network server, e.g., 4205a. The pay network server may parse the batch payment request, and extract the transaction data for each transaction stored in the batch payment request, e.g., 4219. The pay network server may store the transaction data, e.g., 4220, for each transaction in a database, e.g., pay network database 4205b. In some embodiments, the pay network server may invoke a component to provide value-add analytics services based on analysis of the transactions of the merchant for whom the TVC is clearing purchase transactions. Thus, in some embodiments, the pay network server may provide analytics-based value-added services for the merchant and/or the merchant's users.

[00298] With reference to FIGURE 42B, in some embodiments, for each extracted transaction, the pay network server may query, e.g., 4223, a database, e.g., pay network database 4205b, for an address of an issuer server. For example, the pay network server may utilize PHP/SQL commands similar to the examples provided above. The pay network server may generate an individual payment request, e.g., 4225, for each transaction for which it has extracted transaction data, and provide the individual payment request, e.g., 4225, to the issuer server, e.g., 4206a. For example, the pay network server may provide an individual payment request to the issuer server(s) as a HTTP(S) POST message including XML-formatted data. An example listing of an individual payment request 4225, substantially in the form of a HTTP(S) POST message including XML-formatted data, is provided below:

```
POST /paymentrequest.php HTTP/1.1
```

```
Host: www.issuer.com
Content-Type: Application/XML
Content-Length: 788
<?XML version = "1.0" encoding = "UTF-8"?>
<pay_request>
    <request_ID>CNI4ICNW2</request_ID>
    <timestamp>2011-02-22 17:00:01</timestamp>
    <pay_amount>$34.78</pay_amount>
    <account_params>
        <account_name>John Q. Public</account_name>
        <account_type>credit</account_type>
        <account_num>123456789012345</account_num>
        <billing_address>123 Green St., Norman, OK 98765</billing_address>
        <phone>123-456-7809</phone>
        <sign>/jqp/</sign>
    </account_params>
    <merchant_params>
        <merchant_id>3FBCR4INC</merchant_id>
        <merchant_name>Books & Things, Inc.</merchant_name>
        <merchant_auth_key>1NNF484MCP59CHB27365</merchant_auth_key>
    </merchant_params>
    <purchase_summary>
        <num_products>1</num_products>
        <product>
            <product_summary>Book - XML for dummies</product_summary>
            <product_quantity>1</product_quantity?
        </product>
    </purchase_summary>
</pay_request>
```

[00299] In some embodiments, the issuer server may generate a payment command, e.g., 4227. For example, the issuer server may issue a command to deduct funds from the user's account (or add a charge to the user's credit card account). The issuer server may issue a payment command, e.g., 4227, to a database storing the user's account information, e.g., user profile database 4206b. The issuer server may provide an individual payment confirmation, e.g., 4228, to the pay network server, which may forward, e.g., 4229, the funds transfer message to the acquirer server. An example listing of an individual payment confirmation 4228, substantially in the form of a HTTP(S) POST message including XML-formatted data, is provided below:

```
POST /clearance.php HTTP/1.1
Host: www.acquirer.com
Content-Type: Application/XML
Content-Length: 206
<?XML version = "1.0" encoding = "UTF-8"?>
<deposit_ack>
    <request_ID>CNI4ICNW2</request_ID>
    <clear_flag>true</clear_flag>
    <timestamp>2011-02-22 17:00:02</timestamp>
    <deposit_amount>$34.78</deposit_amount>
</deposit_ack>
```

[00300] In some embodiments, the acquirer server may parse the individual payment confirmation, and correlate the transaction (e.g., using the request_ID field in the example above) to the merchant. The acquirer server may then transfer the funds specified in the funds transfer message to an account of the merchant. For example, the acquirer server may query, e.g. 4230, an acquirer database 4207b for payment ledger and/or merchant account data, e.g., 4231. The acquirer server may utilize payment ledger and/or merchant account data from the acquirer database, along with the individual payment confirmation, to generate updated payment ledger and/or merchant account data, e.g., 4232. The acquirer server may then store, e.g., 4233, the updated payment ledger and/or merchant account data to the acquire database.

[00301] FIGURES 43A-B show logic flow diagrams illustrating example aspects of purchase transaction clearance in some embodiments of the TVC, e.g., a Purchase Transaction Clearance ("PTC") component 4300. With reference to FIGURE 43A, in some embodiments, a merchant server may initiate clearance of a batch of authorized transactions. For example, the merchant server may generate a batch data request, e.g., 4301, and provide the request to a merchant database. In response to the batch data request, the database may provide the requested batch data, e.g., 4302. The server may generate a batch clearance request, e.g., 4303, using the batch data obtained from the database, and provide the batch clearance request to an acquirer server. The acquirer server may parse, e.g., 4304, the obtained batch clearance request, and generate, e.g., 4307, a batch payment request using the obtained batch clearance request to provide, the batch payment request to a pay network server. For example, the acquirer server

may query, e.g., 4305, an acquirer database for an address of a payment network server, and utilize the obtained address, e.g., 4306, to forward the generated batch payment request to the pay network server.

[00302] The pay network server may parse the batch payment request obtained from the acquirer server, and extract the transaction data for each transaction stored in the batch payment request, e.g., 4308. The pay network server may store the transaction data, e.g., 4309, for each transaction in a pay network database. In some embodiments, the pay network server may invoke a component, e.g., 4310, to provide analytics based on the transactions of the merchant for whom purchase transaction are being cleared.

[00303] With reference to FIGURE 43B, in some embodiments, for each extracted transaction, the pay network server may query, e.g., 4311, a pay network database for an address of an issuer server. The pay network server may generate an individual payment request, e.g., 4313, for each transaction for which it has extracted transaction data, and provide the individual payment request to the issuer server. In some embodiments, the issuer server may parse the individual payment request, e.g., 4314, and generate a payment command, e.g., 4315, based on the parsed individual payment request. For example, the issuer server may issue a command to deduct funds from the user's account (or add a charge to the user's credit card account). The issuer server may issue a payment command, e.g., 4315, to a database storing the user's account information, e.g., a user profile database. The issuer server may provide an individual payment confirmation, e.g., 4317, to the pay network server, which may forward, e.g., 4318, the individual payment confirmation to the acquirer server.

[00304] In some embodiments, the acquirer server may parse the individual payment confirmation, and correlate the transaction (e.g., using the request_ID field in the example above) to the merchant. The acquirer server may then transfer the funds specified in the funds transfer message to an account of the merchant. For example, the acquirer server may query, e.g. 4319, an acquirer database for payment ledger and/or merchant account data, e.g., 4320. The acquirer server may utilize payment ledger and/or merchant account data from the acquirer database, along with the individual payment confirmation, to generate updated payment ledger and/or merchant account

data, e.g., 4321. The acquirer server may then store, e.g., 4322, the updated payment ledger and/or merchant account data to the acquire database.

TVC Controller

[00305] FIGURE 44 shows a block diagram illustrating embodiments of a TVC controller 4401. In this embodiment, the TVC controller 4401 may serve to aggregate, process, store, search, serve, identify, instruct, generate, match, and/or facilitate interactions with a computer through various technologies, and/or other related data.

[00306] Typically, users, e.g., 4433a, which may be people and/or other systems, may engage information technology systems (e.g., computers) to facilitate information processing. In turn, computers employ processors to process information; such processors 4403 may be referred to as central processing units (CPU). One form of processor is referred to as a microprocessor. CPUs use communicative circuits to pass binary encoded signals acting as instructions to enable various operations. These instructions may be operational and/or data instructions containing and/or referencing other instructions and data in various processor accessible and operable areas of memory 4429 (e.g., registers, cache memory, random access memory, etc.). Such communicative instructions may be stored and/or transmitted in batches (e.g., batches of instructions) as programs and/or data components to facilitate desired operations. These stored instruction codes, e.g., programs, may engage the CPU circuit components and other motherboard and/or system components to perform desired operations. One type of program is a computer operating system, which, may be executed by CPU on a computer; the operating system enables and facilitates users to access and operate computer information technology and resources. Some resources that may be employed in information technology systems include: input and output mechanisms through which data may pass into and out of a computer; memory storage into which data may be saved; and processors by which information may be processed. These information technology systems may be used to collect data for later retrieval, analysis, and manipulation, which may be facilitated through a database program. These information technology systems provide interfaces that allow users to access and operate various

system components.

[00307] In one embodiment, the TVC controller 4401 may be connected to and/or communicate with entities such as, but not limited to: one or more users from user input devices 4411; peripheral devices 4412; an optional cryptographic processor device 4428; and/or a communications network 4413. For example, the TVC controller 4401 may be connected to and/or communicate with users, e.g., 4433a, operating client device(s), e.g., 4433b, including, but not limited to, personal computer(s), server(s) and/or various mobile device(s) including, but not limited to, cellular telephone(s), smartphone(s) (e.g., iPhone®, Blackberry®, Android OS-based phones etc.), tablet computer(s) (e.g., Apple iPad™, HP Slate™, Motorola Xoom™, etc.), eBook reader(s) (e.g., Amazon Kindle™, Barnes and Noble's Nook™ eReader, etc.), laptop computer(s), notebook(s), netbook(s), gaming console(s) (e.g., XBOX Live™, Nintendo® DS, Sony PlayStation® Portable, etc.), portable scanner(s), and/or the like.

[00308] Networks are commonly thought to comprise the interconnection and interoperation of clients, servers, and intermediary nodes in a graph topology. It should be noted that the term "server" as used throughout this application refers generally to a computer, other device, program, or combination thereof that processes and responds to the requests of remote users across a communications network. Servers serve their information to requesting "clients." The term "client" as used herein refers generally to a computer, program, other device, user and/or combination thereof that is capable of processing and making requests and obtaining and processing any responses from servers across a communications network. A computer, other device, program, or combination thereof that facilitates, processes information and requests, and/or furthers the passage of information from a source user to a destination user is commonly referred to as a "node." Networks are generally thought to facilitate the transfer of information from source points to destinations. A node specifically tasked with furthering the passage of information from a source to a destination is commonly called a "router." There are many forms of networks such as Local Area Networks (LANs), Pico networks, Wide Area Networks (WANs), Wireless Networks (WLANs), etc. For example, the Internet is generally accepted as being an interconnection of a multitude of networks whereby remote clients and servers may access and interoperate

with one another.

[00309] The TVC controller 4401 may be based on computer systems that may comprise, but are not limited to, components such as: a computer systemization 4402 connected to memory 4429.

Computer Systemization

[00310] A computer systemization 4402 may comprise a clock 4430, central processing unit ("CPU(s)" and/or "processor(s)" (these terms are used interchangeable throughout the disclosure unless noted to the contrary)) 4403, a memory 4429 (e.g., a read only memory (ROM) 4406, a random access memory (RAM) 4405, etc.), and/or an interface bus 4407, and most frequently, although not necessarily, are all interconnected and/or communicating through a system bus 4404 on one or more (mother)board(s) 4402 having conductive and/or otherwise transportive circuit pathways through which instructions (e.g., binary encoded signals) may travel to effectuate communications, operations, storage, etc. The computer systemization may be connected to a power source 4486; e.g., optionally the power source may be internal. Optionally, a cryptographic processor 4426 and/or transceivers (e.g., ICs) 4474 may be connected to the system bus. In another embodiment, the cryptographic processor and/or transceivers may be connected as either internal and/or external peripheral devices 4412 via the interface bus I/O. In turn, the transceivers may be connected to antenna(s) 4475, thereby effectuating wireless transmission and reception of various communication and/or sensor protocols; for example the antenna(s) may connect to: a Texas Instruments WiLink WL1283 transceiver chip (e.g., providing 802.11n, Bluetooth 3.0, FM, global positioning system (GPS) (thereby allowing TVC controller to determine its location)); Broadcom BCM4329FKUBG transceiver chip (e.g., providing 802.11n, Bluetooth 2.1 + EDR, FM, etc.); a Broadcom BCM4750IUB8 receiver chip (e.g., GPS); an Infineon Technologies X-Gold 618-PMB9800 (e.g., providing 2G/3G HSDPA/HSUPA communications); and/or the like. The system clock typically has a crystal oscillator and generates a base signal through the computer systemization's circuit pathways. The clock is typically coupled to the system bus and various clock multipliers that will

increase or decrease the base operating frequency for other components interconnected in the computer systemization. The clock and various components in a computer systemization drive signals embodying information throughout the system. Such transmission and reception of instructions embodying information throughout a computer systemization may be commonly referred to as communications. These communicative instructions may further be transmitted, received, and the cause of return and/or reply communications beyond the instant computer systemization to: communications networks, input devices, other computer systemizations, peripheral devices, and/or the like. It should be understood that in alternative embodiments, any of the above components may be connected directly to one another, connected to the CPU, and/or organized in numerous variations employed as exemplified by various computer systems.

[00311] The CPU comprises at least one high-speed data processor adequate to execute program components for executing user and/or system-generated requests. Often, the processors themselves will incorporate various specialized processing units, such as, but not limited to: integrated system (bus) controllers, memory management control units, floating point units, and even specialized processing sub-units like graphics processing units, digital signal processing units, and/or the like. Additionally, processors may include internal fast access addressable memory, and be capable of mapping and addressing memory 4429 beyond the processor itself; internal memory may include, but is not limited to: fast registers, various levels of cache memory (e.g., level 1, 2, 3, etc.), RAM, etc. The processor may access this memory through the use of a memory address space that is accessible via instruction address, which the processor can construct and decode allowing it to access a circuit path to a specific memory address space having a memory state. The CPU may be a microprocessor such as: AMD's Athlon, Duron and/or Opteron; ARM's application, embedded and secure processors; IBM and/or Motorola's DragonBall and PowerPC; IBM's and Sony's Cell processor; Intel's Celeron, Core (2) Duo, Itanium, Pentium, Xeon, and/or XScale; and/or the like processor(s). The CPU interacts with memory through instruction passing through conductive and/or transportive conduits (e.g., (printed) electronic and/or optic circuits) to execute stored instructions (i.e., program code) according to

conventional data processing techniques. Such instruction passing facilitates communication within the TVC controller and beyond through various interfaces. Should processing requirements dictate a greater amount speed and/or capacity, distributed processors (e.g., Distributed TVC), mainframe, multi-core, parallel, and/or super-computer architectures may similarly be employed.Alternatively, should deployment requirements dictate greater portability, smaller Personal Digital Assistants (PDAs) may be employed.

[00312] Depending on the particular implementation, features of the TVC may be achieved by implementing a microcontroller such as CAST's R8051XC2 microcontroller; Intel's MCS 51 (i.e., 8051 microcontroller); and/or the like. Also, to implement certain features of the TVC, some feature implementations may rely on embedded components, such as: Application-Specific Integrated Circuit ("ASIC"), Digital Signal Processing ("DSP"), Field Programmable Gate Array ("FPGA"), and/or the like embedded technology. For example, any of the TVC component collection (distributed or otherwise) and/or features may be implemented via the microprocessor and/or via embedded components; e.g., via ASIC, coprocessor, DSP, FPGA, and/or the like. Alternately, some implementations of the TVC may be implemented with embedded components that are configured and used to achieve a variety of features or signal processing.

[00313] Depending on the particular implementation, the embedded components may include software solutions, hardware solutions, and/or some combination of both hardware/software solutions. For example, TVC features discussed herein may be achieved through implementing FPGAs, which are a semiconductor devices containing programmable logic components called "logic blocks", and programmable interconnects, such as the high performance FPGA Virtex series and/or the low cost Spartan series manufactured by Xilinx. Logic blocks and interconnects can be programmed by the customer or designer, after the FPGA is manufactured, to implement any of the TVC features. A hierarchy of programmable interconnects allow logic blocks to be interconnected as needed by the TVC system designer/administrator, somewhat like a one-chip programmable breadboard. An FPGA's logic blocks can be programmed to perform the operation of basic logic gates such as AND, and XOR, or

more complex combinational operators such as decoders or simple mathematical operations. In most FPGAs, the logic blocks also include memory elements, which may be circuit flip-flops or more complete blocks of memory. In some circumstances, the TVC may be developed on regular FPGAs and then migrated into a fixed version that more resembles ASIC implementations. Alternate or coordinating implementations may migrate TVC controller features to a final ASIC instead of or in addition to FPGAs. Depending on the implementation all of the aforementioned embedded components and microprocessors may be considered the "CPU" and/or "processor" for the TVC.

Power Source

[00314] The power source 4486 may be of any standard form for powering small electronic circuit board devices such as the following power cells: alkaline, lithium hydride, lithium ion, lithium polymer, nickel cadmium, solar cells, and/or the like. Other types of AC or DC power sources may be used as well. In the case of solar cells, in one embodiment, the case provides an aperture through which the solar cell may capture photonic energy. The power cell 4486 is connected to at least one of the interconnected subsequent components of the TVC thereby providing an electric current to all subsequent components. In one example, the power source 4486 is connected to the system bus component 4404. In an alternative embodiment, an outside power source 4486 is provided through a connection across the I/O 4408 interface. For example, a USB and/or IEEE 1394 connection carries both data and power across the connection and is therefore a suitable source of power.

Interface Adapters

[00315] Interface bus(ses) 4407 may accept, connect, and/or communicate to a number of interface adapters, conventionally although not necessarily in the form of adapter cards, such as but not limited to: input output interfaces (I/O) 4408, storage interfaces 4409, network interfaces 4410, and/or the like. Optionally, cryptographic processor interfaces 4427 similarly may be connected to the interface bus. The interface bus provides for the communications of interface adapters with one another as well as

with other components of the computer systemization. Interface adapters are adapted for a compatible interface bus. Interface adapters conventionally connect to the interface bus via a slot architecture. Conventional slot architectures may be employed, such as, but not limited to: Accelerated Graphics Port (AGP), Card Bus, (Extended) Industry Standard Architecture ((E)ISA), Micro Channel Architecture (MCA), NuBus, Peripheral Component Interconnect (Extended) (PCI(X)), PCI Express, Personal Computer Memory Card International Association (PCMCIA), and/or the like.

[00316] Storage interfaces 4409 may accept, communicate, and/or connect to a number of storage devices such as, but not limited to: storage devices 4414, removable disc devices, and/or the like. Storage interfaces may employ connection protocols such as, but not limited to: (Ultra) (Serial) Advanced Technology Attachment (Packet Interface) ((Ultra) (Serial) ATA(PI)), (Enhanced) Integrated Drive Electronics ((E)IDE), Institute of Electrical and Electronics Engineers (IEEE) 1394, fiber channel, Small Computer Systems Interface (SCSI), Universal Serial Bus (USB), and/or the like.

[00317] Network interfaces 4410 may accept, communicate, and/or connect to a communications network 4413. Through a communications network 4413, the TVC controller is accessible through remote clients 4433b (e.g., computers with web browsers) by users 4433a. Network interfaces may employ connection protocols such as, but not limited to: direct connect, Ethernet (thick, thin, twisted pair 10/100/1000 Base T, and/or the like), Token Ring, wireless connection such as IEEE 802.11a-x, and/or the like. Should processing requirements dictate a greater amount speed and/or capacity, distributed network controllers (e.g., Distributed TVC), architectures may similarly be employed to pool, load balance, and/or otherwise increase the communicative bandwidth required by the TVC controller. A communications network may be any one and/or the combination of the following: a direct interconnection; the Internet; a Local Area Network (LAN); a Metropolitan Area Network (MAN); an Operating Missions as Nodes on the Internet (OMNI); a secured custom connection; a Wide Area Network (WAN); a wireless network (e.g., employing protocols such as, but not limited to a Wireless Application Protocol (WAP), I-mode, and/or the like); and/or the like. A network interface may be regarded as a specialized form of an input output interface. Further, multiple network interfaces 4410 may be used to engage with various

communications network types 4413. For example, multiple network interfaces may be employed to allow for the communication over broadcast, multicast, and/or unicast networks.

[00318] Input Output interfaces (I/O) 4408 may accept, communicate, and/or connect to user input devices 4411, peripheral devices 4412, cryptographic processor devices 4428, and/or the like. I/O may employ connection protocols such as, but not limited to: audio: analog, digital, monaural, RCA, stereo, and/or the like; data: Apple Desktop Bus (ADB), IEEE 1394a-b, serial, universal serial bus (USB); infrared; joystick; keyboard; midi; optical; PC AT; PS/2; parallel; radio; video interface: Apple Desktop Connector (ADC), BNC, coaxial, component, composite, digital, Digital Visual Interface (DVI), high-definition multimedia interface (HDMI), RCA, RF antennae, S-Video, VGA, and/or the like; wireless transceivers: 802.11a/b/g/n/x; Bluetooth; cellular (e.g., code division multiple access (CDMA), high speed packet access (HSPA(+)), high-speed downlink packet access (HSDPA), global system for mobile communications (GSM), long term evolution (LTE), WiMax, etc.); and/or the like. One typical output device may include a video display, which typically comprises a Cathode Ray Tube (CRT) or Liquid Crystal Display (LCD) based monitor with an interface (e.g., DVI circuitry and cable) that accepts signals from a video interface, may be used. The video interface composites information generated by a computer systemization and generates video signals based on the composited information in a video memory frame. Another output device is a television set, which accepts signals from a video interface. Typically, the video interface provides the composited video information through a video connection interface that accepts a video display interface (e.g., an RCA composite video connector accepting an RCA composite video cable; a DVI connector accepting a DVI display cable, etc.).

[00319] User input devices 4411 often are a type of peripheral device 4412 (see below) and may include: card readers, dongles, finger print readers, gloves, graphics tablets, joysticks, keyboards, microphones, mouse (mice), remote controls, retina readers, touch screens (e.g., capacitive, resistive, etc.), trackballs, trackpads, sensors (e.g., accelerometers, ambient light, GPS, gyroscopes, proximity, etc.), styluses, and/or the like.

[00320] Peripheral devices 4412 may be connected and/or communicate to I/O

and/or other facilities of the like such as network interfaces, storage interfaces, directly to the interface bus, system bus, the CPU, and/or the like. Peripheral devices may be external, internal and/or part of the TVC controller. Peripheral devices may include: antenna, audio devices (e.g., line-in, line-out, microphone input, speakers, etc.), cameras (e.g., still, video, webcam, etc.), dongles (e.g., for copy protection, ensuring secure transactions with a digital signature, and/or the like), external processors (for added capabilities; e.g., crypto devices 4428), force-feedback devices (e.g., vibrating motors), network interfaces, printers, scanners, storage devices, transceivers (e.g., cellular, GPS, etc.), video devices (e.g., goggles, monitors, etc.), video sources, visors, and/or the like. Peripheral devices often include types of input devices (e.g., cameras).

[00321] It should be noted that although user input devices and peripheral devices may be employed, the TVC controller may be embodied as an embedded, dedicated, and/or monitor-less (i.e., headless) device, wherein access would be provided over a network interface connection.

[00322] Cryptographic units such as, but not limited to, microcontrollers, processors 4426, interfaces 4427, and/or devices 4428 may be attached, and/or communicate with the TVC controller. A MC68HC16 microcontroller, manufactured by Motorola Inc., may be used for and/or within cryptographic units. The MC68HC16 microcontroller utilizes a 16-bit multiply-and-accumulate instruction in the 16 MHz configuration and requires less than one second to perform a 512-bit RSA private key operation. Cryptographic units support the authentication of communications from interacting agents, as well as allowing for anonymous transactions. Cryptographic units may also be configured as part of the CPU. Equivalent microcontrollers and/or processors may also be used. Other commercially available specialized cryptographic processors include: the Broadcom's CryptoNetX and other Security Processors; nCipher's nShield, SafeNet's Luna PCI (e.g., 7100) series; Semaphore Communications' 40 MHz Roadrunner 184; Sun's Cryptographic Accelerators (e.g., Accelerator 6000 PCIe Board, Accelerator 500 Daughtercard); Via Nano Processor (e.g., L2100, L2200, U2400) line, which is capable of performing 500+ MB/s of cryptographic instructions; VLSI Technology's 33 MHz 6868; and/or the like.

Memory

[00323] Generally, any mechanization and/or embodiment allowing a processor to affect the storage and/or retrieval of information is regarded as memory 4429. However, memory is a fungible technology and resource, thus, any number of memory embodiments may be employed in lieu of or in concert with one another. It is to be understood that the TVC controller and/or a computer systemization may employ various forms of memory 4429. For example, a computer systemization may be configured wherein the operation of on-chip CPU memory (e.g., registers), RAM, ROM, and any other storage devices are provided by a paper punch tape or paper punch card mechanism; however, such an embodiment would result in an extremely slow rate of operation. In a typical configuration, memory 4429 will include ROM 4406, RAM 4405, and a storage device 4414. A storage device 4414 may be any conventional computer system storage. Storage devices may include a drum; a (fixed and/or removable) magnetic disk drive; a magneto-optical drive; an optical drive (i.e., Blueray, CD ROM/RAM/Recordable (R)/ReWritable (RW), DVD R/RW, HD DVD R/RW etc.); an array of devices (e.g., Redundant Array of Independent Disks (RAID)); solid state memory devices (USB memory, solid state drives (SSD), etc.); other processor-readable storage mediums; and/or other devices of the like. Thus, a computer systemization generally requires and makes use of memory.

Component Collection

[00324] The memory 4429 may contain a collection of program and/or database components and/or data such as, but not limited to: operating system component(s) 4415 (operating system); information server component(s) 4416 (information server); user interface component(s) 4417 (user interface); Web browser component(s) 4418 (Web browser); database(s) 4419; mail server component(s) 4421; mail client component(s) 4422; cryptographic server component(s) 4420 (cryptographic server); the TVC component(s) 4435; and/or the like (i.e., collectively a component collection). These components may be stored and accessed from the storage devices and/or from storage devices accessible through an interface bus. Although non-conventional

program components such as those in the component collection, typically, are stored in a local storage device 4414, they may also be loaded and/or stored in memory such as: peripheral devices, RAM, remote storage facilities through a communications network, ROM, various forms of memory, and/or the like.

Operating System

[00325] The operating system component 4415 is an executable program component facilitating the operation of the TVC controller. Typically, the operating system facilitates access of I/O, network interfaces, peripheral devices, storage devices, and/or the like. The operating system may be a highly fault tolerant, scalable, and secure system such as: Apple Macintosh OS X (Server); AT&T Plan 9; Be OS; Unix and Unix-like system distributions (such as AT&T's UNIX; Berkley Software Distribution (BSD) variations such as FreeBSD, NetBSD, OpenBSD, and/or the like; Linux distributions such as Red Hat, Ubuntu, and/or the like); and/or the like operating systems. However, more limited and/or less secure operating systems also may be employed such as Apple Macintosh OS, IBM OS/2, Microsoft DOS, Microsoft Windows 2000/2003/3.1/95/98/CE/Millenium/NT/Vista/XP (Server), Palm OS, and/or the like. An operating system may communicate to and/or with other components in a component collection, including itself, and/or the like. Most frequently, the operating system communicates with other program components, user interfaces, and/or the like. For example, the operating system may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses. The operating system, once executed by the CPU, may enable the interaction with communications networks, data, I/O, peripheral devices, program components, memory, user input devices, and/or the like. The operating system may provide communications protocols that allow the TVC controller to communicate with other entities through a communications network 4413. Various communication protocols may be used by the TVC controller as a subcarrier transport mechanism for interaction, such as, but not limited to: multicast, TCP/IP, UDP, unicast, and/or the like.

Information Server

[00326] An information server component 4416 is a stored program component that is executed by a CPU. The information server may be a conventional Internet information server such as, but not limited to Apache Software Foundation's Apache, Microsoft's Internet Information Server, and/or the like. The information server may allow for the execution of program components through facilities such as Active Server Page (ASP), ActiveX, (ANSI) (Objective-) C (++), C# and/or .NET, Common Gateway Interface (CGI) scripts, dynamic (D) hypertext markup language (HTML), FLASH, Java, JavaScript, Practical Extraction Report Language (PERL), Hypertext Pre-Processor (PHP), pipes, Python, wireless application protocol (WAP), WebObjects, and/or the like. The information server may support secure communications protocols such as, but not limited to, File Transfer Protocol (FTP); HyperText Transfer Protocol (HTTP); Secure Hypertext Transfer Protocol (HTTPS), Secure Socket Layer (SSL), messaging protocols (e.g., America Online (AOL) Instant Messenger (AIM), Application Exchange (APEX), ICQ, Internet Relay Chat (IRC), Microsoft Network (MSN) Messenger Service, Presence and Instant Messaging Protocol (PRIM), Internet Engineering Task Force's (IETF's) Session Initiation Protocol (SIP), SIP for Instant Messaging and Presence Leveraging Extensions (SIMPLE), open XML-based Extensible Messaging and Presence Protocol (XMPP) (i.e., Jabber or Open Mobile Alliance's (OMA's) Instant Messaging and Presence Service (IMPS)), Yahoo! Instant Messenger Service, and/or the like. The information server provides results in the form of Web pages to Web browsers, and allows for the manipulated generation of the Web pages through interaction with other program components. After a Domain Name System (DNS) resolution portion of an HTTP request is resolved to a particular information server, the information server resolves requests for information at specified locations on the TVC controller based on the remainder of the HTTP request. For example, a request such as http://123.124.125.126/myInformation.html might have the IP portion of the request "123.124.125.126" resolved by a DNS server to an information server at that IP address; that information server might in turn further parse the http request for the "/myInformation.html" portion of the request and resolve it to a location in memory containing the information "myInformation.html." Additionally, other information

serving protocols may be employed across various ports, e.g., FTP communications across port 21, and/or the like. An information server may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the information server communicates with the TVC database 4419, operating systems, other program components, user interfaces, Web browsers, and/or the like.

[00327] Access to the TVC database may be achieved through a number of database bridge mechanisms such as through scripting languages as enumerated below (e.g., CGI) and through inter-application communication channels as enumerated below (e.g., CORBA, WebObjects, etc.). Any data requests through a Web browser are parsed through the bridge mechanism into appropriate grammars as required by the TVC. In one embodiment, the information server would provide a Web form accessible by a Web browser. Entries made into supplied fields in the Web form are tagged as having been entered into the particular fields, and parsed as such. The entered terms are then passed along with the field tags, which act to instruct the parser to generate queries directed to appropriate tables and/or fields. In one embodiment, the parser may generate queries in standard SQL by instantiating a search string with the proper join/select commands based on the tagged text entries, wherein the resulting command is provided over the bridge mechanism to the TVC as a query. Upon generating query results from the query, the results are passed over the bridge mechanism, and may be parsed for formatting and generation of a new results Web page by the bridge mechanism. Such a new results Web page is then provided to the information server, which may supply it to the requesting Web browser.

[00328] Also, an information server may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses.

User Interface

[00329] Computer interfaces in some respects are similar to automobile operation interfaces. Automobile operation interface elements such as steering wheels, gearshifts,

and speedometers facilitate the access, operation, and display of automobile resources, and status. Computer interaction interface elements such as check boxes, cursors, menus, scrollers, and windows (collectively and commonly referred to as widgets) similarly facilitate the access, capabilities, operation, and display of data and computer hardware and operating system resources, and status. Operation interfaces are commonly called user interfaces. Graphical user interfaces (GUIs) such as the Apple Macintosh Operating System's Aqua, IBM's OS/2, Microsoft's Windows 2000/2003/3.1/95/98/CE/Millenium/NT/XP/Vista/7 (i.e., Aero), Unix's X-Windows (e.g., which may include additional Unix graphic interface libraries and layers such as K Desktop Environment (KDE), mythTV and GNU Network Object Model Environment (GNOME)), web interface libraries (e.g., ActiveX, AJAX, (D)HTML, FLASH, Java, JavaScript, etc. interface libraries such as, but not limited to, Dojo, jQuery(UI), MooTools, Prototype, script.aculo.us, SWFObject, Yahoo! User Interface, any of which may be used and) provide a baseline and means of accessing and displaying information graphically to users.

[00330] A user interface component 4417 is a stored program component that is executed by a CPU. The user interface may be a conventional graphic user interface as provided by, with, and/or atop operating systems and/or operating environments such as already discussed. The user interface may allow for the display, execution, interaction, manipulation, and/or operation of program components and/or system facilities through textual and/or graphical facilities. The user interface provides a facility through which users may affect, interact, and/or operate a computer system. A user interface may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the user interface communicates with operating systems, other program components, and/or the like. The user interface may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses.

Web Browser

[00331] A Web browser component 4418 is a stored program component that is executed by a CPU. The Web browser may be a conventional hypertext viewing application such as Microsoft Internet Explorer or Netscape Navigator. Secure Web browsing may be supplied with 128bit (or greater) encryption by way of HTTPS, SSL, and/or the like. Web browsers allowing for the execution of program components through facilities such as ActiveX, AJAX, (D)HTML, FLASH, Java, JavaScript, web browser plug-in APIs (e.g., FireFox, Safari Plug-in, and/or the like APIs), and/or the like. Web browsers and like information access tools may be integrated into PDAs, cellular telephones, and/or other mobile devices. A Web browser may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the Web browser communicates with information servers, operating systems, integrated program components (e.g., plug-ins), and/or the like; e.g., it may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses. Also, in place of a Web browser and information server, a combined application may be developed to perform similar operations of both. The combined application would similarly affect the obtaining and the provision of information to users, user agents, and/or the like from the TVC enabled nodes. The combined application may be nugatory on systems employing standard Web browsers.

Mail Server

[00332] A mail server component 4421 is a stored program component that is executed by a CPU 4403. The mail server may be a conventional Internet mail server such as, but not limited to sendmail, Microsoft Exchange, and/or the like. The mail server may allow for the execution of program components through facilities such as TVC, ActiveX, (ANSI) (Objective-) C (++), C# and/or .NET, CGI scripts, Java, JavaScript, PERL, PHP, pipes, Python, WebObjects, and/or the like. The mail server may support communications protocols such as, but not limited to: Internet message access protocol (IMAP), Messaging Application Programming Interface (MAPI)/Microsoft Exchange, post office protocol (POP3), simple mail transfer protocol (SMTP), and/or the like. The mail server can route, forward, and process incoming and

outgoing mail messages that have been sent, relayed and/or otherwise traversing through and/or to the TVC.

[00333] Access to the TVC mail may be achieved through a number of APIs offered by the individual Web server components and/or the operating system.

[00334] Also, a mail server may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, information, and/or responses.

Mail Client

[00335] A mail client component 4422 is a stored program component that is executed by a CPU 4403. The mail client may be a conventional mail viewing application such as Apple Mail, Microsoft Entourage, Microsoft Outlook, Microsoft Outlook Express, Mozilla, Thunderbird, and/or the like. Mail clients may support a number of transfer protocols, such as: IMAP, Microsoft Exchange, POP3, SMTP, and/or the like. A mail client may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the mail client communicates with mail servers, operating systems, other mail clients, and/or the like; e.g., it may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, information, and/or responses. Generally, the mail client provides a facility to compose and transmit electronic mail messages.

Cryptographic Server

[00336] A cryptographic server component 4420 is a stored program component that is executed by a CPU 4403, cryptographic processor 4426, cryptographic processor interface 4427, cryptographic processor device 4428, and/or the like. Cryptographic processor interfaces will allow for expedition of encryption and/or decryption requests by the cryptographic component; however, the cryptographic component, alternatively, may run on a conventional CPU. The cryptographic component allows for the

encryption and/or decryption of provided data. The cryptographic component allows for both symmetric and asymmetric (e.g., Pretty Good Protection (PGP)) encryption and/or decryption. The cryptographic component may employ cryptographic techniques such as, but not limited to: digital certificates (e.g., X.509 authentication framework), digital signatures, dual signatures, enveloping, password access protection, public key management, and/or the like. The cryptographic component will facilitate numerous (encryption and/or decryption) security protocols such as, but not limited to: checksum, Data Encryption Standard (DES), Elliptical Curve Encryption (ECC), International Data Encryption Algorithm (IDEA), Message Digest 5 (MD5, which is a one way hash operation), passwords, Rivest Cipher (RC5), Rijndael, RSA (which is an Internet encryption and authentication system that uses an algorithm developed in 1977 by Ron Rivest, Adi Shamir, and Leonard Adleman), Secure Hash Algorithm (SHA), Secure Socket Layer (SSL), Secure Hypertext Transfer Protocol (HTTPS), and/or the like. Employing such encryption security protocols, the TVC may encrypt all incoming and/or outgoing communications and may serve as node within a virtual private network (VPN) with a wider communications network. The cryptographic component facilitates the process of "security authorization" whereby access to a resource is inhibited by a security protocol wherein the cryptographic component effects authorized access to the secured resource. In addition, the cryptographic component may provide unique identifiers of content, e.g., employing and MD5 hash to obtain a unique signature for an digital audio file. A cryptographic component may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. The cryptographic component supports encryption schemes allowing for the secure transmission of information across a communications network to enable the TVC component to engage in secure transactions if so desired. The cryptographic component facilitates the secure accessing of resources on the TVC and facilitates the access of secured resources on remote systems; i.e., it may act as a client and/or server of secured resources. Most frequently, the cryptographic component communicates with information servers, operating systems, other program components, and/or the like. The cryptographic component may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses.

The TVC Database

[00337] The TVC database component 4419 may be embodied in a database and its stored data. The database is a stored program component, which is executed by the CPU; the stored program component portion configuring the CPU to process the stored data. The database may be a conventional, fault tolerant, relational, scalable, secure database such as Oracle or Sybase. Relational databases are an extension of a flat file. Relational databases consist of a series of related tables. The tables are interconnected via a key field. Use of the key field allows the combination of the tables by indexing against the key field; i.e., the key fields act as dimensional pivot points for combining information from various tables. Relationships generally identify links maintained between tables by matching primary keys. Primary keys represent fields that uniquely identify the rows of a table in a relational database. More precisely, they uniquely identify rows of a table on the "one" side of a one-to-many relationship.

[00338] Alternatively, the TVC database may be implemented using various standard data-structures, such as an array, hash, (linked) list, struct, structured text file (e.g., XML), table, and/or the like. Such data-structures may be stored in memory and/or in (structured) files. In another alternative, an object-oriented database may be used, such as Frontier, ObjectStore, Poet, Zope, and/or the like. Object databases can include a number of object collections that are grouped and/or linked together by common attributes; they may be related to other object collections by some common attributes. Object-oriented databases perform similarly to relational databases with the exception that objects are not just pieces of data but may have other types of capabilities encapsulated within a given object. If the TVC database is implemented as a data-structure, the use of the TVC database 4419 may be integrated into another component such as the TVC component 4435. Also, the database may be implemented as a mix of data structures, objects, and relational structures. Databases may be consolidated and/or distributed in countless variations through standard data processing techniques. Portions of databases, e.g., tables, may be exported and/or imported and thus decentralized and/or integrated.

[00339] In one embodiment, the database component 4419 includes several tables

4419a-q. A Users table 4419a may include fields such as, but not limited to: user_id, ssn, dob, first_name, last_name, age, state, address_firstline, address_secondline, zipcode, devices_list, contact_info, contact_type, alt_contact_info, alt_contact_type, user_gender, user_clothing_size, user_body_type, user_eye_color, user_hair_color, user_complexion, user_personalized_gesture_models, user_recommended_items, user_image, user_image_date, user_body_joint_location, and/or the like. The Users table may support and/or track multiple entity accounts on a TVC. A Devices table 4419b may include fields such as, but not limited to: device_ID, device_name, device_IP, device_GPS, device_MAC, device_serial, device_ECID, device_UDID, device_browser, device_type, device_model, device_version, device_OS, device_apps_list, device_securekey, wallet_app_installed_ flag, and/or the like. An Apps table 4419c may include fields such as, but not limited to: app_ID, app_name, app_type, app_dependencies, app_access_code, user_pin, and/or the like. An Accounts table 4419d may include fields such as, but not limited to: account_number, account_security_code, account_name, issuer_acquirer_flag, issuer_name, acquirer_name, account_address, routing_number, access_API_call, linked_wallets_list, and/or the like. A Merchants table 4419e may include fields such as, but not limited to: merchant_id, merchant_name, merchant_address, store_id, ip_address, mac_address, auth_key, port_num, security_settings_list, and/or the like. An Issuers table 4419f may include fields such as, but not limited to: issuer_id, issuer_name, issuer_address, ip_address, mac_address, auth_key, port_num, security_settings_list, and/or the like. An Acquirers table 4419g may include fields such as, but not limited to: account_firstname, account_lastname, account_type, account_num, account_ balance_list, billingaddress_ line1, billingaddress_ line2, billing_zipcode, billing_state, shipping_preferences, shippingaddress_line1, shippingaddress_line2, shipping_ zipcode, shipping_state, and/or the like. A Pay Gateways table 4419h may include fields such as, but not limited to: gateway_ID, gateway_IP, gateway_MAC, gateway_secure_key, gateway_access_list, gateway_API_call_list, gateway_services_list, and/or the like. A Shop Sessions table 4419i may include fields such as, but not limited to: user_id, session_id, alerts_URL, timestamp, expiry_lapse, merchant_id, store_id, device_type, device_ID, device_IP, device_MAC, device_browser, device_serial, device_ECID, device_model, device_OS,

wallet_app_installed, total_cost, cart_ID_list, product_params_list, social_flag, social_message, social_networks_list, coupon_lists, accounts_list, CVV2_lists, charge_ratio_list, charge_priority_list, value_exchange_symbols_list, bill_address, ship_address, cloak_flag, pay_mode, alerts_rules_list, and/or the like. A Transactions table 4419j may include fields such as, but not limited to: order_id, user_id, timestamp, transaction_cost, purchase_details_list, num_products, products_list, product_type, product_params_list, product_title, product_summary, quantity, user_id, client_id, client_ip, client_type, client_model, operating_system, os_version, app_installed_flag, user_id, account_firstname, account_lastname, account_type, account_num, account_priority_account_ratio, billingaddress_line1, billingaddress_line2, billing_zipcode, billing_state, shipping_preferences, shippingaddress_line1, shippingaddress_line2, shipping_ zipcode, shipping_state, merchant_id, merchant_name, merchant_auth_key, and/or the like. A Batches table 4419k may include fields such as, but not limited to: batch_id, transaction_id_list, timestamp_list, cleared_flag_list, clearance_trigger_ settings, and/or the like. A Ledgers table 4419l may include fields such as, but not limited to: request_id, timestamp, deposit_amount, batch_id, transaction_id, clear_flag, deposit_account, transaction_summary, payor_ name, payor_account, and/or the like. A Products table 4419m may include fields such as, but not limited to: product_ID, product_title, product_attributes_list, product_price, tax_info_list, related_products_ list, offers_list, discounts_list, rewards_list, merchants_list, merchant_availability_list, product_date_added, product_image, product_qr, product_manufacturer, product_model, product_aisle, product_stack, product_shelf, product_type, and/or the like. An Offers table 4419n may include fields such as, but not limited to: offer_ID, offer_title, offer_attributes_list, offer_price, offer_expiry, related_products_ list, discounts_list, rewards_list, merchants_list, merchant_availability_list, and/or the like. A Behavior Data table 44190 may include fields such as, but not limited to: user_id, timestamp, activity_type, activity_location, activity_attribute_list, activity_attribute_values_list, and/or the like. A Label Analytics table 4419p may include fields such as, but not limited to: label_id, label_name, label_format, label_account_type, label_session_id, label_session_type, label_product_id, label_product_type, Label_transaction_id, label_transaction_type, and/or the like. A Social table 4419q may include fields such as, but not limited to:

social_id, social_name, social_server_id, social_server_ip, social_domain_id, social_source, social_feed_id, social_feed_source, social_comment, social_comment_time, social_comment_keyterms, social_comment_product_id, and/or the like. A MDGA table 4419r includes fields such as, but not limited to: MDGA_id, MDGA_name, MDGA_touch_gestures, MDGA_finger_gestures, MDGA_QR_gestures, MDGA_object_gestures, MDGA_vocal_commands, MDGA_merchant, and/or the like. The MDGA table may support and/or track multiple possible composite actions on a TVC. A payment device table 4419s includes fields such as, but not limited to: pd_id, pd_user, pd_type, pd_issuer, pd_issuer_id, pd_qr, pd_date_added, and/or the like. The payment device table may support and/or track multiple payment devices used on a TVC. An object gestures table 4419t includes fields such as, but not limited to: object_gesture_id, object_gesture_type, object_gesture_x, object_gesture_x, object_gesture_merchant, and/or the like. The object gesture table may support and/or track multiple object gestures performed on a TVC. A touch gesture table 4419u includes fields such as, but not limited to: touch_gesture_id, touch_gesture_type, touch_gesture_x, touch_gesture_x, touch_gesture_merchant, and/or the like. The touch gestures table may support and/or track multiple touch gestures performed on a TVC.A finger gesture table 4419v includes fields such as, but not limited to: finger_gesture_id, finger_gesture_type, finger_gesture_x, finger_gesture_x, finger_gesture_merchant, and/or the like. The finger gestures table may support and/or track multiple finger gestures performed on a TVC. A QR gesture table 4419w includes fields such as, but not limited to: QR_gesture_id, QR_gesture_type, QR_gesture_x, QR_gesture_x, QR_gesture_merchant, and/or the like. The QR gestures table may support and/or track multiple QR gestures performed on a TVC. A vocal command table 4419x includes fields such as, but not limited to: vc_id, vc_name, vc_command_list, and/or the like. The vocal command gestures table may support and/or track multiple vocal commands performed on a TVC.

[00340] In one embodiment, the TVC database may interact with other database systems. For example, employing a distributed database system, queries and data access by search TVC component may treat the combination of the TVC database, an integrated data security layer database as a single database entity.

[00341] In one embodiment, user programs may contain various user interface primitives, which may serve to update the TVC. Also, various accounts may require custom database tables depending upon the environments and the types of clients the TVC may need to serve. It should be noted that any unique fields may be designated as a key field throughout. In an alternative embodiment, these tables have been decentralized into their own databases and their respective database controllers (i.e., individual database controllers for each of the above tables). Employing standard data processing techniques, one may further distribute the databases over several computer systemizations and/or storage devices. Similarly, configurations of the decentralized database controllers may be varied by consolidating and/or distributing the various database components 4419a-x. The TVC may be configured to keep track of various settings, inputs, and parameters via database controllers.

[00342] The TVC database may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the TVC database communicates with the TVC component, other program components, and/or the like. The database may contain, retain, and provide information regarding other nodes and data.

The TVCs

[00343] The TVC component 4435 is a stored program component that is executed by a CPU. In one embodiment, the TVC component incorporates any and/or all combinations of the aspects of the TVC discussed in the previous figures. As such, the TVC affects accessing, obtaining and the provision of information, services, transactions, and/or the like across various communications networks.

[00344] The TVC component may transform reality scene visual captures (e.g., see 213 in FIGURE 2A, etc.) via TVC components (e.g., fingertip detection component 4442, image processing component 4443, virtual label generation 4444, auto-layer injection component 4445, user setting component 4446, wallet snap component 4447, mixed gesture detection component 4448, and/or the like) into transaction settlements, and/or the like and use of the TVC. In one embodiment, the TVC component 4435 takes

inputs (e.g., user selection on one or more of the presented overlay labels such as fund transfer 227d in FIGURE 2C, etc.; checkout request 3811; product data 3815; wallet access input 4011; transaction authorization input 4014; payment gateway address 4018; payment network address 4022; issuer server address(es) 4025; funds authorization request(s) 4026; user(s) account(s) data 4028; batch data 4212; payment network address 4216; issuer server address(es) 4224; individual payment request 4225; payment ledger, merchant account data 4231; and/or the like) etc., and transforms the inputs via various components (e.g., user selection on one or more of the presented overlay labels such as fund transfer 227d in FIGURE 2C, etc.; UPC 4453; PTA 4451PTC 4452; and/or the like), into outputs (e.g., fund transfer receipt 239 in FIGURE 2E; checkout request message 3813; checkout data 3817; card authorization request 4016, 4023; funds authorization response(s) 4030; transaction authorization response 4032; batch append data 4034; purchase receipt 4035; batch clearance request 4214; batch payment request 4218; transaction data 4220; individual payment confirmation 4228, 4229; updated payment ledger, merchant account data 4233; and/or the like).

[00345] The TVC component enabling access of information between nodes may be developed by employing standard development tools and languages such as, but not limited to: Apache components, Assembly, ActiveX, binary executables, (ANSI) (Objective-) C (++), C# and/or .NET, database adapters, CGI scripts, Java, JavaScript, mapping tools, procedural and object oriented development tools, PERL, PHP, Python, shell scripts, SQL commands, web application server extensions, web development environments and libraries (e.g., Microsoft's ActiveX; Adobe AIR, FLEX & FLASH; AJAX; (D)HTML; Dojo, Java; JavaScript; jQuery(UI); MooTools; Prototype; script.aculo.us; Simple Object Access Protocol (SOAP); SWFObject; Yahoo! User Interface; and/or the like), WebObjects, and/or the like. In one embodiment, the TVC server employs a cryptographic server to encrypt and decrypt communications. The TVC component may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the TVC component communicates with the TVC database, operating systems, other program components, and/or the like. The TVC may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications,

requests, and/or responses.

Distributed TVCs

[00346] The structure and/or operation of any of the TVC node controller components may be combined, consolidated, and/or distributed in any number of ways to facilitate development and/or deployment. Similarly, the component collection may be combined in any number of ways to facilitate deployment and/or development. To accomplish this, one may integrate the components into a common code base or in a facility that can dynamically load the components on demand in an integrated fashion.

[00347] The component collection may be consolidated and/or distributed in countless variations through standard data processing and/or development techniques. Multiple instances of any one of the program components in the program component collection may be instantiated on a single node, and/or across numerous nodes to improve performance through load-balancing and/or data-processing techniques. Furthermore, single instances may also be distributed across multiple controllers and/or storage devices; e.g., databases. All program component instances and controllers working in concert may do so through standard data processing communication techniques.

[00348] The configuration of the TVC controller will depend on the context of system deployment. Factors such as, but not limited to, the budget, capacity, location, and/or use of the underlying hardware resources may affect deployment requirements and configuration. Regardless of if the configuration results in more consolidated and/or integrated program components, results in a more distributed series of program components, and/or results in some combination between a consolidated and distributed configuration, data may be communicated, obtained, and/or provided. Instances of components consolidated into a common code base from the program component collection may communicate, obtain, and/or provide data. This may be accomplished through intra-application data processing communication techniques such as, but not limited to: data referencing (e.g., pointers), internal messaging, object instance variable communication, shared memory space, variable passing, and/or the

like.

[00349] If component collection components are discrete, separate, and/or external to one another, then communicating, obtaining, and/or providing data with and/or to other components may be accomplished through inter-application data processing communication techniques such as, but not limited to: Application Program Interfaces (API) information passage; (distributed) Component Object Model ((D)COM), (Distributed) Object Linking and Embedding ((D)OLE), and/or the like), Common Object Request Broker Architecture (CORBA), Jini local and remote application program interfaces, JavaScript Object Notation (JSON), Remote Method Invocation (RMI), SOAP, process pipes, shared files, and/or the like. Messages sent between discrete component components for inter-application communication or within memory spaces of a singular component for intra-application communication may be facilitated through the creation and parsing of a grammar. A grammar may be developed by using development tools such as lex, yacc, XML, and/or the like, which allow for grammar generation and parsing capabilities, which in turn may form the basis of communication messages within and between components.

[00350] For example, a grammar may be arranged to recognize the tokens of an HTTP post command, e.g.:

```
w3c -post http://... Value1
```

[00351] where Value1 is discerned as being a parameter because "http://" is part of the grammar syntax, and what follows is considered part of the post value. Similarly, with such a grammar, a variable "Value1" may be inserted into an "http://" post command and then sent. The grammar syntax itself may be presented as structured data that is interpreted and/or otherwise used to generate the parsing mechanism (e.g., a syntax description text file as processed by lex, yacc, etc.). Also, once the parsing mechanism is generated and/or instantiated, it itself may process and/or parse structured data such as, but not limited to: character (e.g., tab) delineated text, HTML, structured text streams, XML, and/or the like structured data. In another embodiment, inter-application data processing protocols themselves may have integrated and/or readily available parsers (e.g., JSON, SOAP, and/or like parsers) that may be employed

to parse (e.g., communications) data. Further, the parsing grammar may be used beyond message parsing, but may also be used to parse: databases, data collections, data stores, structured data, and/or the like. Again, the desired configuration will depend upon the context, environment, and requirements of system deployment.

[00352] For example, in some implementations, the TVC controller may be executing a PHP script implementing a Secure Sockets Layer ("SSL") socket server via the information server, which listens to incoming communications on a server port to which a client may send data, e.g., data encoded in JSON format. Upon identifying an incoming communication, the PHP script may read the incoming message from the client device, parse the received JSON-encoded text data to extract information from the JSON-encoded text data into PHP script variables, and store the data (e.g., client identifying information, etc.) and/or extracted information in a relational database accessible using the Structured Query Language ("SQL"). An exemplary listing, written substantially in the form of PHP/SQL commands, to accept JSON-encoded input data from a client device via a SSL connection, parse the data to extract variables, and store the data to a database, is provided below:

```
<?PHP
header('Content-Type: text/plain');

// set ip address and port to listen to for incoming data
$address = '192.168.0.100';
$port = 255;

// create a server-side SSL socket, listen for/accept incoming communication
$sock = socket_create(AF_INET, SOCK_STREAM, 0);
socket_bind($sock, $address, $port) or die('Could not bind to address');
socket_listen($sock);
$client = socket_accept($sock);

// read input data from client device in 1024 byte blocks until end of message
do {
    $input = "";
    $input = socket_read($client, 1024);
    $data .= $input;
} while($input != "");

```

```
// parse data to extract variables
$obj = json_decode($data, true);

// store input data in a database
mysql_connect("201.408.185.132",$DBserver,$password); // access database server
mysql_select("CLIENT_DB.SQL"); // select database to append
mysql_query("INSERT INTO UserTable (transmission)
VALUES ($data)"); // add data to UserTable table in  a CLIENT database
mysql_close("CLIENT_DB.SQL"); // close connection to database
?>
```

[00353] Also, the following resources may be used to provide example embodiments regarding SOAP parser implementation:

http://www.xav.com/perl/site/lib/SOAP/Parser.html
http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.IBMDI.doc/referenceguide295.htm

[00354] and other parser implementations:

http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.IBMDI.doc/referenceguide259.htm

[00355] all of which are hereby expressly incorporated by reference herein.

[00356] In order to address various issues and advance the art, the entirety of this application for TRANSACTION VISUAL CAPTURING APPARATUSES, METHODS AND SYSTEMS (including the Cover Page, Title, Headings, Field, Background, Summary, Brief Description of the Drawings, Detailed Description, Claims, Abstract, Figures, Appendices and/or otherwise) shows by way of illustration various embodiments in which the claimed innovations may be practiced. The advantages and features of the application are of a representative sample of embodiments only, and are not exhaustive and/or exclusive. They are presented only to assist in understanding and teach the claimed principles. It should be understood that they are not representative of all claimed innovations. As such, certain aspects of the disclosure have not been discussed herein. That alternate embodiments may not have been presented for a specific portion of the innovations or that further undescribed alternate embodiments may be available for a portion is not to be considered a disclaimer of those alternate

embodiments. It will be appreciated that many of those undescribed embodiments incorporate the same principles of the innovations and others are equivalent. Thus, it is to be understood that other embodiments may be utilized and functional, logical, operational, organizational, structural and/or topological modifications may be made without departing from the scope and/or spirit of the disclosure. As such, all examples and/or embodiments are deemed to be non-limiting throughout this disclosure. Also, no inference should be drawn regarding those embodiments discussed herein relative to those not discussed herein other than it is as such for purposes of reducing space and repetition. For instance, it is to be understood that the logical and/or topological structure of any combination of any program components (a component collection), other components and/or any present feature sets as described in the figures and/or throughout are not limited to a fixed operating order and/or arrangement, but rather, any disclosed order is exemplary and all equivalents, regardless of order, are contemplated by the disclosure. Furthermore, it is to be understood that such features are not limited to serial execution, but rather, any number of threads, processes, services, servers, and/or the like that may execute asynchronously, concurrently, in parallel, simultaneously, synchronously, and/or the like are contemplated by the disclosure. As such, some of these features may be mutually contradictory, in that they cannot be simultaneously present in a single embodiment. Similarly, some features are applicable to one aspect of the innovations, and inapplicable to others. In addition, the disclosure includes other innovations not presently claimed. Applicant reserves all rights in those presently unclaimed innovations, including the right to claim such innovations, file additional applications, continuations, continuations in part, divisions, and/or the like thereof. As such, it should be understood that advantages, embodiments, examples, functional, features, logical, operational, organizational, structural, topological, and/or other aspects of the disclosure are not to be considered limitations on the disclosure as defined by the claims or limitations on equivalents to the claims. It is to be understood that, depending on the particular needs and/or characteristics of a TVC individual and/or enterprise user, database configuration and/or relational model, data type, data transmission and/or network framework, syntax structure, and/or the like, various embodiments of the TVC may be implemented that enable a great deal of flexibility and customization. For example, aspects of the TVC may be adapted for

(electronic/financial) trading systems, financial planning systems, and/or the like. While various embodiments and discussions of the TVC have been directed to retail commerce, however, it is to be understood that the embodiments described herein may be readily configured and/or customized for a wide variety of other applications and/or implementations.

CLAIMS

What is claimed is:

1. An augmented retail shopping processor-implemented method, comprising:

obtaining a user shopping assistance request including user check-in information from a user mobile device upon user entry into a merchant store to engage in a shopping experience;

extracting a user identifier based on the user check-in information;

accessing a database for a user profile based on the extracted user identifier;

determining a user prior behavior pattern from the accessed user profile;

obtaining user real-time in-store behavior data from the user mobile device;

generating a product purchase recommendation using the user real-time in-store behavior and the user prior behavior pattern;

providing, via a network communication device over a merchant network, the product purchase recommendation to the user mobile device;

adding a product for purchase by the user to a shopping cart over the merchant network, based on the provided recommendation;

obtaining a transaction interests indication that the user wishes to purchase the product added to the cart;

providing a check-out information page to the user including product item information and payment information;

initiating a purchase transaction for the product added to the cart through an encrypted, non-merchant, bandwidth and network latency reducing, and out-of-band network communication via an electronic payment communication network; and

providing an electronic receipt to the user mobile device for the purchase transaction for the product added to the cart.

2. An augmented retail shopping processor-implemented method, comprising:

obtaining a user check-in message indicating user entry at a merchant

store from a user mobile device;

retrieving a user profile associated with the merchant store;

obtaining user real-time in-store behavior data from the user mobile device;

generating a product purchase recommendation based on the user profile and the user real-time in-store behavior;

providing the product purchase recommendation to the user;

obtaining a user interests indication that the user wishes to make a purchase of a product;

initiating a purchase transaction for the product; and

providing an electronic receipt to the user mobile device for the purchase transaction upon completion of the purchase transaction.

3. The method of claim 2, wherein the user check-in message is generated by a user snapping a merchant store provided quick response (QR) code.

4. The method of claim 2, wherein the user check-in message is sent to a remote server.

5. The method of claim 2, wherein the user check-in message includes geo-location information of the user.

6. The method of claim 2, wherein the merchant store assigns a sales clerk to the user upon user check-in at the merchant store.

7. The method of claim 6, wherein the sales clerk comprises any of a store employee and a virtual shopping assistant.

8. The method of claim 6, wherein the sales clerk assignment is determined based on user loyalty levels.

9. The method of claim 6, wherein the sales clerk comprises any of a local representative and a remote representative.

10. The method of claim 2, wherein the user profile comprises user loyalty information and past purchasing history with the merchant store.

11. The method of claim 2, wherein the user profile is previously stored at a local database at the merchant store.

12. The method of claim 2, wherein the user profile is stored at a remote server and transmitted to the merchant store.

13. The method of claim 2, wherein the real-time in-store behavior data comprises any of:

user's location in the merchant store;

product items that are located close to the user;

product items that the user has viewed or scanned; and

product items that the user has purchased.

14. The method of claim 2, wherein the product purchase recommendation comprises any of:

product items based on user interests;

popular product items in store; and

product items that are popular from a social media platform.

15. The method of claim 14, further comprising:

obtaining social media data from social media platforms, wherein the social media data comprises social comments, ratings, and multimedia contents related to the product item.

16. The method of claim 2, further comprising:

receiving a user communication indicating shopping interests.

17. The method of claim 16, wherein the user communication is conducted via any of:

in-person communication between the user and a sales clerk;

video chat;

audio chat;

instant messages; and

text messages.

18. The method of claim 16, wherein the shopping interests further comprises:

a user inquiry about locations of product items including a snapped in-store photo of product items.

19. The method of claim 16, wherein the shopping interests further comprises:

a user request to meet a sales clerk in-person for shopping assistance.

20. The method of claim 16, wherein the shopping interests further comprises:

a user request for a store map.

21. The method of claim 16, wherein the shopping interests further comprises:

a user request to start an in-store augmented reality shopping experience.

22. The method of claim 2, wherein check-out information page includes a QR code encoding product item information and a payment amount due.

23. The method of claim 22, wherein the purchase transaction is initiated upon the user snapping the QR code using the user mobile device, and submitting a wallet payment request to an electronic payment processing network.

24. The method of claim 22, wherein the purchase transaction is initiated at the merchant store.

25. The method of claim 22, wherein the electronic receipt is sent to the user mobile device via a third party notification system.

26. The method of claim 22, wherein the electronic receipt is provided by the merchant store.

27. The method of claim 2, further comprising:

maintaining a shopping cart for the user; and

adding the product item to the shopping cart.

28. The method of claim 2, further comprising:

receiving a shopping list from the user mobile device; and

obtaining product item information from the shopping list.

29. The method of claim 28, further comprising:

obtaining inventory information and stock keeping unit (SKU) information of the obtained product information; and

generating a store map with tags indicating locations of product items on the shopping list.

30. The method of claim 28, further comprising:

generating an augmenter reality in-store scan indicating locations of product items on the shopping list.

31. An augmented retail shopping system, comprising:

means for obtaining a user check-in message indicating user entry at a merchant store from a user mobile device;

means for retrieving a user profile associated with the merchant store;

means for obtaining user real-time in-store behavior data from the user mobile device;

means for generating a product purchase recommendation based on the user profile and the user real-time in-store behavior;

means for providing the product purchase recommendation to the user;

means for obtaining a user interests indication that the user wishes to make a purchase of a product;

means for initiating a purchase transaction for the product; and

means for providing an electronic receipt to the user mobile device for the purchase transaction upon completion of the purchase transaction.

32. An augmented retail shopping apparatus, comprising:

a processor; and

a memory disposed in communication with the processor and storing processor-executable instructions to:

obtain a user check-in message indicating user entry at a merchant store from a user mobile device;

retrieve a user profile associated with the merchant store;

obtain user real-time in-store behavior data from the user mobile device;

generate a product purchase recommendation based on the user profile and the user real-time in-store behavior;

provide the product purchase recommendation to the user;

obtain a user interests indication that the user wishes to make a purchase of a product;

initiate a purchase transaction for the product; and

provide an electronic receipt to the user mobile device for the purchase transaction upon completion of the purchase transaction.

33. An augmented retail shopping non-transitory computer-readable medium storing processor-executable instructions, said instructions executable by a processor to:

obtain a user check-in message indicating user entry at a merchant store from a user mobile device;

retrieve a user profile associated with the merchant store;

obtain user real-time in-store behavior data from the user mobile device;

generate a product purchase recommendation based on the user profile

and the user real-time in-store behavior;

provide the product purchase recommendation to the user;

obtain a user interests indication that the user wishes to make a purchase of a product;

initiate a purchase transaction for the product; and

provide an electronic receipt to the user mobile device for the purchase transaction upon completion of the purchase transaction.

34. A payment transaction visual capturing processor-implemented method, comprising:

obtaining a live visual capture of a reality scene via an image capture device coupled to a user mobile device;

performing image analysis of the obtained visual capture of the reality scene;

identifying an object within the reality scene indicative of a financial account within the reality scene via image processing;

determining an account identifier of the financial account via the image processing;

retrieving financial information pertaining to the financial account based on the determined account identifier;

generating user interactive option labels for the identified object, said user interactive option labels including an option to initiate a financial transaction with the financial account; and

presenting the generated user interactive option labels overlaying the live visual capture of the reality scene at a user interface of the user mobile device.

35. The method of claim 34, wherein the identified object comprises any of a payment card, an invoice and a purchase item.

36. The method of claim 34, wherein the user interactive option labels comprise any of the labels for fund transfer, view balance, and pay for a purchase.

37. A payment transaction visual capturing processor-implemented method, comprising:

obtaining a visual capture of a reality scene via an image capture device coupled to a user mobile device;

performing image analysis of the obtained visual capture of the reality scene;

identifying an object within the reality scene via image processing;

retrieving previously stored user activity records;

obtaining user interests indicators based on the retrieved user activity records;

correlating the obtained user interests indicators with the identified object;

generating augmented reality virtual labels including information related to the identified object based on the obtained user interests; and

presenting the generated augmented reality virtual labels overlaying the visual capture of the reality scene at a user interface of the user mobile device.

38. The method of claim 37, wherein the user activity records include any of a web search key term, a GPS location check-in event, and a browsing history.

39. The method of claim 37, wherein two or more objects are identified from the captured reality scene, and each of the two or more objects is associated with augmented reality virtual labels.

40. The method of claim 37, further comprising:

determining a fingertip motion within the captured reality scene.

41. A transaction visual capturing processor-implemented method, comprising:

obtaining a live visual capture of a reality scene via an image capture device coupled to a user mobile device;

performing image processing of the obtained live visual capture of the reality scene;

identifying a first object indicative of a first financial account within the reality scene via the image processing;

identifying a second object indicative of a second financial account within the reality scene via the image processing;

determining a first account identifier of the first financial account via the image processing;

determining a second account identifier of the second financial account via the image processing;

detecting a user transaction command within the live visual capture of the reality scene for payment from the first financial account to the second financial account;

initiating a payment transaction request for the payment from the first financial account to the second financial account,

said payment transaction request including the determined first account identifier and the second account identifier; and

obtaining a transaction confirmation for the payment from the first financial account to the second financial account.

42. The method of claim 41, wherein the identified first object is a financial payment card having an account resolvable identifier.

43. The method of claim 41, wherein the identified second object is a financial payment card having an account resolvable identifier.

44. The method of claim 41, wherein the identified second object is a sales bill including a QR code.

45. The method of claim 41, wherein the identified second object is a metro card.

46. The method of claim 41, wherein the payment from the first financial account to the second financial account comprises a fund transfer from one financial payment card to another financial payment card.

47. The method of claim 41, wherein the payment from the first financial account to the second financial account comprises a bill payment from a financial payment card to a merchant for a product purchase.

48. The method of claim 41, wherein the payment from the first financial account to the second financial account comprises a fund refill from a financial payment card to a metro card.

49. The method of claim 41, wherein the image processing comprises obtaining screen grabs of the obtained live visual capture.

50. The method of claim 41, wherein the user transaction command comprises an audio command.

51. The method of claim 41, wherein the user transaction command comprises

a fingertip motion of moving from the first object to the second object.

52. The method of claim 41, further comprising:

obtaining information pertaining to the identified first financial account and the identified second object based on the determined first account identifier.

53. The method of claim 41, further comprising:

generating a user interactive option label indicating the payment from the first financial account to the second financial account; and

injecting the generated user interactive option label overlaying the live visual capture of the reality scene at a user interface of the user mobile device.

54. The method of claim 41, wherein the first account identifier and the second account identifier are visibly determinable via any of:

barcode reading;

QR code decoding; and

optical character recognition (OCR).

55. The method of claim 41, further comprising:

obtaining authorization credentials for the payment from the first financial account to the second financial account.

56. The method of claim 55, further comprising:

requesting a user to input a passcode for user identify confirmation.

57. The method of claim 41, wherein the first account identifier comprises a 16 digit bank card number.

58. The method of claim 41, wherein the second account identifier comprises a merchant identifier.

59. The method of claim 41, wherein the second account identifier comprises a 16 digit bank card number.

60. The method of claim 41, further comprising:

generating a security alert request when the second object comprises a financial payment card with a cardholder; and

sending the security alert to the cardholder of the second object.

61. A visual capturing processor-implemented method, comprising:

obtaining a list of product items indicating user demands at a user mobile device;

determining a product category and a product identifier for each product item on

the obtained list of product items;

obtaining a user indication of a merchant store;

obtaining product inventory and stock keeping data of the merchant store;

querying the obtained product inventory and stock keeping data based on the product identifier and the product category for each product item;

determining an in-store stock keeping location for each product item based on the query;

obtaining a visual layout of the merchant store;

tagging the visual layout of the merchant store with the determined in-store stock keeping location for each product item; and

presenting the tagged visual layout of the merchant store at the user mobile device.

62. The method of claim 61, wherein the list of product items comprises a shopping list entered by a user.

63. The method of claim 62, wherein the shopping list is generated via audio commands from the user.

64. The method of claim 62, wherein the shopping list is generated by extracting product item information from a previously stored sales receipt.

65. The method of claim 61, wherein the user indication of the merchant store comprises a user check-in message at a merchant store.

66. The method of claim 61, wherein the user indication of the merchant store comprises GPS coordinates of a user.

67. The method of claim 61, wherein the product inventory and stock keeping data comprises a table listing an aisle number and a stack number of an in-stock product at the merchant store.

68. The method of claim 61, wherein the in-store stock keeping location for each product item comprises any of a aisle number, a stack number, and a shelf number.

69. The method of claim 61, wherein the visual layout of the merchant store comprises a static store floor plan map.

70. The method of claim 69, further comprising highlighting the static store floor plan map with labels illustrating a location of each product item.

71. The method of claim 61, wherein the visual layout of the merchant store

comprises a live visual capture of an in-store reality scene.

72. The method of claim 71, further comprising injecting user interactive augmented reality labels overlaying the live visual capture of the in-store reality scene, said augmented reality labels indicating a location of each product item within the in-store reality scene.

73. The method of claim 72, wherein said augmented reality labels may comprise a semi-transparent bound box covering a product item within the in-store reality scene.

74. The method of claim 61, wherein more than one merchant stores are processed for multi-merchant shopping.

75. An augmented retail shopping apparatus, comprising:

a processor; and

a memory in communication with the processor containing processor-readable instructions to:

obtain a user shopping assistance request including user check-in information from a user mobile device upon user entry into a merchant store to engage in a shopping experience;

extract a user identifier based on the user check-in information;

access a database for a user profile based on the extracted user identifier;

determine a user prior behavior pattern from the accessed user profile;

obtain user real-time in-store behavior data from the user mobile device;

generate a product purchase recommendation using the user real-time in-store behavior and the user prior behavior pattern;

provide, via a network communication device over a merchant network, the product purchase recommendation to the user mobile device;

add a product for purchase by the user to a shopping cart over the merchant network, based on the provided recommendation;

obtain a transaction interests indication that the user wishes to purchase the product added to the cart;

provide a check-out information page to the user including product item information and payment information;

initiate a purchase transaction for the product added to the cart through

an encrypted, non-merchant, bandwidth and network latency reducing, and out-of-band network communication via an electronic payment communication network; and

provide an electronic receipt to the user mobile device for the purchase transaction for the product added to the cart.

76. An augmented retail shopping system, comprising:

means for obtaining a user shopping assistance request including user check-in information from a user mobile device upon user entry into a merchant store to engage in a shopping experience;

means for extracting a user identifier based on the user check-in information;

means for accessing a database for a user profile based on the extracted user identifier;

means for determining a user prior behavior pattern from the accessed user profile;

means for obtaining user real-time in-store behavior data from the user mobile device;

means for generating a product purchase recommendation using the user real-time in-store behavior and the user prior behavior pattern;

means for providing, via a network communication device over a merchant network, the product purchase recommendation to the user mobile device;

means for adding a product for purchase by the user to a shopping cart over the merchant network, based on the provided recommendation;

means for obtaining a transaction interests indication that the user wishes to purchase the product added to the cart;

means for providing a check-out information page to the user including product item information and payment information;

means for initiating a purchase transaction for the product added to the cart through an encrypted, non-merchant, bandwidth and network latency reducing, and out-of-band network communication via an electronic payment communication network; and

means for providing an electronic receipt to the user mobile device for the purchase transaction for the product added to the cart.

77. An augmented retail shopping non-transitory computer-readable medium storing processor-executable instructions, said instructions executable by a processor to:

obtain a user shopping assistance request including user check-in information from a user mobile device upon user entry into a merchant store to engage in a shopping experience;

extract a user identifier based on the user check-in information;

access a database for a user profile based on the extracted user identifier;

determine a user prior behavior pattern from the accessed user profile;

obtain user real-time in-store behavior data from the user mobile device;

generate a product purchase recommendation using the user real-time in-store behavior and the user prior behavior pattern;

provide, via a network communication device over a merchant network, the product purchase recommendation to the user mobile device;

add a product for purchase by the user to a shopping cart over the merchant network, based on the provided recommendation;

obtain a transaction interests indication that the user wishes to purchase the product added to the cart;

provide a check-out information page to the user including product item information and payment information;

initiate a purchase transaction for the product added to the cart through an encrypted, non-merchant, bandwidth and network latency reducing, and out-of-band network communication via an electronic payment communication network; and

provide an electronic receipt to the user mobile device for the purchase transaction for the product added to the cart.

78. The apparatus of claim 31, wherein the user check-in message is generated by a user snapping a merchant store provided quick response (QR) code.

79. The system of claim 31, wherein the user check-in message is sent to a remote server.

80. The system of claim 31, wherein the user check-in message includes geo-location information of the user.

81. The system of claim 31, wherein the merchant store assigns a sales clerk to the user upon user check-in at the merchant store.

82. The system of claim 81, wherein the sales clerk comprises any of a store employee and a virtual shopping assistant.

83. The system of claim 81, wherein the sales clerk assignment is determined based on user loyalty levels.

84. The system of claim 81, wherein the sales clerk comprises any of a local representative and a remote representative.

85. The system of claim 31, wherein the user profile comprises user loyalty information and past purchasing history with the merchant store.

86. The system of claim 31, wherein the user profile is previously stored at a local database at the merchant store.

87. The system of claim 31, wherein the user profile is stored at a remote server and transmitted to the merchant store.

88. The system of claim 31, wherein the real-time in-store behavior data comprises any of:

user's location in the merchant store;

product items that are located close to the user;

product items that the user has viewed or scanned; and

product items that the user has purchased.

89. The system of claim 31, wherein the product purchase recommendation comprises any of:

product items based on user interests;

popular product items in store; and

product items that are popular from a social media platform.

90. The system of claim 89, further comprising:

means for obtaining social media data from social media platforms, wherein the social media data comprises social comments, ratings, and multimedia contents related to the product item.

91. The system of claim 31, further comprising:

means for receiving a user communication indicating shopping interests.

92. The system of claim 91, wherein the user communication is conducted via

any of:

in-person communication between the user and a sales clerk;

video chat;

audio chat;

instant messages; and

text messages.

93. The system of claim 91, wherein the shopping interests further comprises:

a user inquiry about locations of product items including a snapped in-store photo of product items.

94. The system of claim 91, wherein the shopping interests further comprises:

a user request to meet a sales clerk in-person for shopping assistance.

95. The system of claim 91, wherein the shopping interests further comprises:

a user request for a store map.

96. The system of claim 91, wherein the shopping interests further comprises:

a user request to start an in-store augmented reality shopping experience.

97. The system of claim 31, wherein check-out information page includes a QR code encoding product item information and a payment amount due.

98. The system of claim 97, wherein the purchase transaction is initiated upon the user snapping the QR code using the user mobile device, and submitting a wallet payment request to an electronic payment processing network.

99. The system of claim 97, wherein the purchase transaction is initiated at the merchant store.

100. The system of claim 97, wherein the electronic receipt is sent to the user mobile device via a third party notification system.

101. The system of claim 97, wherein the electronic receipt is provided by the merchant store.

102. The system of claim 31, further comprising:

means for maintaining a shopping cart for the user; and

means for adding the product item to the shopping cart.

103. The system of claim 31, further comprising:

means for receiving a shopping list from the user mobile device; and

means for obtaining product item information from the shopping list.

104. The system of claim 31, further comprising:

means for obtaining inventory information and stock keeping unit (SKU) information of the obtained product information; and

means for generating a store map with tags indicating locations of product items on the shopping list.

105. The system of claim 31, further comprising:

means for generating an augmenter reality in-store scan indicating locations of product items on the shopping list.

106. The apparatus of claim 32, wherein the user check-in message is generated by a user snapping a merchant store provided quick response (QR) code.

107. The apparatus of claim 32, wherein the user check-in message is sent to a remote server.

108. The apparatus of claim 32, wherein the user check-in message includes geo-location information of the user.

109. The apparatus of claim 32, wherein the merchant store assigns a sales clerk to the user upon user check-in at the merchant store.

110. The apparatus of claim 109, wherein the sales clerk comprises any of a store employee and a virtual shopping assistant.

111. The apparatus of claim 109, wherein the sales clerk assignment is determined based on user loyalty levels.

112. The apparatus of claim 109, wherein the sales clerk comprises any of a local representative and a remote representative.

113. The apparatus of claim 32, wherein the user profile comprises user loyalty information and past purchasing history with the merchant store.

114. The apparatus of claim 32, wherein the user profile is previously stored at a local database at the merchant store.

115. The apparatus of claim 32, wherein the user profile is stored at a remote server and transmitted to the merchant store.

116. The apparatus of claim 32, wherein the real-time in-store behavior data comprises any of:

user's location in the merchant store;

product items that are located close to the user;

product items that the user has viewed or scanned; and

product items that the user has purchased.

117. The apparatus of claim 32, wherein the product purchase recommendation comprises any of:

product items based on user interests;

popular product items in store; and

product items that are popular from a social media platform.

118. The apparatus of claim 117, further comprising instructions to:

obtain social media data from social media platforms, wherein the social media data comprises social comments, ratings, and multimedia contents related to the product item.

119. The apparatus of claim 32, further comprising instructions to:

receive a user communication indicating shopping interests.

120. The apparatus of claim 119, wherein the user communication is conducted via any of:

in-person communication between the user and a sales clerk;

video chat;

audio chat;

instant messages; and

text messages.

121. The apparatus of claim 119, wherein the shopping interests further comprises:

a user inquiry about locations of product items including a snapped in-store photo of product items.

122. The apparatus of claim 119, wherein the shopping interests further comprises:

a user request to meet a sales clerk in-person for shopping assistance.

123. The apparatus of claim 119, wherein the shopping interests further comprises:

a user request for a store map.

124. The apparatus of claim 119, wherein the shopping interests further comprises:

a user request to start an in-store augmented reality shopping experience.

125. The apparatus of claim 32, wherein check-out information page includes a QR code encoding product item information and a payment amount due.

126. The apparatus of claim 125, wherein the purchase transaction is initiated upon the user snapping the QR code using the user mobile device, and submitting a wallet payment request to an electronic payment processing network.

127. The apparatus of claim 125, wherein the purchase transaction is initiated at the merchant store.

128. The apparatus of claim 125, wherein the electronic receipt is sent to the user mobile device via a third party notification system.

129. The apparatus of claim 125, wherein the electronic receipt is provided by the merchant store.

130. The apparatus of claim 32, further comprising instructions to:

maintain a shopping cart for the user; and

add the product item to the shopping cart.

131. The apparatus of claim 32, further comprising instructions to:

receive a shopping list from the user mobile device; and

obtain product item information from the shopping list.

132. The apparatus of claim 32, further comprising instructions to:

obtain inventory information and stock keeping unit (SKU) information of the obtained product information; and

generate a store map with tags indicating locations of product items on the shopping list.

133. The apparatus of claim 32, further comprising instructions to:

generate an augmenter reality in-store scan indicating locations of product items on the shopping list.

134. The medium of claim 33, wherein the user check-in message is generated by a user snapping a merchant store provided quick response (QR) code.

135. The medium of claim 33, wherein the user check-in message is sent to a remote server.

136. The medium of claim 33, wherein the user check-in message includes geo-location information of the user.

137. The medium of claim 33, wherein the merchant store assigns a sales clerk to the user upon user check-in at the merchant store.

138. The medium of claim 137, wherein the sales clerk comprises any of a store employee and a virtual shopping assistant.

139. The medium of claim 137, wherein the sales clerk assignment is determined based on user loyalty levels.

140. The medium of claim 137, wherein the sales clerk comprises any of a local representative and a remote representative.

141. The medium of claim 33, wherein the user profile comprises user loyalty information and past purchasing history with the merchant store.

142. The medium of claim 33, wherein the user profile is previously stored at a local database at the merchant store.

143. The medium of claim 33, wherein the user profile is stored at a remote server and transmitted to the merchant store.

144. The medium of claim 33, wherein the real-time in-store behavior data comprises any of:

user's location in the merchant store;

product items that are located close to the user;

product items that the user has viewed or scanned; and

product items that the user has purchased.

145. The medium of claim 33, wherein the product purchase recommendation comprises any of:

product items based on user interests;

popular product items in store; and

product items that are popular from a social media platform.

146. The medium of claim 145, further comprising instructions to:

obtain social media data from social media platforms, wherein the social media data comprises social comments, ratings, and multimedia contents related to the product item.

147. The medium of claim 33, further comprising instructions to:

receive a user communication indicating shopping interests.

148. The medium of claim 147, wherein the user communication is conducted

via any of:

in-person communication between the user and a sales clerk;

video chat;

audio chat;

instant messages; and

text messages.

149. The medium of claim 147, wherein the shopping interests further comprises:

a user inquiry about locations of product items including a snapped in-store photo of product items.

150. The medium of claim 147, wherein the shopping interests further comprises:

a user request to meet a sales clerk in-person for shopping assistance.

151. The medium of claim 147, wherein the shopping interests further comprises:

a user request for a store map.

152. The medium of claim 147, wherein the shopping interests further comprises:

a user request to start an in-store augmented reality shopping experience.

153. The medium of claim 33, wherein check-out information page includes a QR code encoding product item information and a payment amount due.

154. The medium of claim 153, wherein the purchase transaction is initiated upon the user snapping the QR code using the user mobile device, and submitting a wallet payment request to an electronic payment processing network.

155. The medium of claim 153, wherein the purchase transaction is initiated at the merchant store.

156. The medium of claim 153, wherein the electronic receipt is sent to the user mobile device via a third party notification system.

157. The medium of claim 153, wherein the electronic receipt is provided by the merchant store.

158. The medium of claim 33, further comprising instructions to:

maintain a shopping cart for the user; and

add the product item to the shopping cart.

159. The medium of claim 33, further comprising instructions to:

receive a shopping list from the user mobile device; and

obtain product item information from the shopping list.

160. The medium of claim 33, further comprising instructions to:

obtain inventory information and stock keeping unit (SKU) information of the obtained product information; and

generate a store map with tags indicating locations of product items on the shopping list.

161. The medium of claim 33, further comprising instructions to:

generate an augmenter reality in-store scan indicating locations of product items on the shopping list.

162. A payment transaction visual capturing apparatus, comprising:

a processor; and

a memory disposed in communication with the processor and storing processor-executable instructions to:

obtain a live visual capture of a reality scene via an image capture device coupled to a user mobile device;

perform image analysis of the obtained visual capture of the reality scene;

identify an object within the reality scene indicative of a financial account within the reality scene via image processing;

determine an account identifier of the financial account via the image processing;

retrieve financial information pertaining to the financial account based on the determined account identifier;

generate user interactive option labels for the identified object, said user interactive option labels including an option to initiate a financial transaction with the financial account; and

present the generated user interactive option labels overlaying the live visual capture of the reality scene at a user interface of the user mobile device.

163. A payment transaction visual capturing system, comprising:

means for obtaining a live visual capture of a reality scene via an image capture device coupled to a user mobile device;

means for performing image analysis of the obtained visual capture of the reality scene;

means for identifying an object within the reality scene indicative of a financial account within the reality scene via image processing;

means for determining an account identifier of the financial account via the image processing;

means for retrieving financial information pertaining to the financial account based on the determined account identifier;

means for generating user interactive option labels for the identified object, said user interactive option labels including an option to initiate a financial transaction with the financial account; and

means for presenting the generated user interactive option labels overlaying the live visual capture of the reality scene at a user interface of the user mobile device.

164. A payment transaction visual capturing non-transitory computer-readable medium storing processor-executable instructions, said instructions executable by a processor to:

obtain a live visual capture of a reality scene via an image capture device coupled to a user mobile device;

perform image analysis of the obtained visual capture of the reality scene;

identify an object within the reality scene indicative of a financial account within the reality scene via image processing;

determine an account identifier of the financial account via the image processing;

retrieve financial information pertaining to the financial account based on the determined account identifier;

generate user interactive option labels for the identified object, said user interactive option labels including an option to initiate a financial transaction with the financial account; and

present the generated user interactive option labels overlaying the live

visual capture of the reality scene at a user interface of the user mobile device.

165. The apparatus of claim 162, wherein the identified object comprises any of a payment card, an invoice and a purchase item.

166. The apparatus of claim 162, wherein the user interactive option labels comprise any of the labels for fund transfer, view balance, and pay for a purchase.

167. The system of claim 163, wherein the identified object comprises any of a payment card, an invoice and a purchase item.

168. The system of claim 163, wherein the user interactive option labels comprise any of the labels for fund transfer, view balance, and pay for a purchase.

169. The medium of claim 164, wherein the identified object comprises any of a payment card, an invoice and a purchase item.

170. The medium of claim 164, wherein the user interactive option labels comprise any of the labels for fund transfer, view balance, and pay for a purchase.

171. A payment transaction visual capturing system, comprising:

means for obtaining a visual capture of a reality scene via an image capture device coupled to a user mobile device;

means for performing image analysis of the obtained visual capture of the reality scene;

means for identifying an object within the reality scene via image processing;

means for retrieving previously stored user activity records;

means for obtaining user interests indicators based on the retrieved user activity records;

means for correlating the obtained user interests indicators with the identified object;

means for generating augmented reality virtual labels including information related to the identified object based on the obtained user interests; and

means for presenting the generated augmented reality virtual labels overlaying the visual capture of the reality scene at a user interface of the user mobile device.

172. A payment transaction visual capturing apparatus, comprising:

a processor; and

a memory disposed in communication with the processor and storing processor-executable instructions to:

obtain a visual capture of a reality scene via an image capture device coupled to a user mobile device;

perform image analysis of the obtained visual capture of the reality scene;

identify an object within the reality scene via image processing;

retrieve previously stored user activity records;

obtain user interests indicators based on the retrieved user activity records;

correlate the obtained user interests indicators with the identified object;

generate augmented reality virtual labels including information related to the identified object based on the obtained user interests; and

present the generated augmented reality virtual labels overlaying the visual capture of the reality scene at a user interface of the user mobile device.

173. A payment transaction visual capturing non-transitory computer-readable medium storing processor-executable instructions, said instructions executable by a processor to:

obtain a visual capture of a reality scene via an image capture device coupled to a user mobile device;

perform image analysis of the obtained visual capture of the reality scene;

identify an object within the reality scene via image processing;

retrieve previously stored user activity records;

obtain user interests indicators based on the retrieved user activity records;

correlate the obtained user interests indicators with the identified object;

generate augmented reality virtual labels including information related to the identified object based on the obtained user interests; and

present the generated augmented reality virtual labels overlaying the visual capture of the reality scene at a user interface of the user mobile device.

174. The system of claim 171, wherein the user activity records include any of a web search key term, a GPS location check-in event, and a browsing history.

175. The system of claim 171, wherein two or more objects are identified from

the captured reality scene, and each of the two or more objects is associated with augmented reality virtual labels.

176. The system of claim 171, further comprising:

means for determining a fingertip motion within the captured reality scene.

177. The apparatus of claim 172, wherein the user activity records include any of a web search key term, a GPS location check-in event, and a browsing history.

178. The apparatus of claim 172, wherein two or more objects are identified from the captured reality scene, and each of the two or more objects is associated with augmented reality virtual labels.

179. The apparatus of claim 172, further comprising instructions to:

determine a fingertip motion within the captured reality scene.

180. The medium of claim 173, wherein the user activity records include any of a web search key term, a GPS location check-in event, and a browsing history.

181. The medium of claim 173, wherein two or more objects are identified from the captured reality scene, and each of the two or more objects is associated with augmented reality virtual labels.

182. The medium of claim 173, further comprising instructions to:

determine a fingertip motion within the captured reality scene.

183. A transaction visual capturing system, comprising:

means for obtaining a live visual capture of a reality scene via an image capture device coupled to a user mobile device;

means for performing image processing of the obtained live visual capture of the reality scene;

means for identifying a first object indicative of a first financial account within the reality scene via the image processing;

means for identifying a second object indicative of a second financial account within the reality scene via the image processing;

means for determining a first account identifier of the first financial account via the image processing;

means for determining a second account identifier of the second financial account via the image processing;

means for detecting a user transaction command within the live visual

capture of the reality scene for payment from the first financial account to the second financial account;

means for initiating a payment transaction request for the payment from the first financial account to the second financial account,

said payment transaction request including the determined first account identifier and the second account identifier; and

means for obtaining a transaction confirmation for the payment from the first financial account to the second financial account.

184. A transaction visual capturing apparatus, comprising:

a processor; and

a memory disposed in communication with the processor and storing processor-executable instructions to:

obtain a live visual capture of a reality scene via an image capture device coupled to a user mobile device;

perform image processing of the obtained live visual capture of the reality scene;

identify a first object indicative of a first financial account within the reality scene via the image processing;

identify a second object indicative of a second financial account within the reality scene via the image processing;

determine a first account identifier of the first financial account via the image processing;

determine a second account identifier of the second financial account via the image processing;

detect a user transaction command within the live visual capture of the reality scene for payment from the first financial account to the second financial account;

initiate a payment transaction request for the payment from the first financial account to the second financial account,

said payment transaction request including the determined first account identifier and the second account identifier; and

obtain a transaction confirmation for the payment from the first financial

account to the second financial account.

185. A transaction visual capturing non-transitory computer-readable medium storing processor-executable instructions, said instructions executable by a processor to:

obtain a live visual capture of a reality scene via an image capture device coupled to a user mobile device;

perform image processing of the obtained live visual capture of the reality scene;

identify a first object indicative of a first financial account within the reality scene via the image processing;

identify a second object indicative of a second financial account within the reality scene via the image processing;

determine a first account identifier of the first financial account via the image processing;

determine a second account identifier of the second financial account via the image processing;

detect a user transaction command within the live visual capture of the reality scene for payment from the first financial account to the second financial account;

initiate a payment transaction request for the payment from the first financial account to the second financial account,

said payment transaction request including the determined first account identifier and the second account identifier; and

obtain a transaction confirmation for the payment from the first financial account to the second financial account.

186. The system of claim 183, wherein the identified first object is a financial payment card having an account resolvable identifier.

187. The system of claim 183, wherein the identified second object is a financial payment card having an account resolvable identifier.

188. The system of claim 183, wherein the identified second object is a sales bill including a QR code.

189. The system of claim 183, wherein the identified second object is a metro

card.

190. The system of claim 183, wherein the payment from the first financial account to the second financial account comprises a fund transfer from one financial payment card to another financial payment card.

191. The system of claim 183, wherein the payment from the first financial account to the second financial account comprises a bill payment from a financial payment card to a merchant for a product purchase.

192. The system of claim 183, wherein the payment from the first financial account to the second financial account comprises a fund refill from a financial payment card to a metro card.

193. The system of claim 183, wherein the image processing comprises obtaining screen grabs of the obtained live visual capture.

194. The system of claim 183, wherein the user transaction command comprises an audio command.

195. The system of claim 183, wherein the user transaction command comprises a fingertip motion of moving from the first object to the second object.

196. The system of claim 183, further comprising:

means for obtaining information pertaining to the identified first financial account and the identified second object based on the determined first account identifier.

197. The system of claim 183, further comprising:

means for generating a user interactive option label indicating the payment from the first financial account to the second financial account; and

means for injecting the generated user interactive option label overlaying the live visual capture of the reality scene at a user interface of the user mobile device.

198. The system of claim 183, wherein the first account identifier and the second account identifier are visibly determinable via any of:

barcode reading;

QR code decoding; and

optical character recognition (OCR).

199. The system of claim 183, further comprising:

means for obtaining authorization credentials for the payment from the first

financial account to the second financial account.

200. The system of claim 199, further comprising:

means for requesting a user to input a passcode for user identify confirmation.

201. The system of claim 183, wherein the first account identifier comprises a 16 digit bank card number.

202. The system of claim 183, wherein the second account identifier comprises a merchant identifier.

203. The system of claim 183, wherein the second account identifier comprises a 16 digit bank card number.

204. The system of claim 183, further comprising:

means for generating a security alert request when the second object comprises a financial payment card with a cardholder; and

means for sending the security alert to the cardholder of the second object.

205. The apparatus of claim 184, wherein the identified first object is a financial payment card having an account resolvable identifier.

206. The apparatus of claim 184, wherein the identified second object is a financial payment card having an account resolvable identifier.

207. The apparatus of claim 184, wherein the identified second object is a sales bill including a QR code.

208. The apparatus of claim 184, wherein the identified second object is a metro card.

209. The apparatus of claim 184, wherein the payment from the first financial account to the second financial account comprises a fund transfer from one financial payment card to another financial payment card.

210. The apparatus of claim 184, wherein the payment from the first financial account to the second financial account comprises a bill payment from a financial payment card to a merchant for a product purchase.

211. The apparatus of claim 184, wherein the payment from the first financial account to the second financial account comprises a fund refill from a financial payment card to a metro card.

212. The apparatus of claim 184, wherein the image processing comprises obtaining screen grabs of the obtained live visual capture.

213. The apparatus of claim 184, wherein the user transaction command comprises an audio command.

214. The apparatus of claim 184, wherein the user transaction command comprises a fingertip motion of moving from the first object to the second object.

215. The apparatus of claim 184, further comprising instructions to:

obtain information pertaining to the identified first financial account and the identified second object based on the determined first account identifier.

216. The apparatus of claim 184, further comprising instructions to:

generate a user interactive option label indicating the payment from the first financial account to the second financial account; and

inject the generated user interactive option label overlaying the live visual capture of the reality scene at a user interface of the user mobile device.

217. The apparatus of claim 184, wherein the first account identifier and the second account identifier are visibly determinable via any of:

barcode reading;

QR code decoding; and

optical character recognition (OCR).

218. The apparatus of claim 184, further comprising instructions to:

obtain authorization credentials for the payment from the first financial account to the second financial account.

219. The apparatus of claim 218, further comprising instructions to:

request a user to input a passcode for user identify confirmation.

220. The apparatus of claim 184, wherein the first account identifier comprises a 16 digit bank card number.

221. The apparatus of claim 184, wherein the second account identifier comprises a merchant identifier.

222. The apparatus of claim 184, wherein the second account identifier comprises a 16 digit bank card number.

223. The apparatus of claim 184, further comprising instructions to:

generate a security alert request when the second object comprises a financial payment card with a cardholder; and

send the security alert to the cardholder of the second object.

224. The medium of claim 185, wherein the identified first object is a financial payment card having an account resolvable identifier.

225. The medium of claim 185, wherein the identified second object is a financial payment card having an account resolvable identifier.

226. The medium of claim 185, wherein the identified second object is a sales bill including a QR code.

227. The medium of claim 185, wherein the identified second object is a metro card.

228. The medium of claim 185, wherein the payment from the first financial account to the second financial account comprises a fund transfer from one financial payment card to another financial payment card.

229. The medium of claim 185, wherein the payment from the first financial account to the second financial account comprises a bill payment from a financial payment card to a merchant for a product purchase.

230. The medium of claim 185, wherein the payment from the first financial account to the second financial account comprises a fund refill from a financial payment card to a metro card.

231. The medium of claim 185, wherein the image processing comprises obtaining screen grabs of the obtained live visual capture.

232. The medium of claim 185, wherein the user transaction command comprises an audio command.

233. The medium of claim 185, wherein the user transaction command comprises a fingertip motion of moving from the first object to the second object.

234. The medium of claim 185, further comprising instructions to:

obtain information pertaining to the identified first financial account and the identified second object based on the determined first account identifier.

235. The medium of claim 185, further comprising instructions to:

generate a user interactive option label indicating the payment from the first financial account to the second financial account; and

inject the generated user interactive option label overlaying the live visual capture of the reality scene at a user interface of the user mobile device.

236. The medium of claim 185, wherein the first account identifier and the

second account identifier are visibly determinable via any of:

barcode reading;

QR code decoding; and

optical character recognition (OCR).

237. The medium of claim 185, further comprising:

obtain authorization credentials for the payment from the first financial account to the second financial account.

238. The medium of claim 237, further comprising instructions to:

request a user to input a passcode for user identify confirmation.

239. The medium of claim 185, wherein the first account identifier comprises a 16 digit bank card number.

240. The medium of claim 185, wherein the second account identifier comprises a merchant identifier.

241. The medium of claim 185, wherein the second account identifier comprises a 16 digit bank card number.

242. The medium of claim 185, further comprising instructions to:

generate a security alert request when the second object comprises a financial payment card with a cardholder; and

send the security alert to the cardholder of the second object.

243. A visual capturing system, comprising:

means for obtaining a list of product items indicating user demands at a user mobile device;

means for determining a product category and a product identifier for each product item on the obtained list of product items;

means for obtaining a user indication of a merchant store;

obtaining product inventory and stock keeping data of the merchant store;

means for querying the obtained product inventory and stock keeping data based on the product identifier and the product category for each product item;

means for determining an in-store stock keeping location for each product item based on the query;

means for obtaining a visual layout of the merchant store;

means for tagging the visual layout of the merchant store with the determined in-

store stock keeping location for each product item; and

means for presenting the tagged visual layout of the merchant store at the user mobile device.

244. A visual capturing apparatus, comprising:

a processor; and

a memory disposed in communication with the processor and storing processor-executable instructions to:

obtain a list of product items indicating user demands at a user mobile device;

determine a product category and a product identifier for each product item on the obtained list of product items;

obtain a user indication of a merchant store;

obtain product inventory and stock keeping data of the merchant store;

query the obtained product inventory and stock keeping data based on the product identifier and the product category for each product item;

determine an in-store stock keeping location for each product item based on the query;

obtain a visual layout of the merchant store;

tag the visual layout of the merchant store with the determined in-store stock keeping location for each product item; and

present the tagged visual layout of the merchant store at the user mobile device.

245. A visual capturing non-transitory computer-readable medium storing processor-executable instructions, said instructions executable by a processor to:

obtain a list of product items indicating user demands at a user mobile device;

determine a product category and a product identifier for each product item on the obtained list of product items;

obtain a user indication of a merchant store;

obtain product inventory and stock keeping data of the merchant store;

query the obtained product inventory and stock keeping data based on the product identifier and the product category for each product item;

determine an in-store stock keeping location for each product item based on the

query;

obtain a visual layout of the merchant store;

tag the visual layout of the merchant store with the determined in-store stock keeping location for each product item; and

present the tagged visual layout of the merchant store at the user mobile device.

246. The system of claim 243, wherein the list of product items comprises a shopping list entered by a user.

247. The system of claim 246, wherein the shopping list is generated via audio commands from the user.

248. The system of claim 246, wherein the shopping list is generated by extracting product item information from a previously stored sales receipt.

249. The system of claim 243, wherein the user indication of the merchant store comprises a user check-in message at a merchant store.

250. The system of claim 243, wherein the user indication of the merchant store comprises GPS coordinates of a user.

251. The system of claim 243, wherein the product inventory and stock keeping data comprises a table listing an aisle number and a stack number of an in-stock product at the merchant store.

252. The system of claim 243, wherein the in-store stock keeping location for each product item comprises any of a aisle number, a stack number, and a shelf number.

253. The system of claim 243, wherein the visual layout of the merchant store comprises a static store floor plan map.

254. The system of claim 253, further comprising highlighting the static store floor plan map with labels illustrating a location of each product item.

255. The system of claim 243, wherein the visual layout of the merchant store comprises a live visual capture of an in-store reality scene.

256. The system of claim 255, further comprising injecting user interactive augmented reality labels overlaying the live visual capture of the in-store reality scene, said augmented reality labels indicating a location of each product item within the in-store reality scene.

257. The system of claim 256, wherein said augmented reality labels may

comprise a semi-transparent bound box covering a product item within the in-store reality scene.

258. The system of claim 243, wherein more than one merchant stores are processed for multi-merchant shopping.

259. The apparatus of claim 244, wherein the list of product items comprises a shopping list entered by a user.

260. The apparatus of claim 259, wherein the shopping list is generated via audio commands from the user.

261. The apparatus of claim 259, wherein the shopping list is generated by extracting product item information from a previously stored sales receipt.

262. The apparatus of claim 244, wherein the user indication of the merchant store comprises a user check-in message at a merchant store.

263. The apparatus of claim 244, wherein the user indication of the merchant store comprises GPS coordinates of a user.

264. The apparatus of claim 244, wherein the product inventory and stock keeping data comprises a table listing an aisle number and a stack number of an in-stock product at the merchant store.

265. The apparatus of claim 244, wherein the in-store stock keeping location for each product item comprises any of a aisle number, a stack number, and a shelf number.

266. The apparatus of claim 244, wherein the visual layout of the merchant store comprises a static store floor plan map.

267. The apparatus of claim 266, further comprising highlighting the static store floor plan map with labels illustrating a location of each product item.

268. The apparatus of claim 244, wherein the visual layout of the merchant store comprises a live visual capture of an in-store reality scene.

269. The apparatus of claim 268, further comprising injecting user interactive augmented reality labels overlaying the live visual capture of the in-store reality scene, said augmented reality labels indicating a location of each product item within the in-store reality scene.

270. The apparatus of claim 269, wherein said augmented reality labels may

comprise a semi-transparent bound box covering a product item within the in-store reality scene.

271. The apparatus of claim 244, wherein more than one merchant stores are processed for multi-merchant shopping.

272. The medium of claim 245, wherein the list of product items comprises a shopping list entered by a user.

273. The medium of claim 272, wherein the shopping list is generated via audio commands from the user.

274. The medium of claim 272, wherein the shopping list is generated by extracting product item information from a previously stored sales receipt.

275. The medium of claim 245, wherein the user indication of the merchant store comprises a user check-in message at a merchant store.

276. The medium of claim 245, wherein the user indication of the merchant store comprises GPS coordinates of a user.

277. The medium of claim 245, wherein the product inventory and stock keeping data comprises a table listing an aisle number and a stack number of an in-stock product at the merchant store.

278. The medium of claim 245, wherein the in-store stock keeping location for each product item comprises any of a aisle number, a stack number, and a shelf number.

279. The medium of claim 245, wherein the visual layout of the merchant store comprises a static store floor plan map.

280. The medium of claim 279, further comprising highlighting the static store floor plan map with labels illustrating a location of each product item.

281. The medium of claim 245, wherein the visual layout of the merchant store comprises a live visual capture of an in-store reality scene.

282. The medium of claim 281, further comprising injecting user interactive augmented reality labels overlaying the live visual capture of the in-store reality scene, said augmented reality labels indicating a location of each product item within the in-store reality scene.

283. The medium of claim 282, wherein said augmented reality labels may comprise a semi-transparent bound box covering a product item within the in-store reality scene.

284. The medium of claim 245, wherein more than one merchant stores are processed for multi-merchant shopping.

285. A processor-implemented method comprising:

receiving from a wallet user multiple gesture actions within a specified temporal quantum;

determining composite constituent gestures, gesture manipulated objects, and user account information from the received multiple gesture actions;

determining via a processor a composite gesture action associated with the determined composite constituent gestures and gesture manipulated objects; and

executing via a processor the composite gesture action to perform a transaction with a user account specified by the user account information.

286. The method of claim 285, wherein the multiple gesture actions contain a video file.

287. The method of claim 285, wherein the multiple gesture actions contain at least one image file.

288. The method of claim 285, wherein the wherein the multiple gesture actions contain an audio file.

289. The method of claim 285, wherein the multiple gesture actions contain both at least one image file and an audio file.

290. The method of claim 285, wherein the transaction is a payment transaction between the user and a second entity.

291. The method of claim 285, wherein the transaction is a payment transaction between the user's payment device and second payment device also owned by the user.

292. An apparatus comprising:

a processor; and

a memory disposed in communication with the processor and storing processor-issuable instructions to:

receive from a wallet user multiple gesture actions within a specified temporal quantum;

determine composite constituent gestures, gesture manipulated objects, and user account information from the received multiple gesture actions;

determine a composite gesture action associated with the determined composite constituent gestures and gesture manipulated objects; and

execute the composite gesture action to perform a transaction with a user account specified by the user account information.

293. A system comprising:

means to receive from a wallet user multiple gesture actions within a specified temporal quantum;

means to determine composite constituent gestures, gesture manipulated objects, and user account information from the received multiple gesture actions;

means to determine a composite gesture action associated with the determined composite constituent gestures and gesture manipulated objects; and

means to execute the composite gesture action to perform a transaction with a user account specified by the user account information.

294. A processor-readable tangible medium storing processor-issuable instructions to:

receive from a wallet user multiple gesture actions within a specified temporal quantum;

determine composite constituent gestures, gesture manipulated objects, and user account information from the received multiple gesture actions;

determine a composite gesture action associated with the determined composite constituent gestures and gesture manipulated objects; and

execute the composite gesture action to perform a transaction with a user account specified by the user account information.

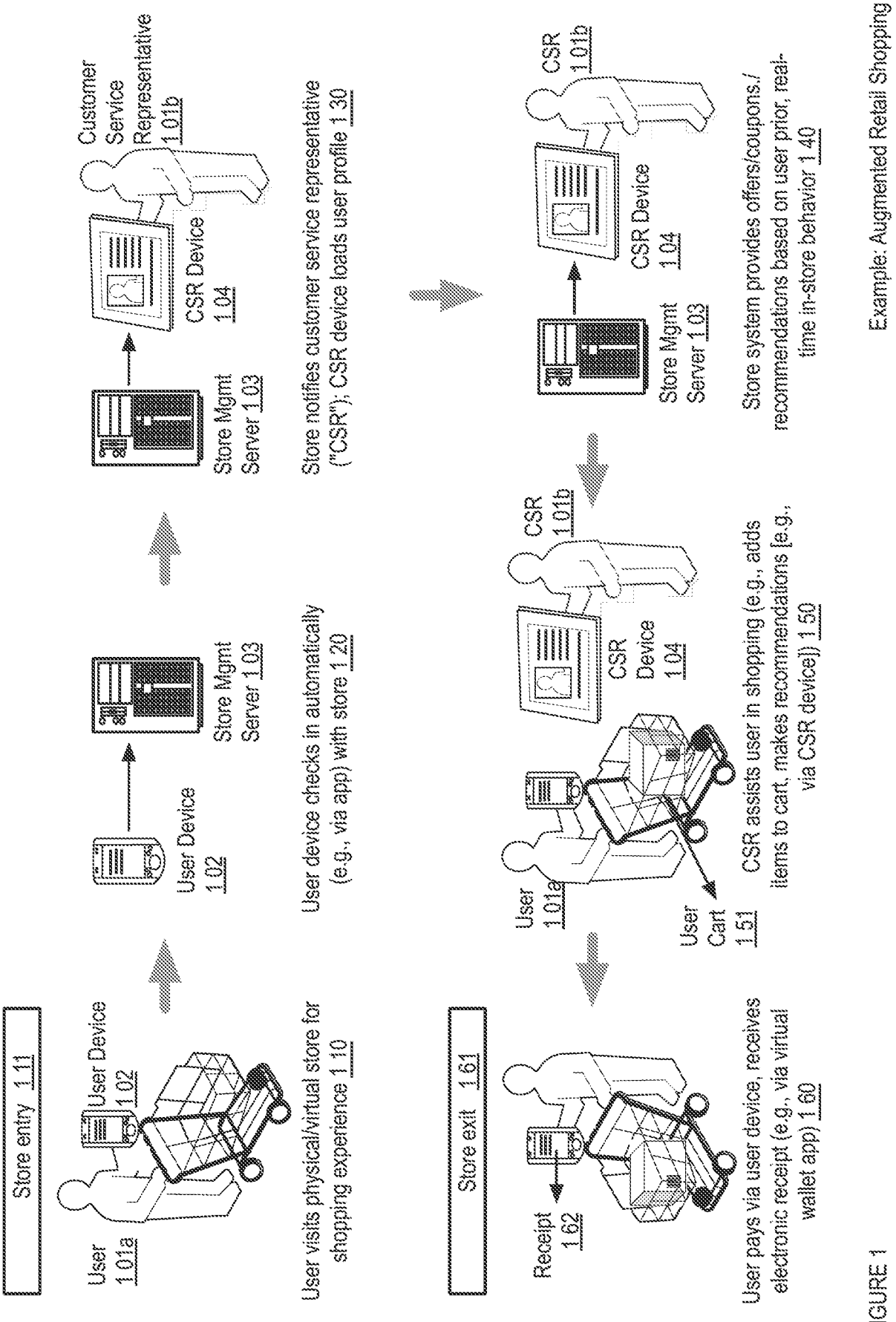
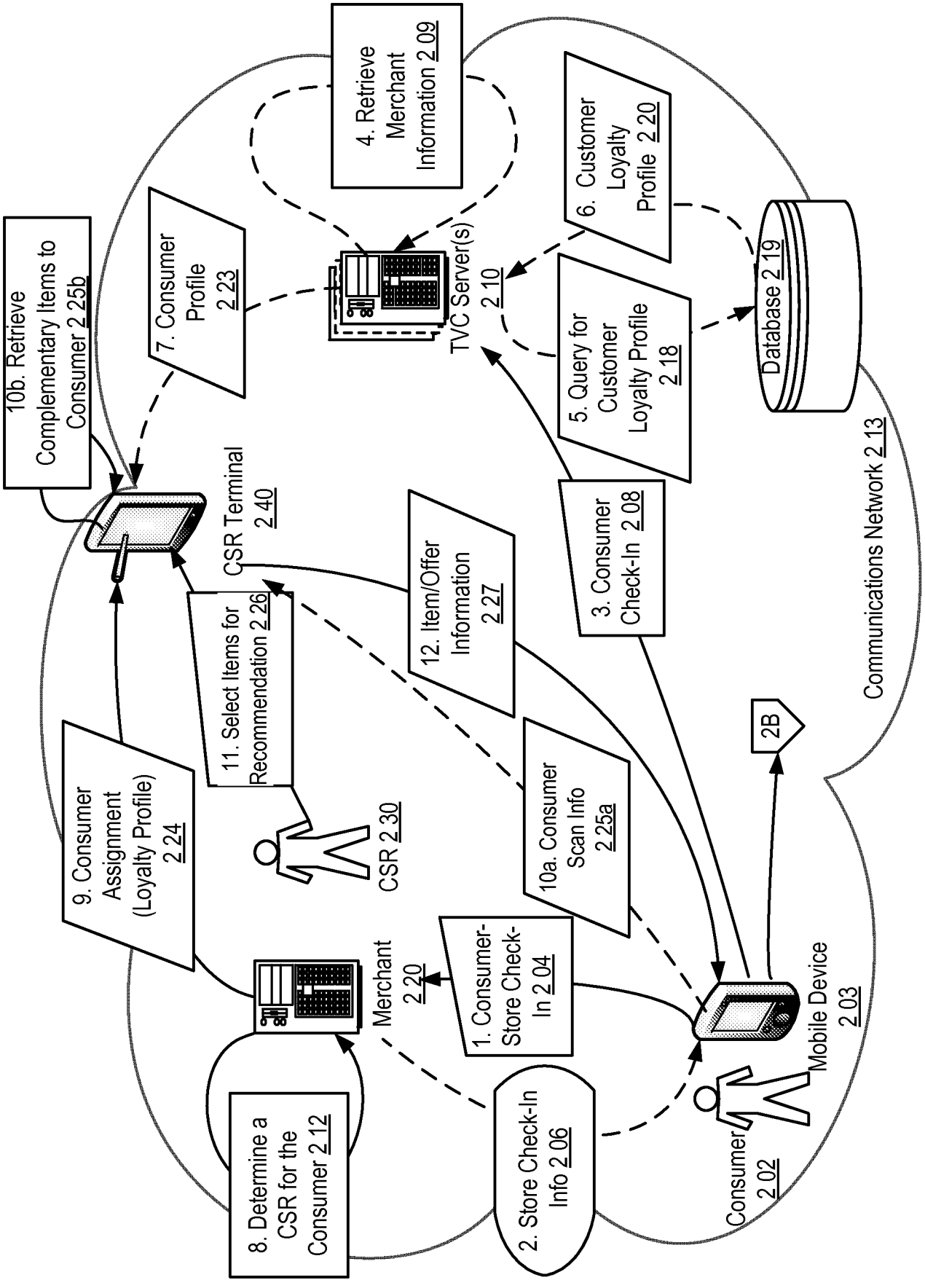


FIGURE 1 Example: Augmented Retail Shopping



Example Data Flow: Augmented Retail Shopping

FIGURE 2A

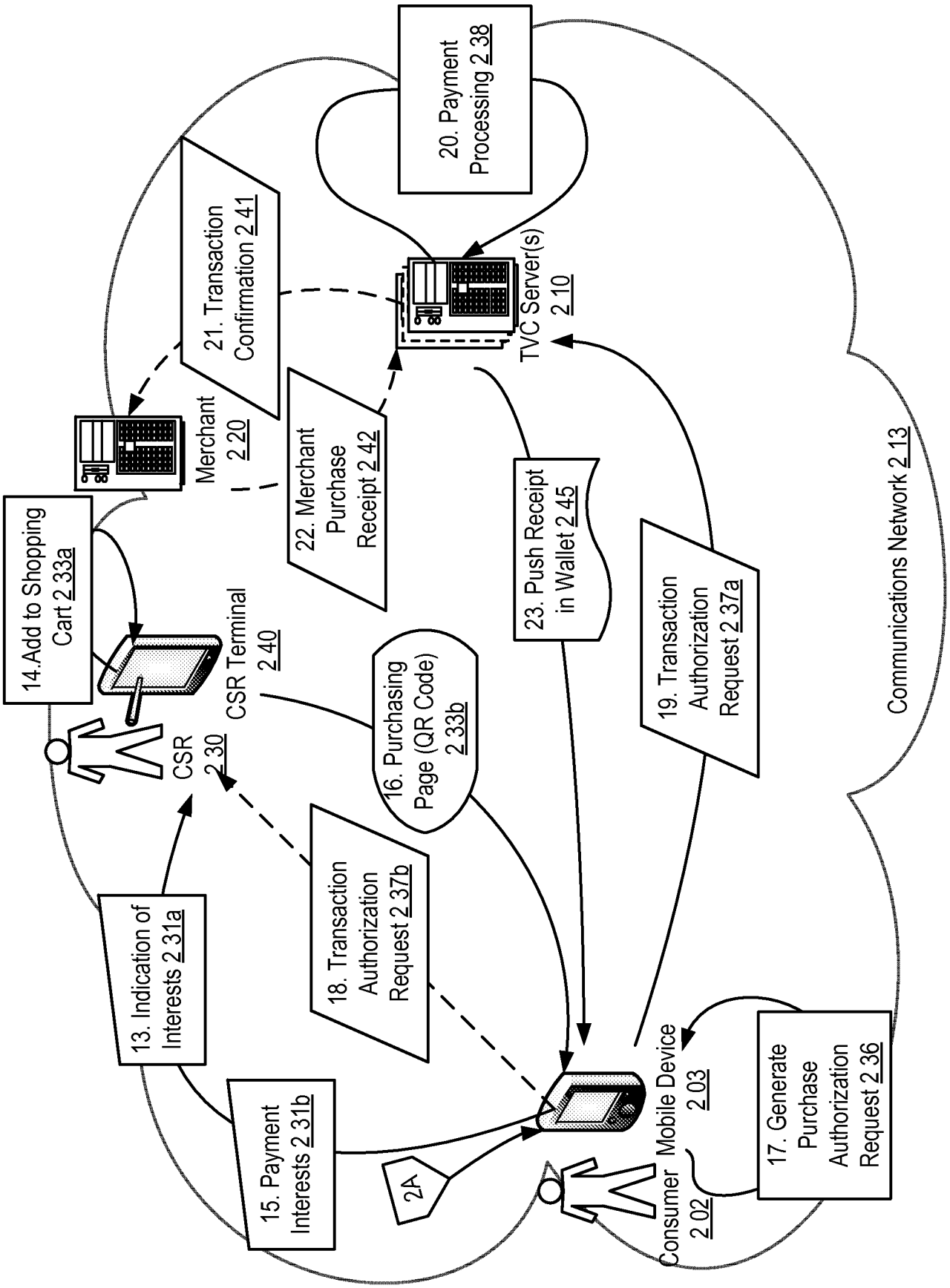


FIGURE 2B

Example Data Flow: Augmented Retail Shopping

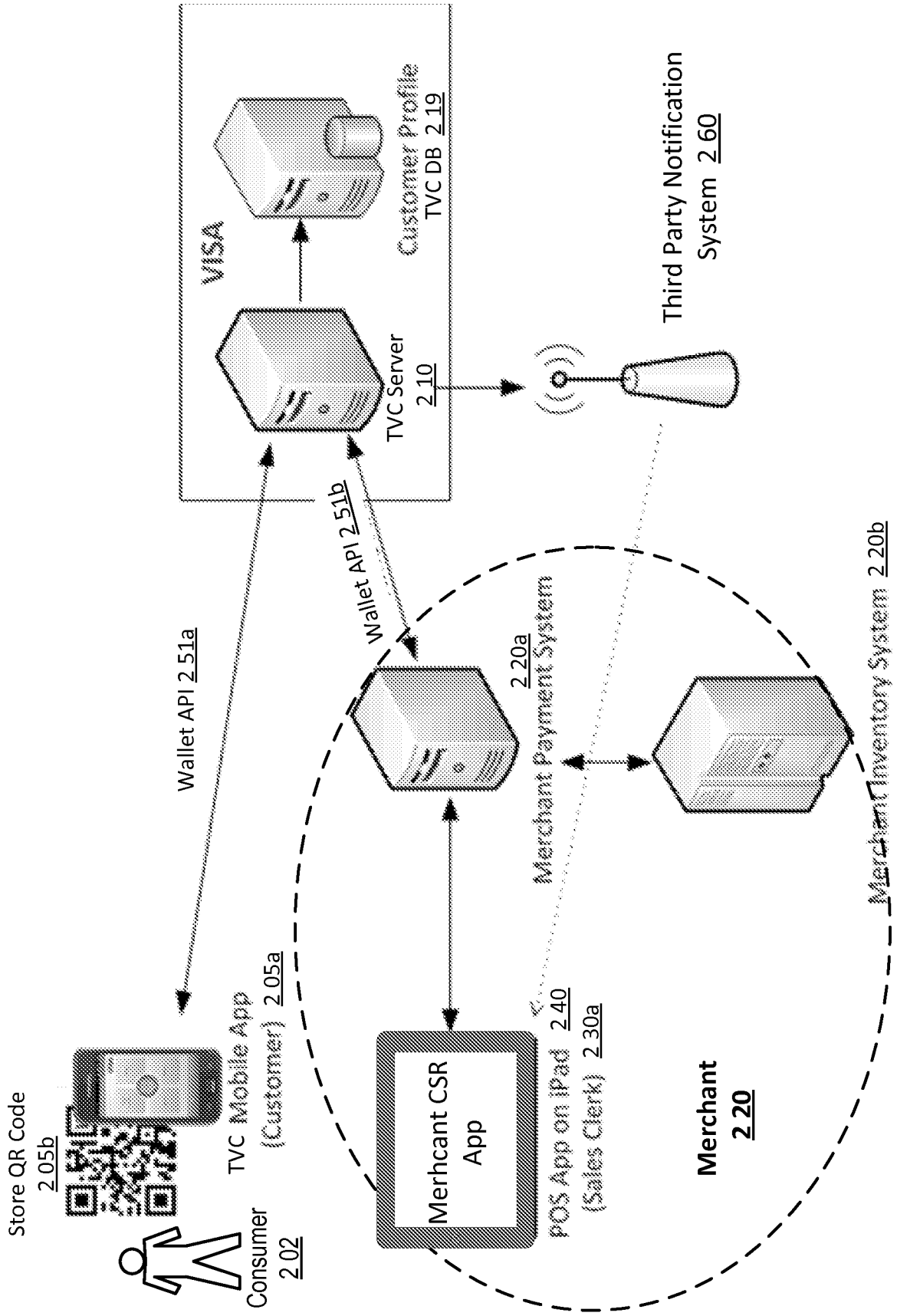


FIGURE 2C

Example Architecture: Augmented Retail Shopping

FIGURE 2D

Example Architecture: Augmented Retail Shopping

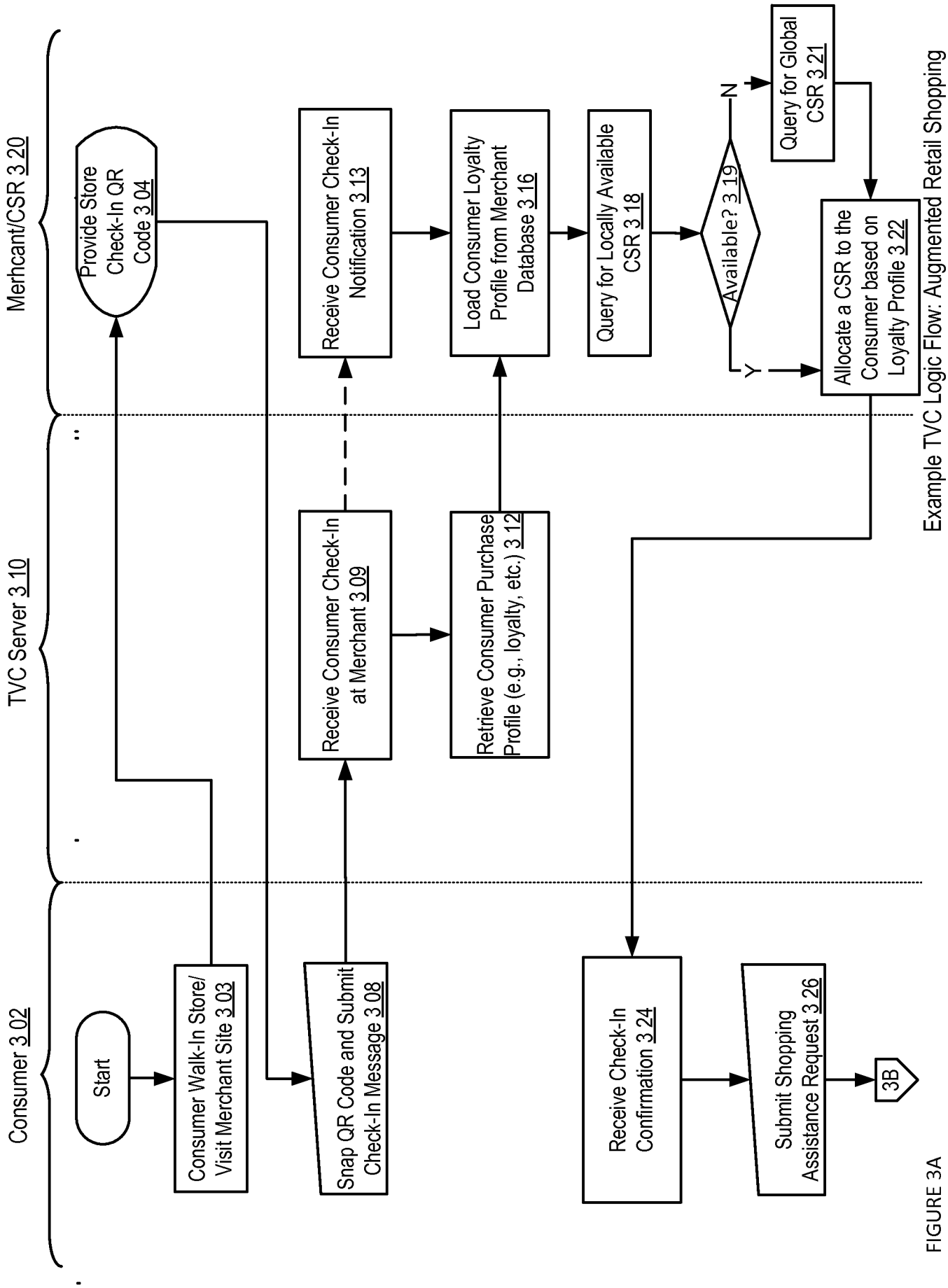


FIGURE 3A

Example TVC Logic Flow: Augmented Retail Shopping

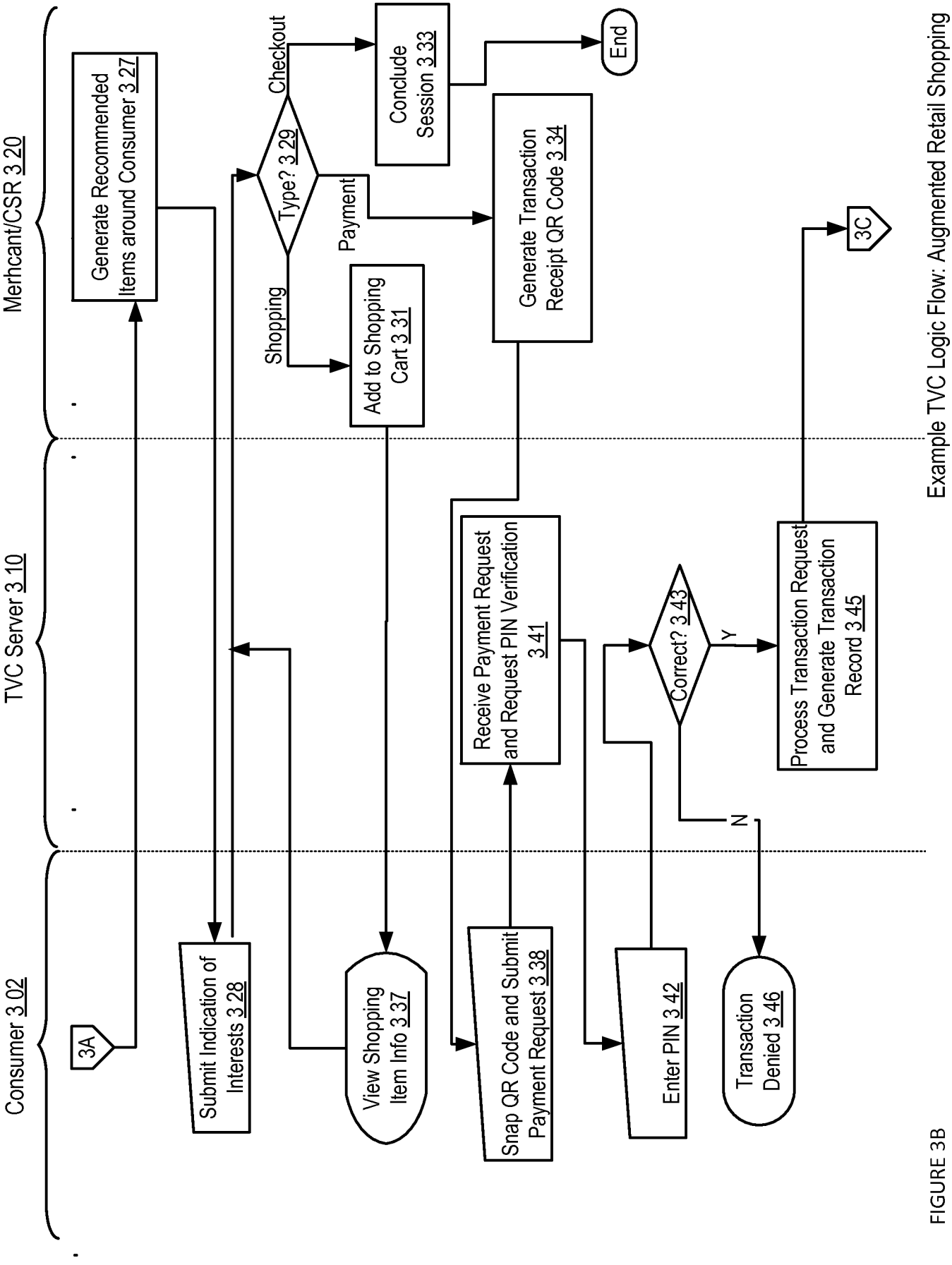
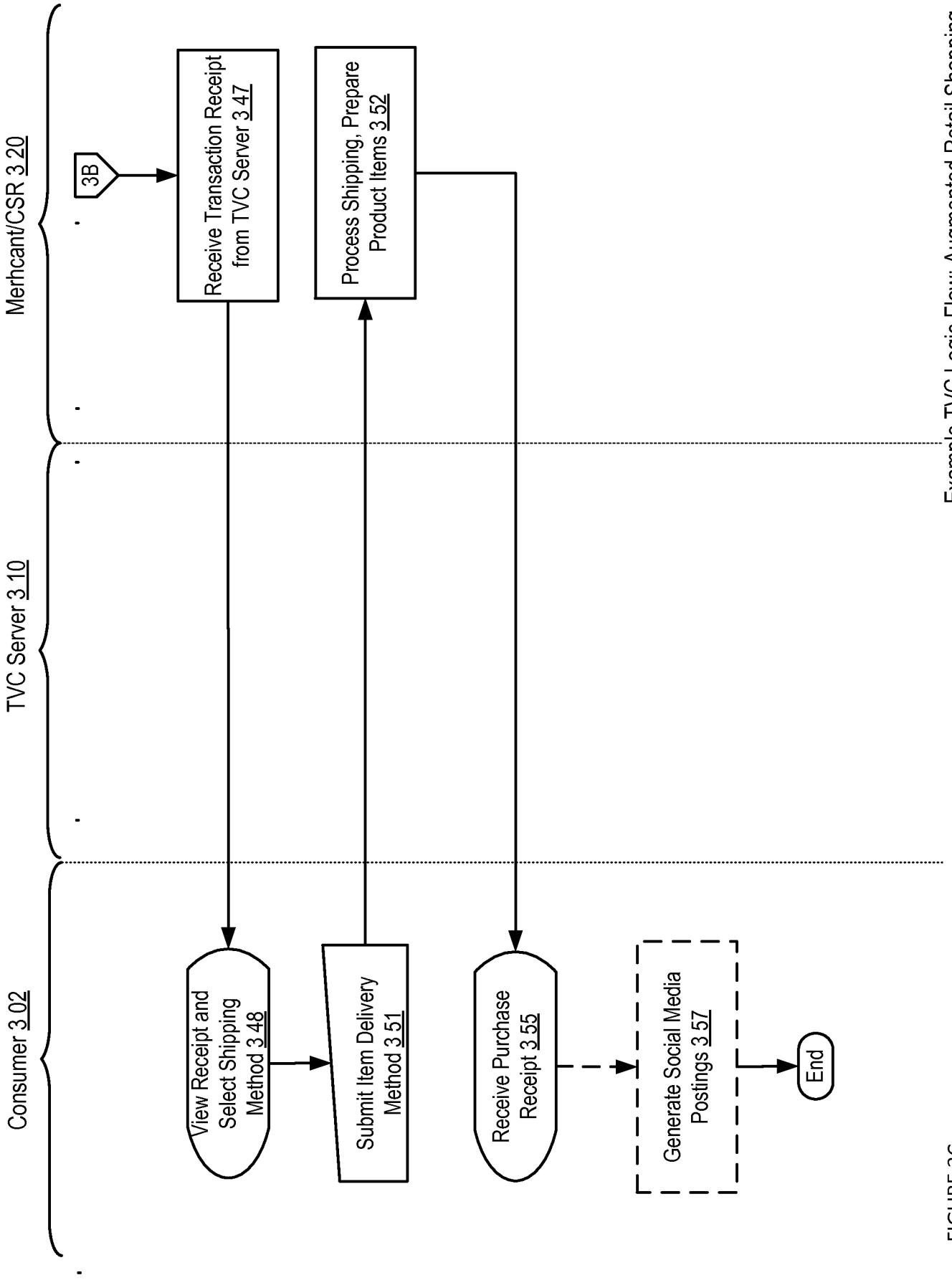


FIGURE 3B

Example TVC Logic Flow: Augmented Retail Shopping



Example TVC Logic Flow: Augmented Retail Shopping

FIGURE 3C

FIGURE 4A Example CSR UI: Consumer Check-In at Merchant

FIGURE 4B

Example Consumer UI: Consumer Check-In

FIGURE 4C

Example CSR UI: Augmented Retail Shopping

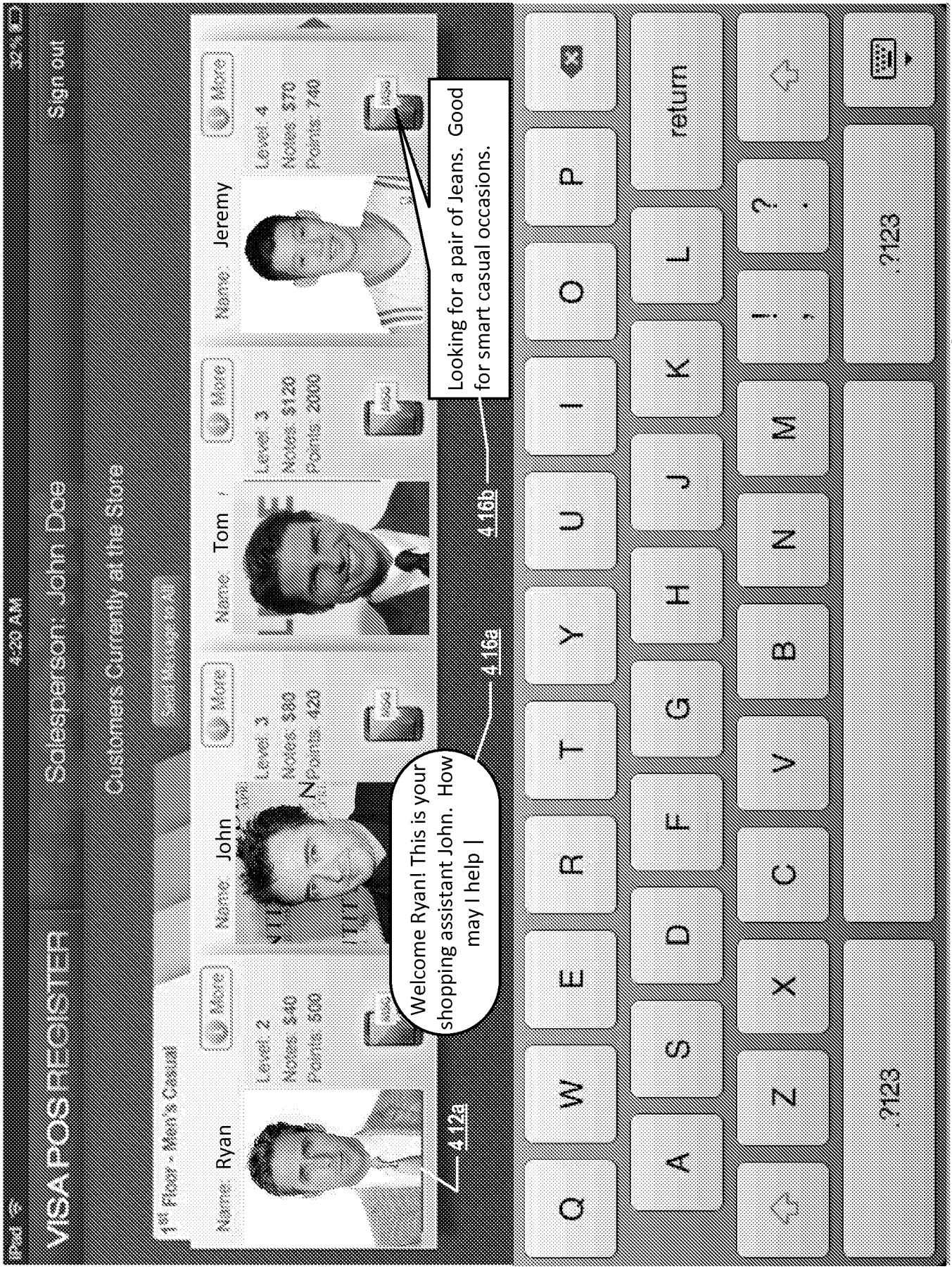


FIGURE 4D

Example CSR UI: Augmented Retail Shopping

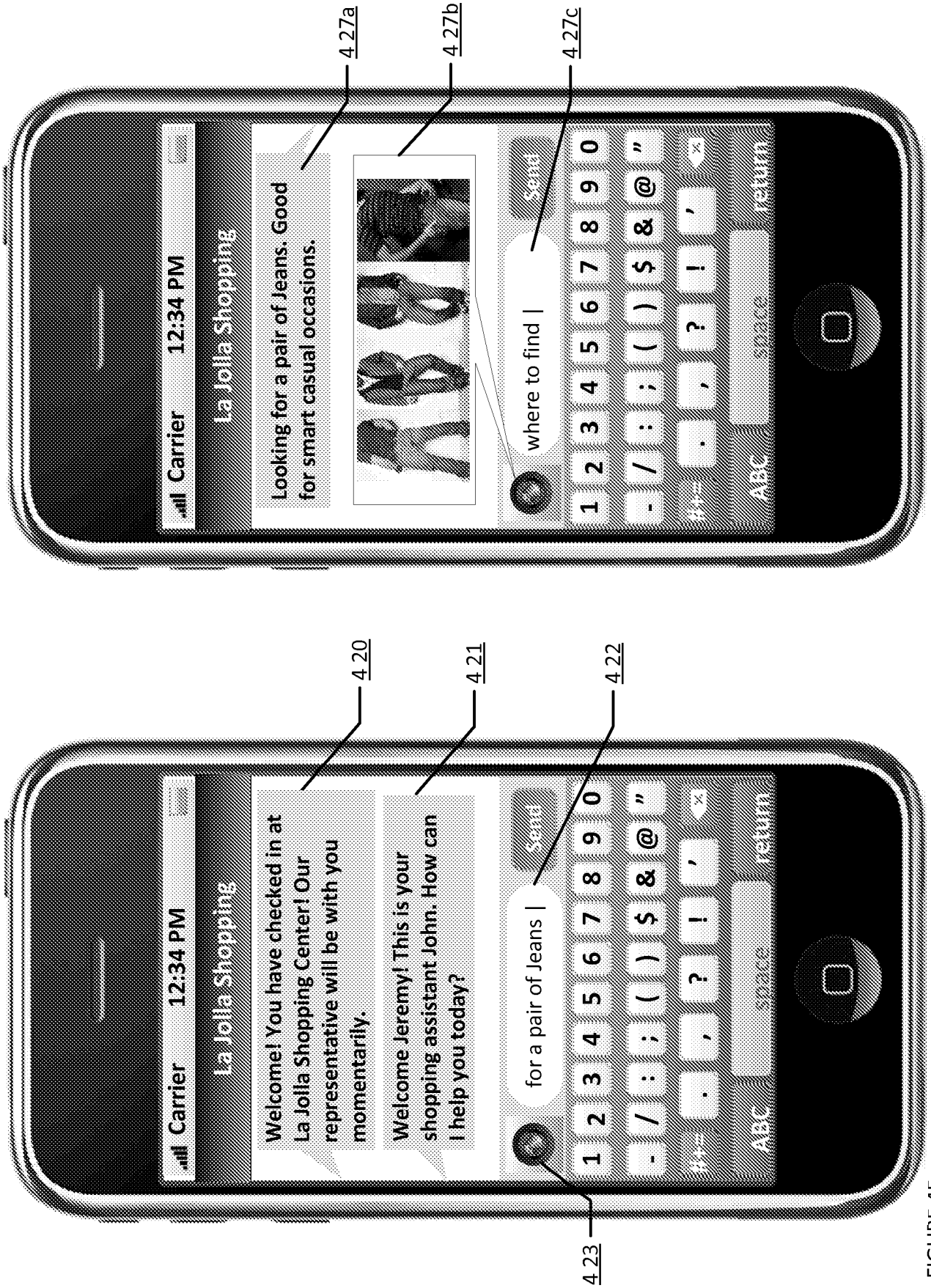


FIGURE 4E

Example Consumer UI: Augmented Retail Shopping

FIGURE 4F Example Consumer UI: Augmented Retail Shopping

FIGURE 4G

Example CSR UI: Augmented Retail Shopping

FIGURE 4H

Example CSR UI: Augmented Retail Shopping

FIGURE 4I

Example Consumer UI: Payment Security Challenge

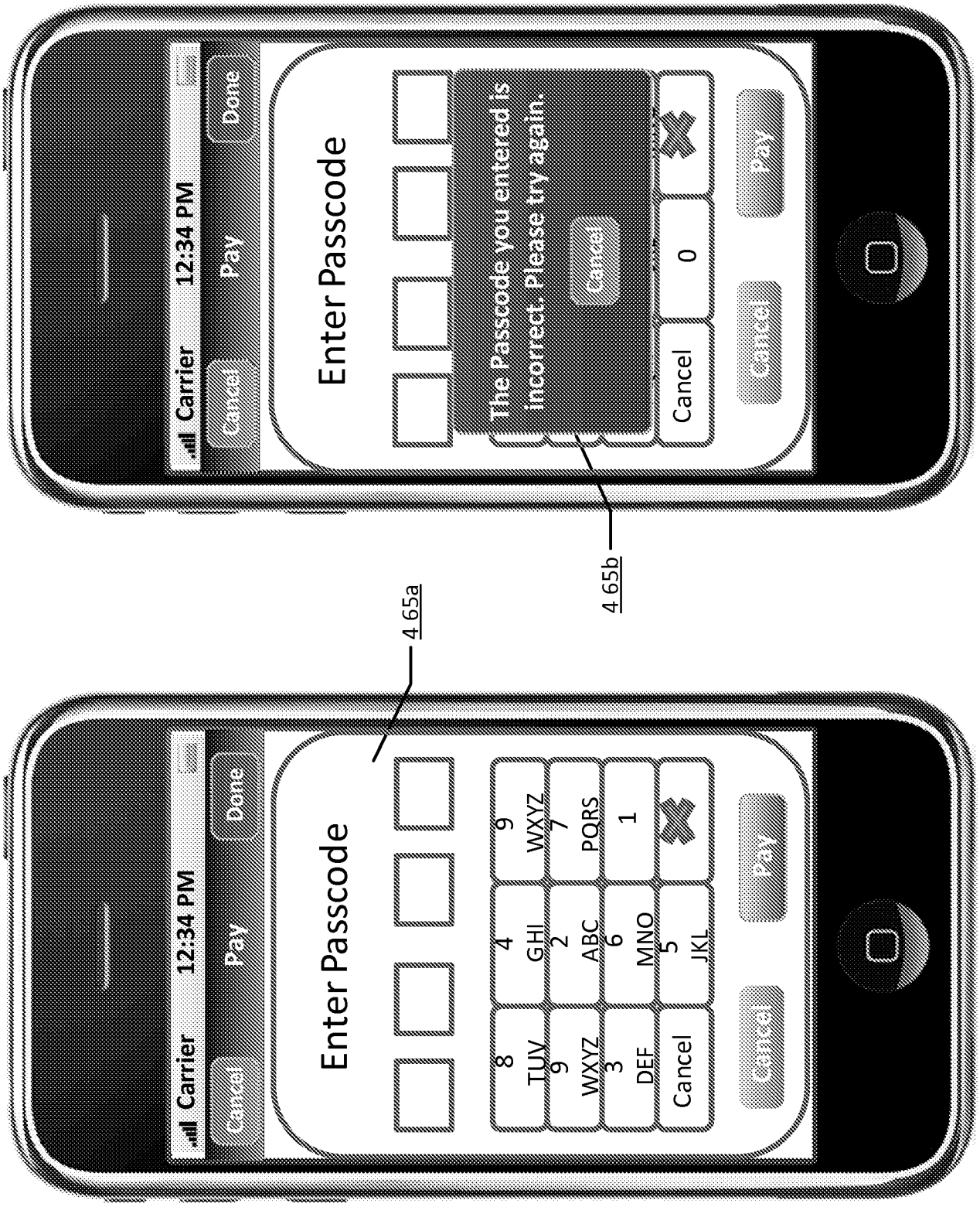


FIGURE 4J

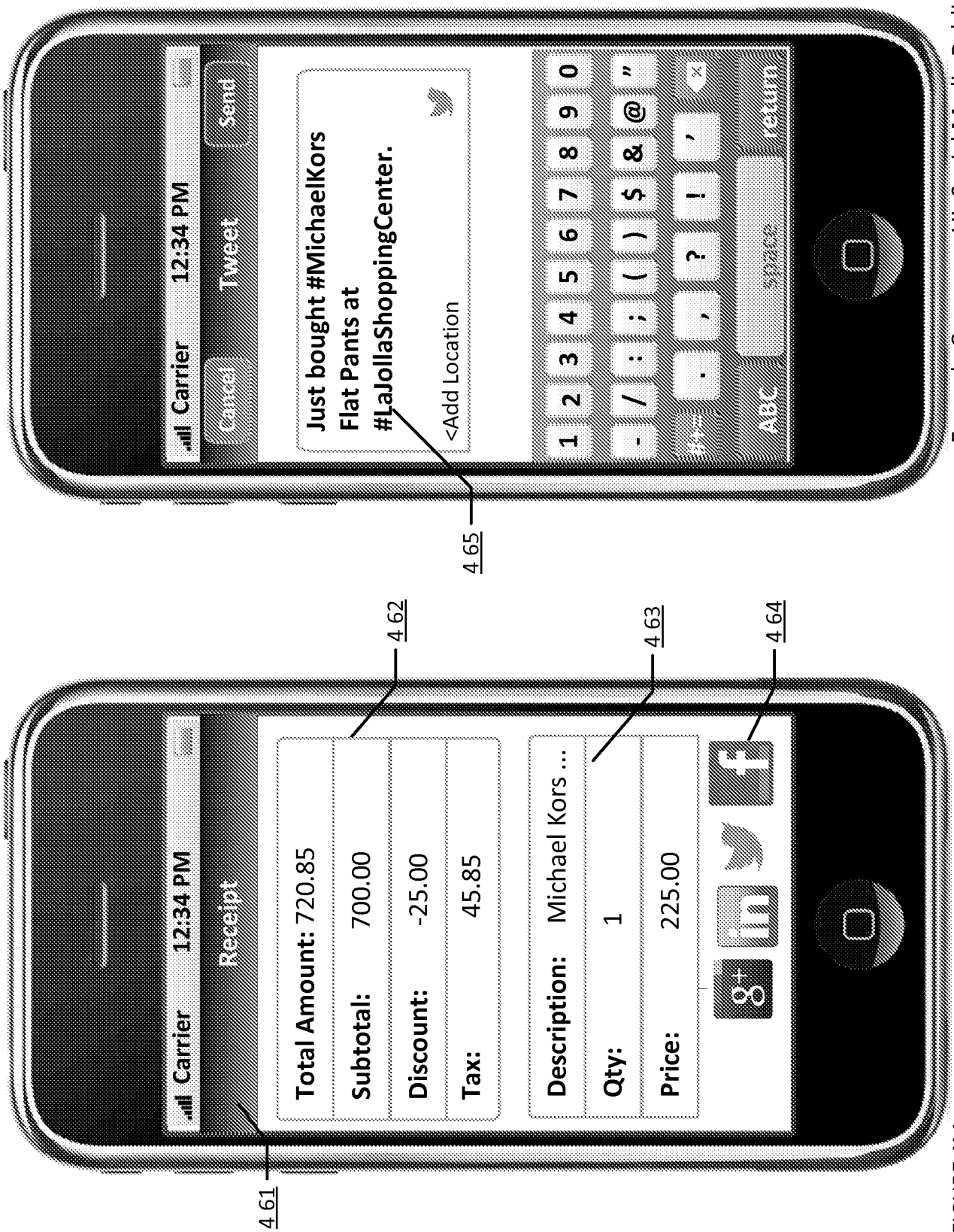
Example Consumer UI: Dynamic Keypad

FIGURE 4K

Example CSR UI: Sales Receipt

FIGURE 4L

Example Consumer UI: Augmented Retail Shopping

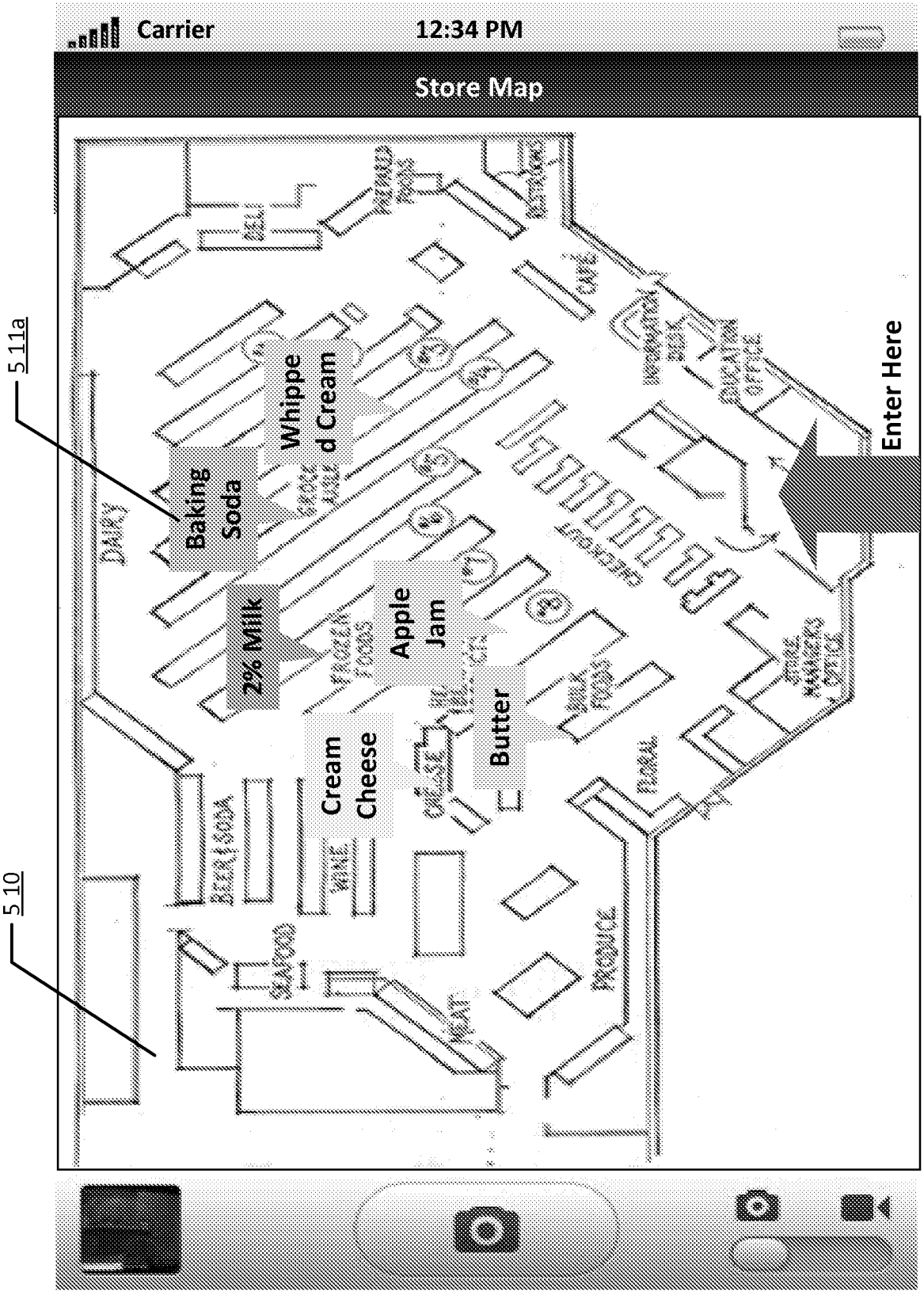


Example Consumer UI: Social Media Publication

FIGURE 4M

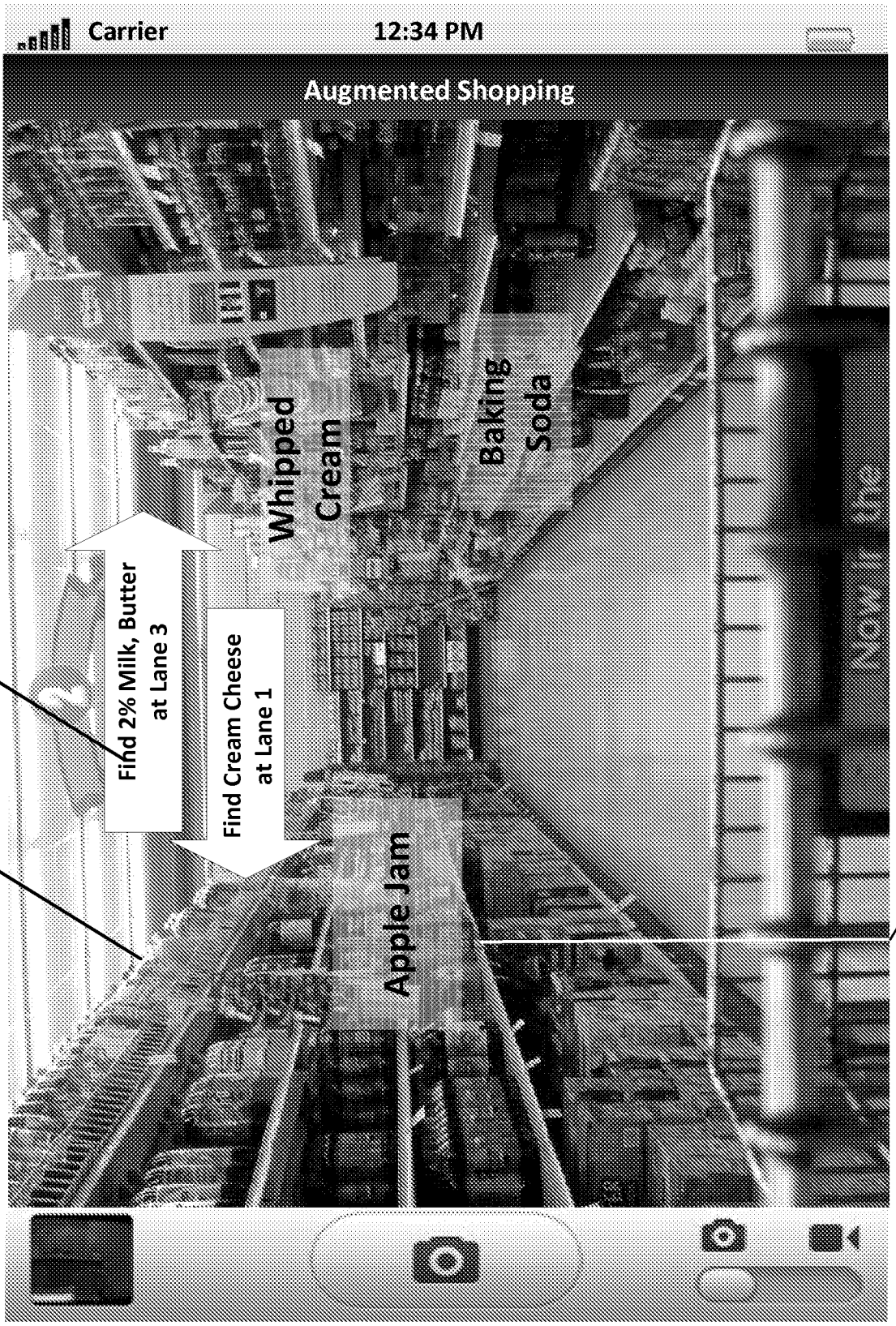
FIGURE 5A

Example Consumer UI: Augmented Shopping List



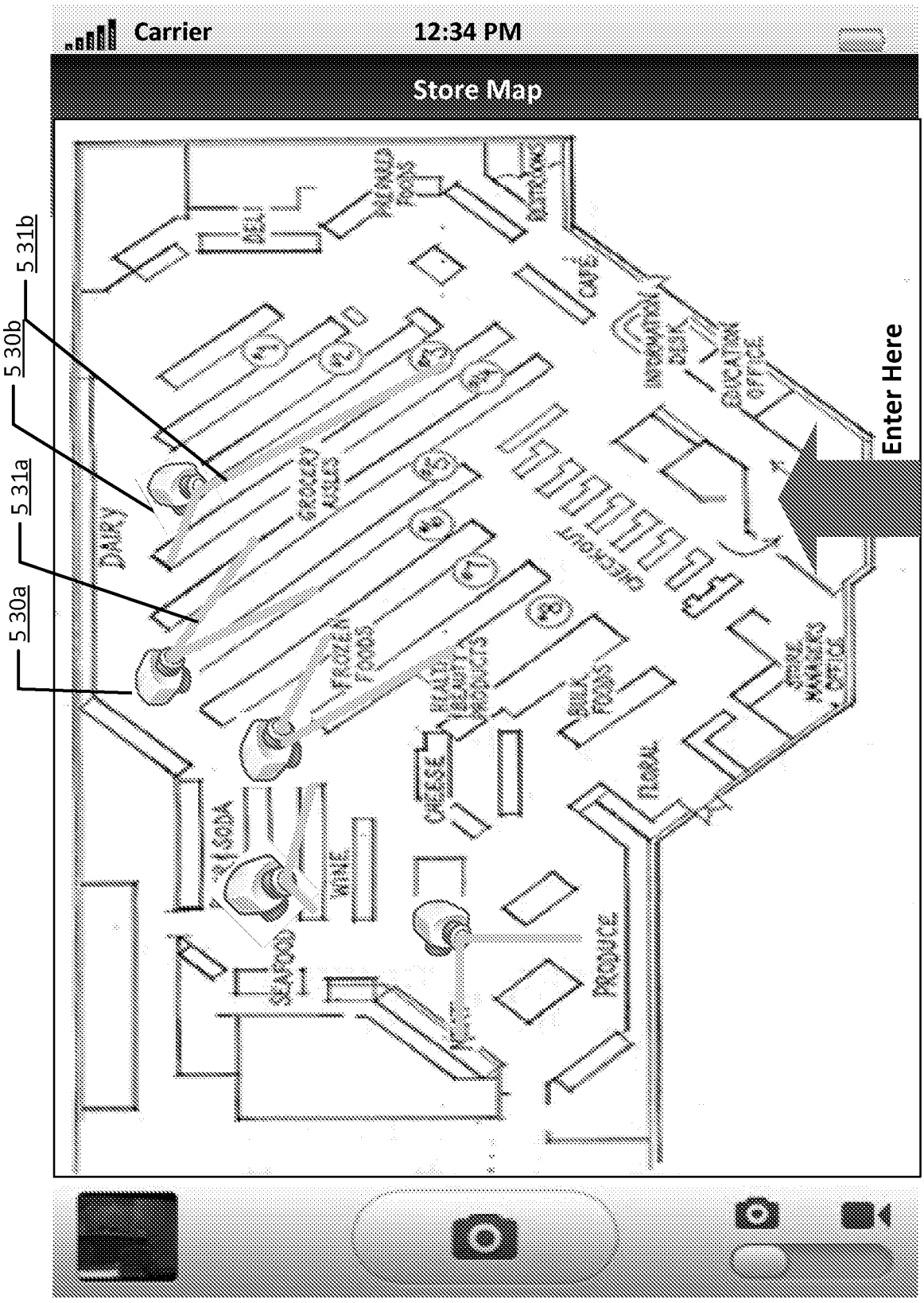
Example Consumer UI: Augmented Shopping List

FIGURE 5B



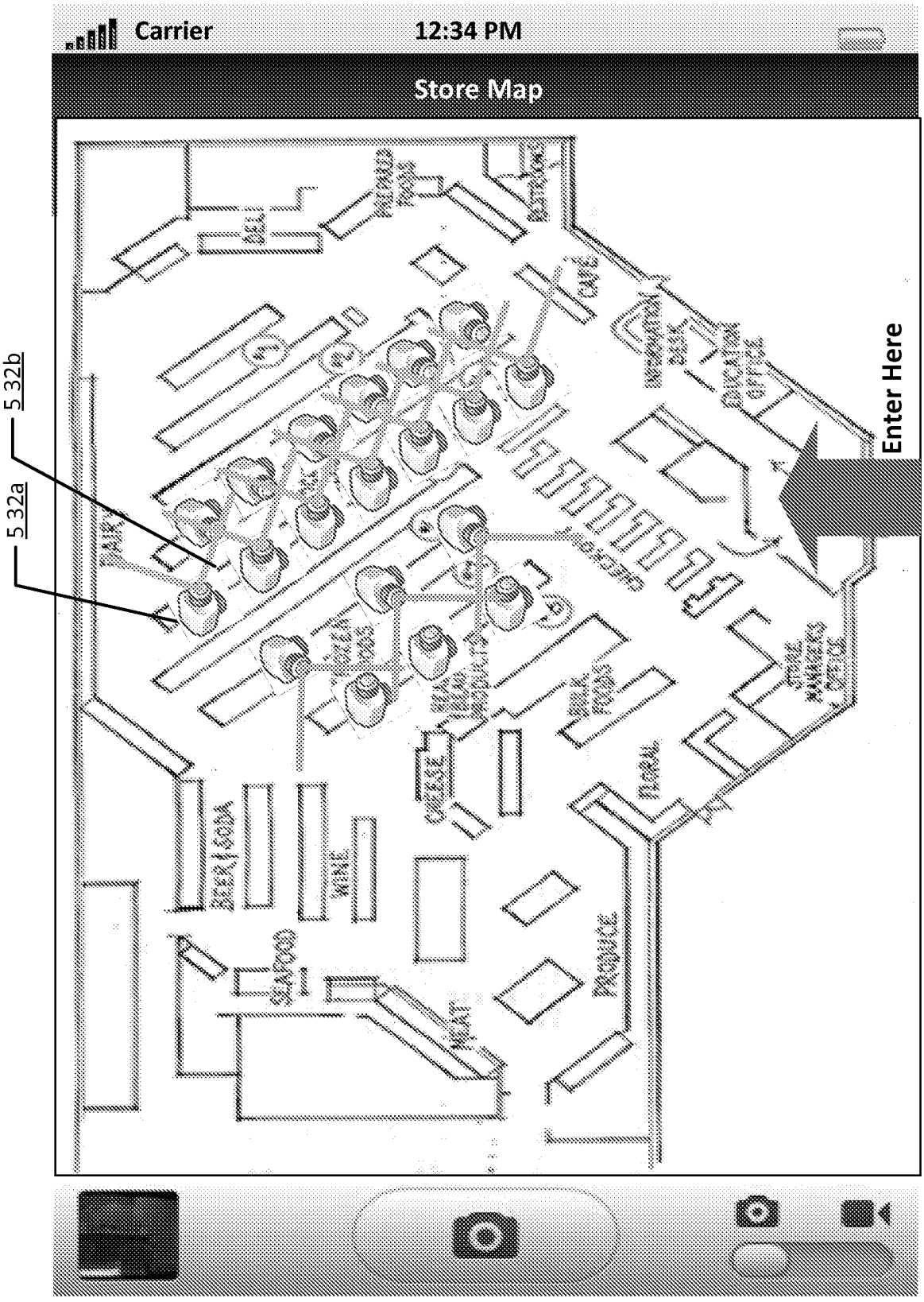
Example Consumer UI: Augmented Shopping List

FIGURE 5C



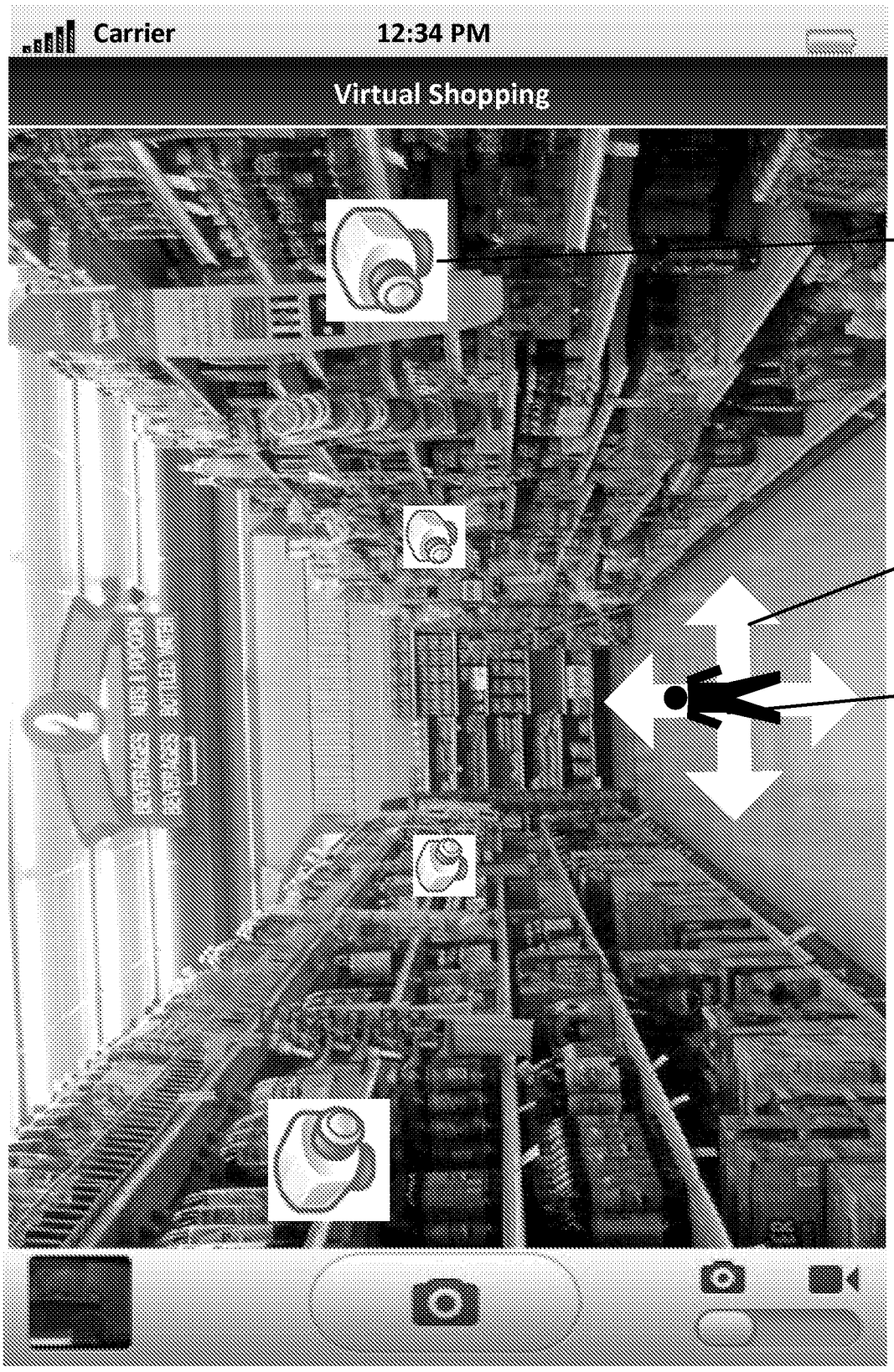
Example Consumer UI: Augmented Shopping List

FIGURE 5D



Example Consumer UI: Augmented Shopping List

FIGURE 5D(1)



Example Consumer UI: Augmented Shopping List

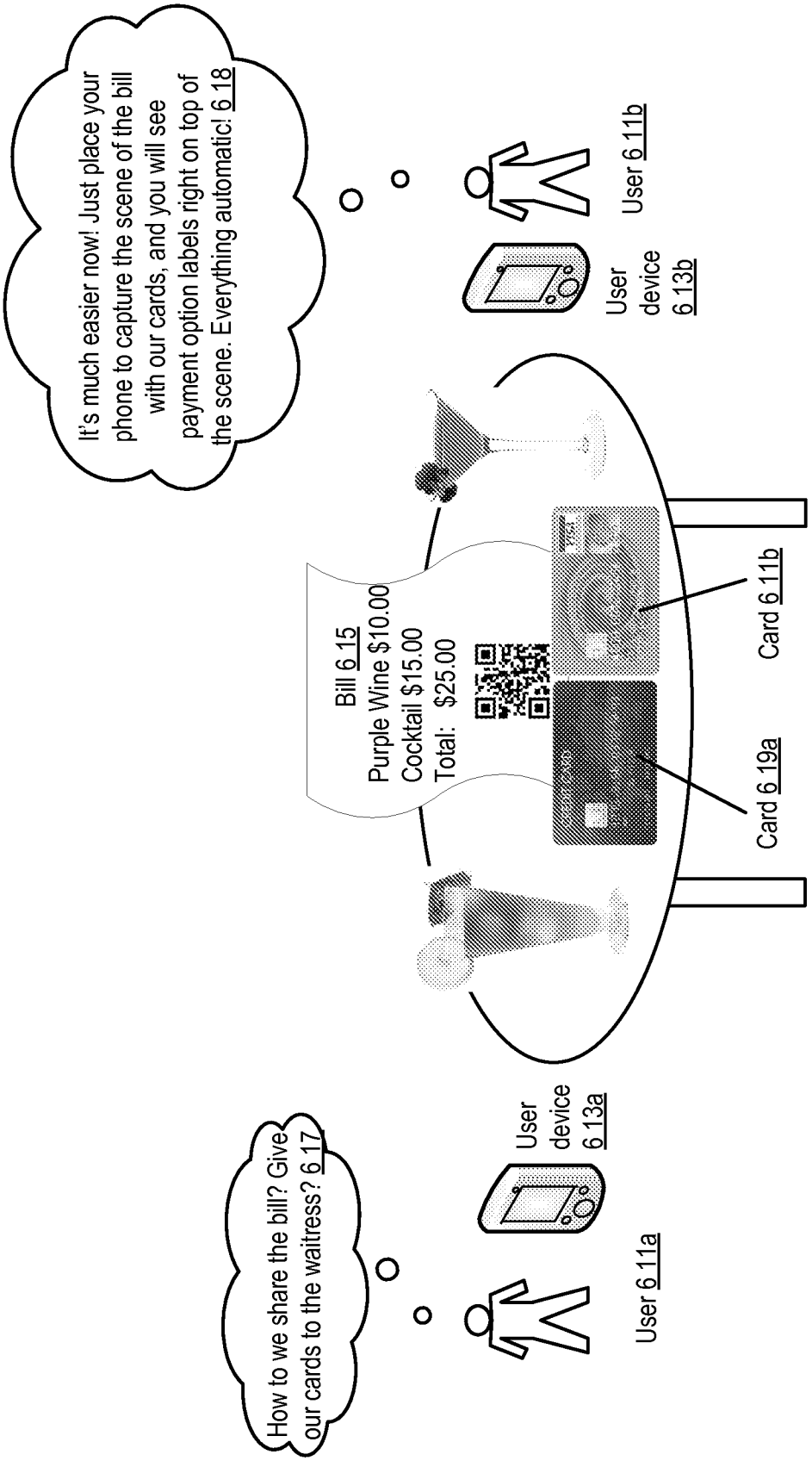
FIGURE 5E

Example Consumer UI: Augmented Shopping List

FIGURE 5F

Example Consumer UI: Augmented Shopping List

FIGURE 5F(1)



TVC Example: User Sharing Bill at Restaurant

Figure 6

TVC Example: Augmented Reality Layers Overlay

Figure 7A

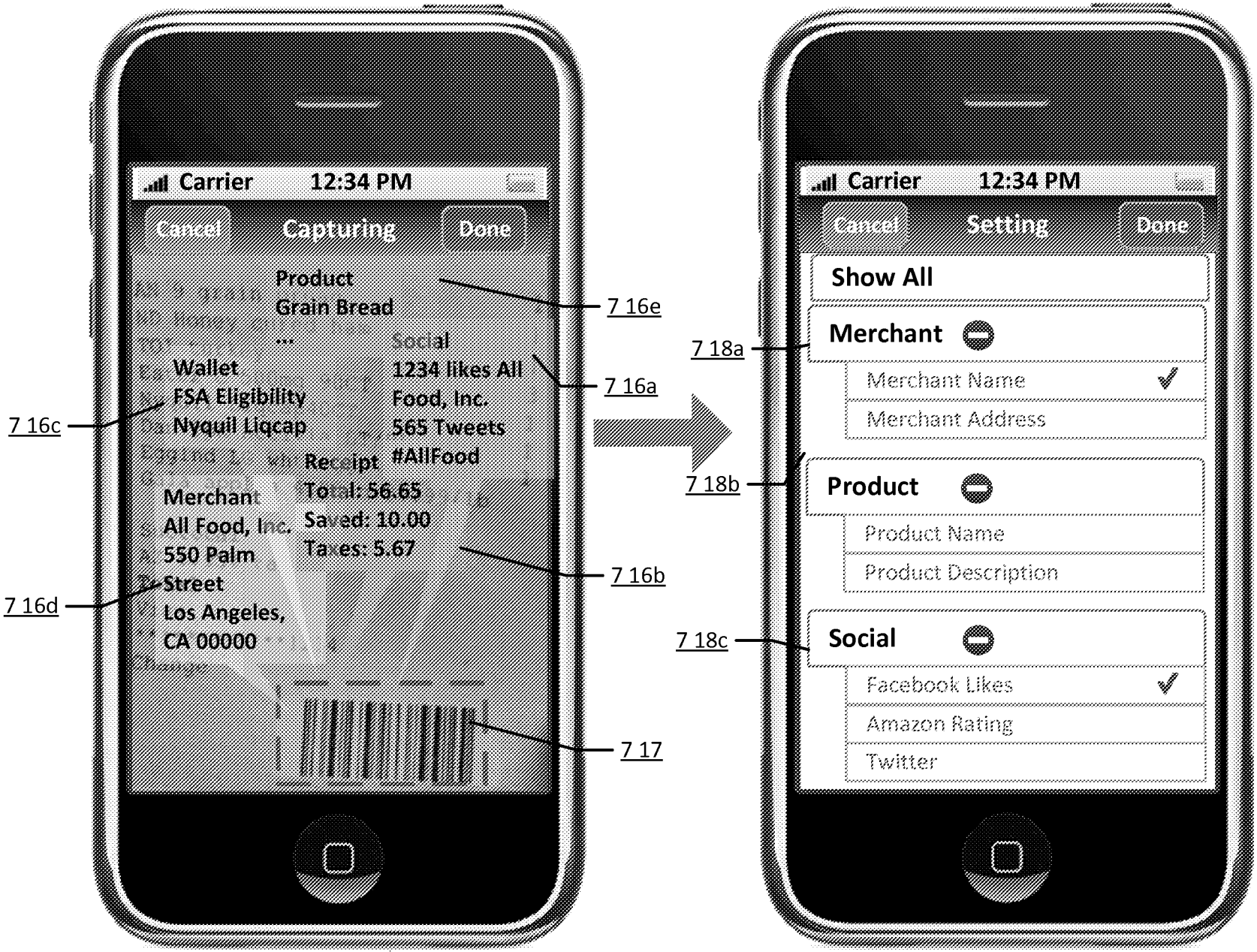
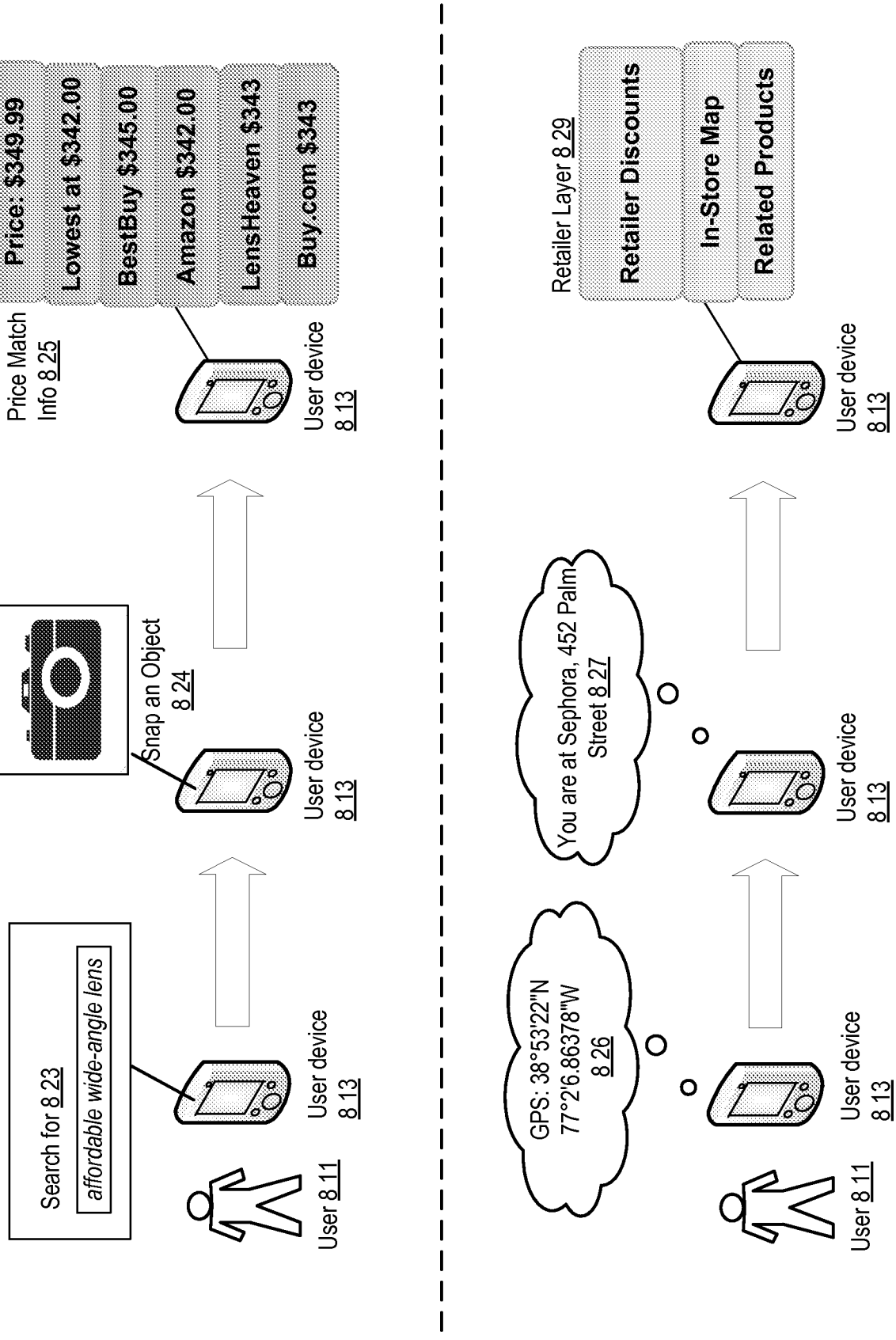


Figure 7B

TVC Example: Consumer Configured Layer Injection

Figure 7C

TVC Example: Consumer Configured Layer Injection



TVC Example: Automatic Augmented Reality Layer Injection

Figure 8

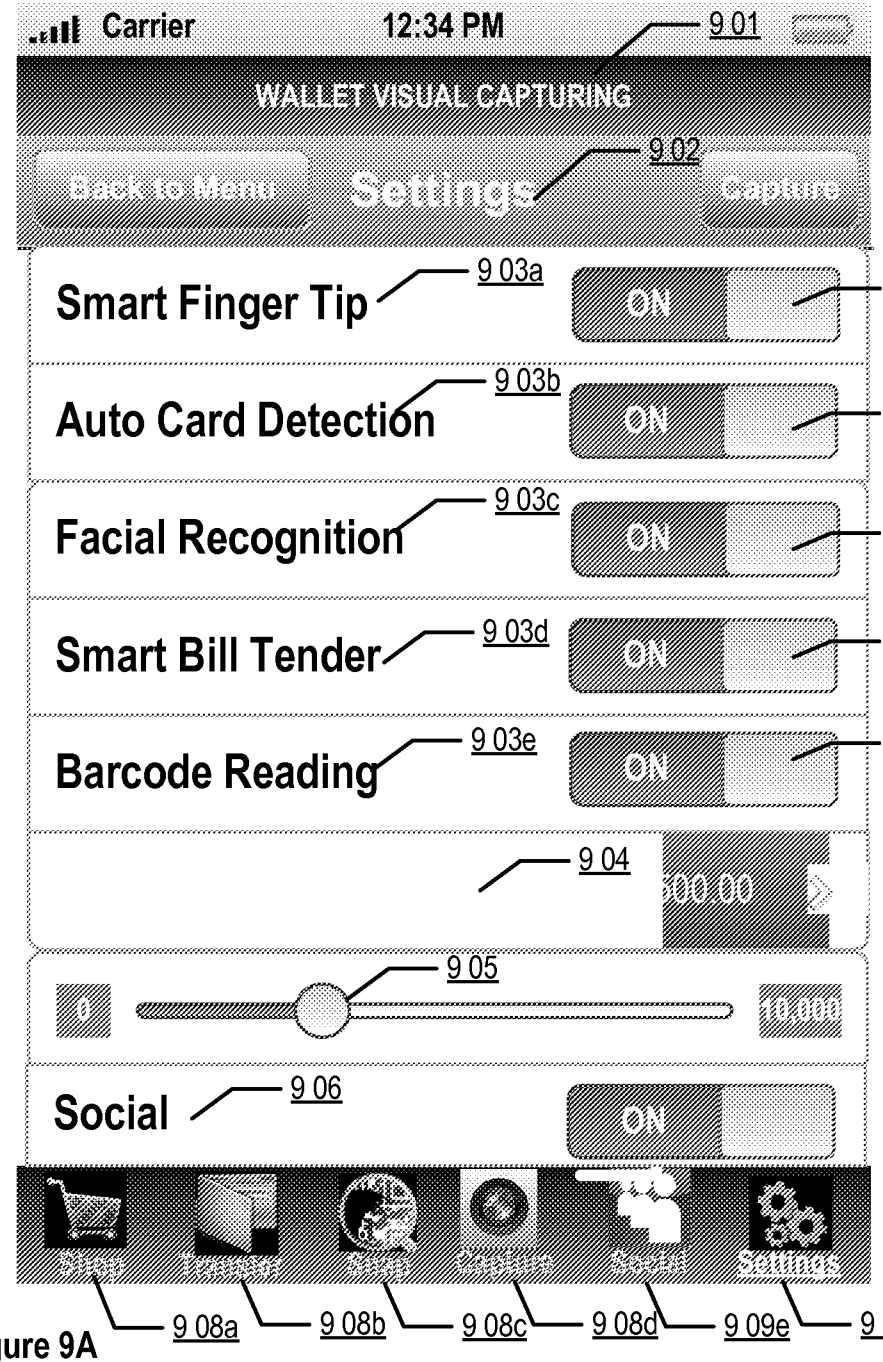
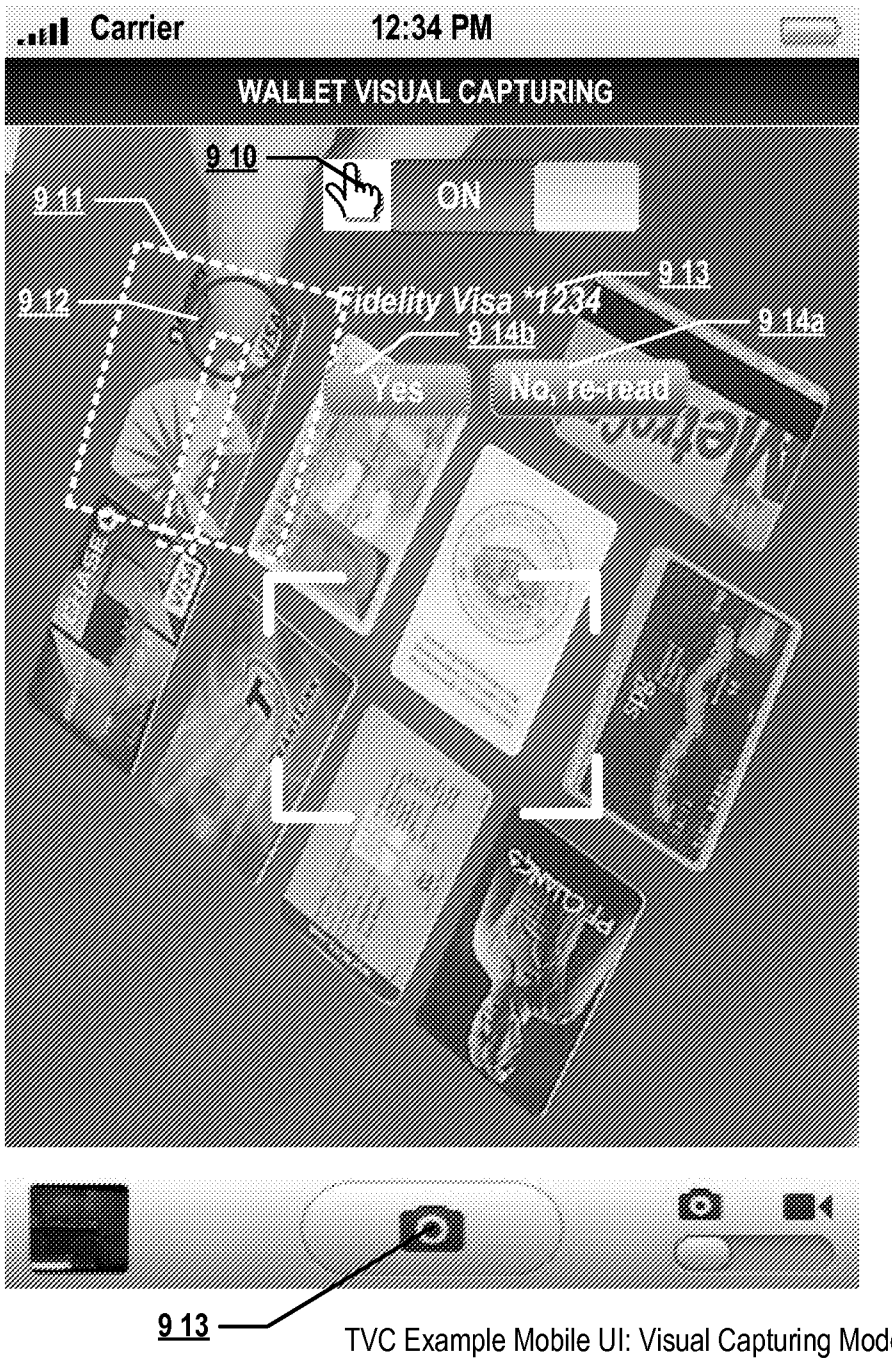


Figure 9A

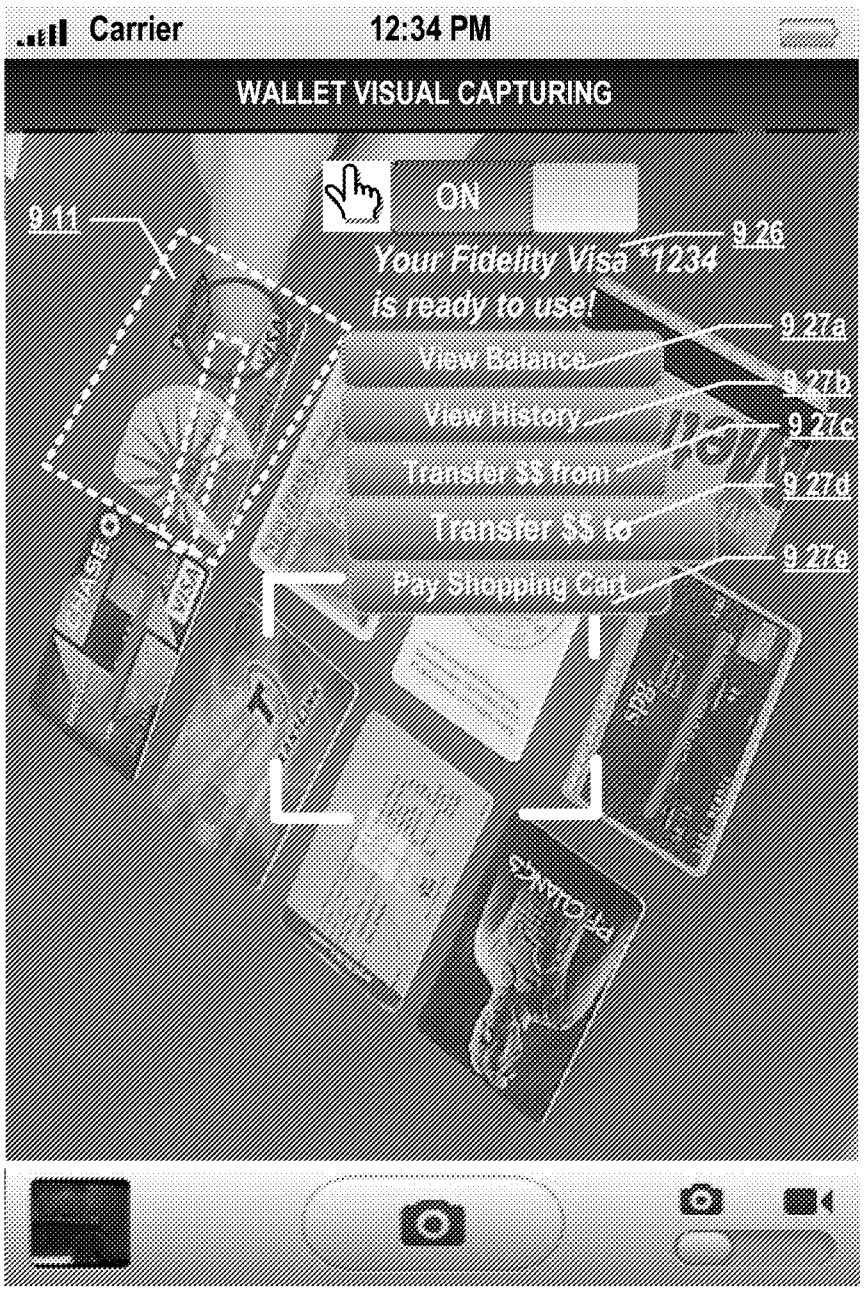


TVC Example Mobile UI: Visual Capturing Mode

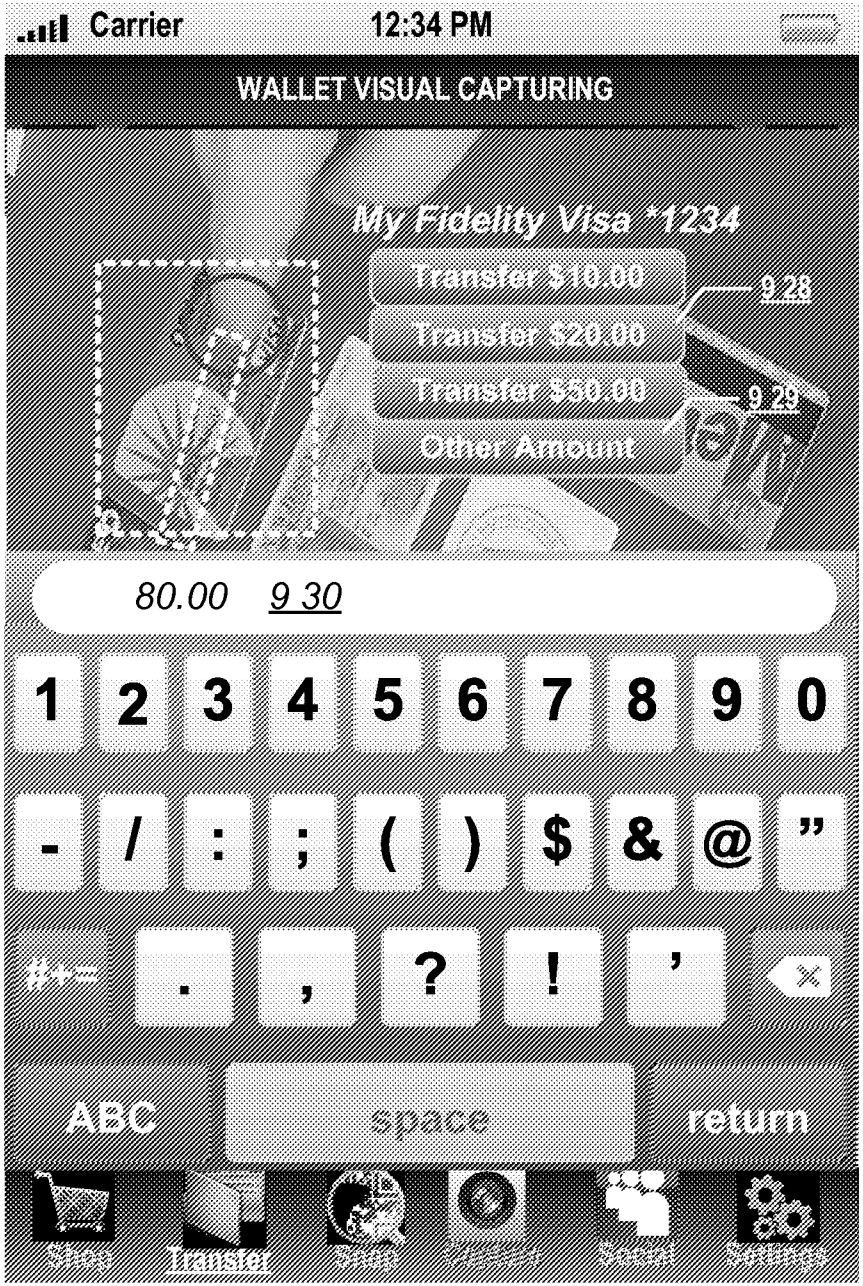
Figure 9B

TVC Example Mobile UI: Add Account via Visual Capturing

Figure 9C



TVC Example Mobile UI: Add Account via Visual Capturing



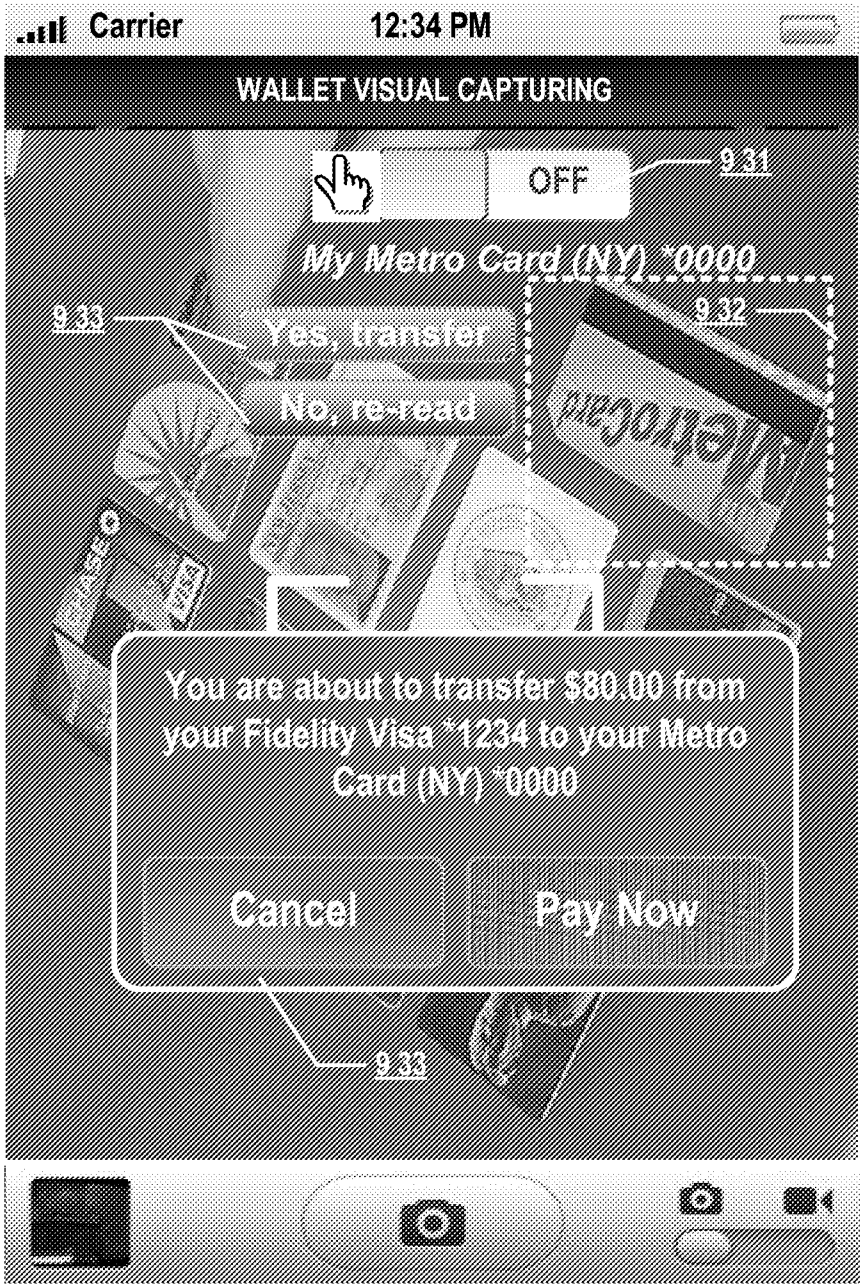


Figure 9D

TVC Example Mobile UI: Transfer Funds via Visual Capturing

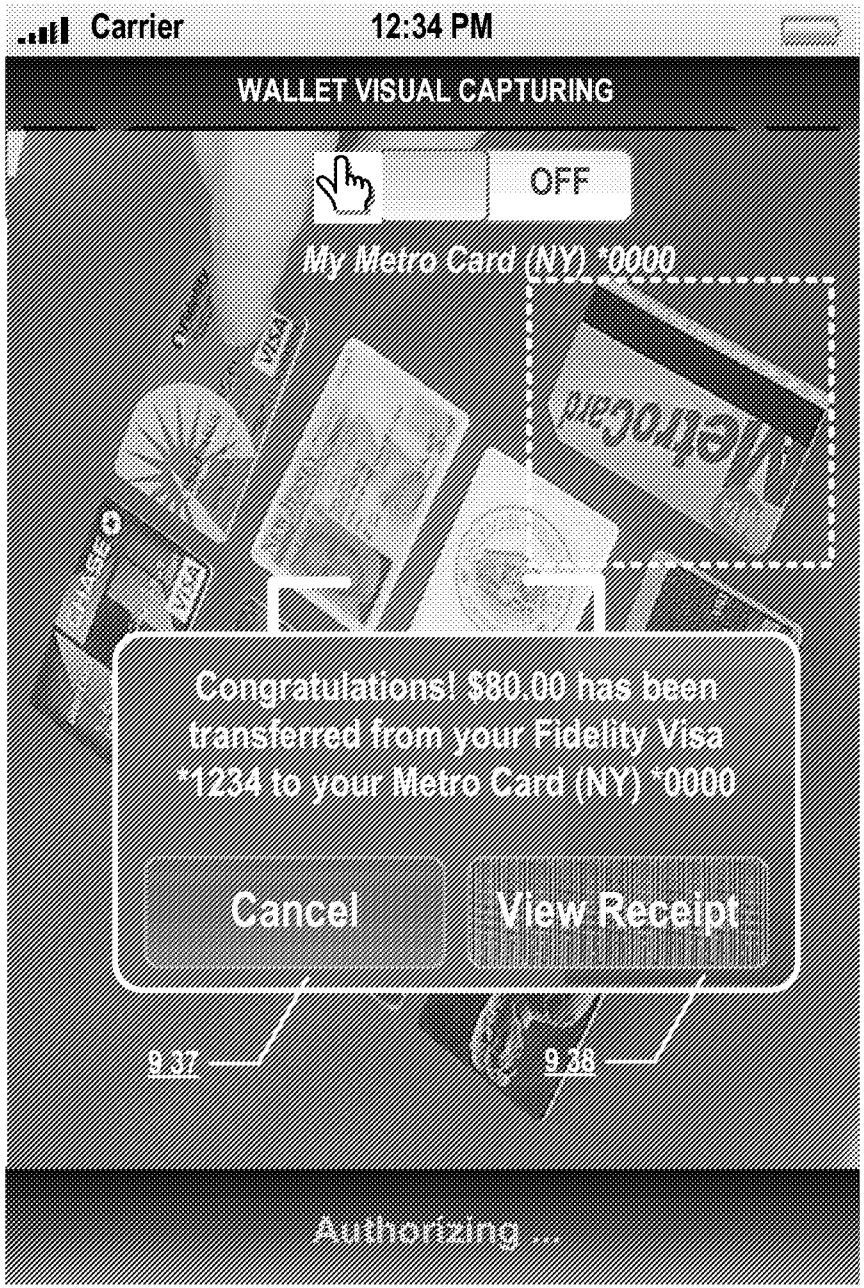
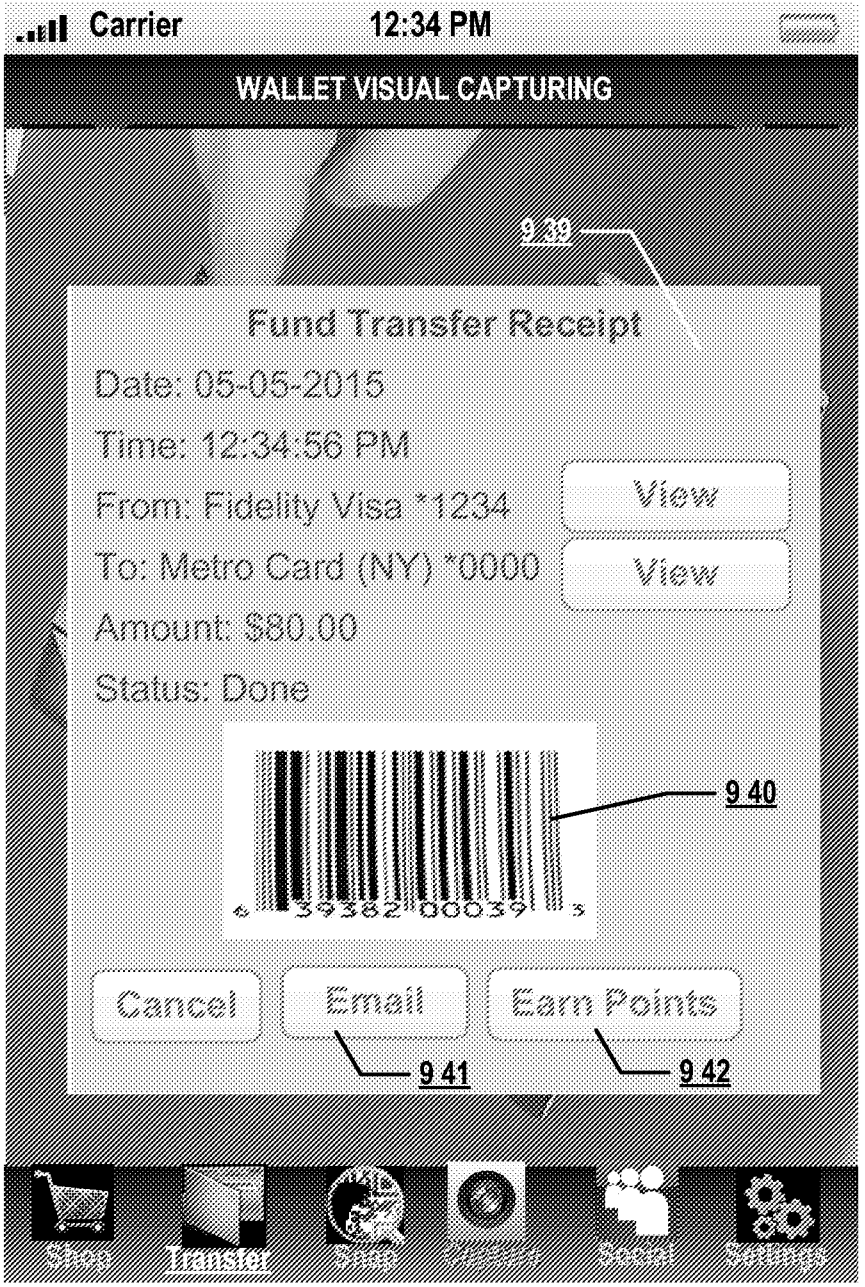


Figure 9E



TVC Example Mobile UI: Transfer Funds via Visual Capturing

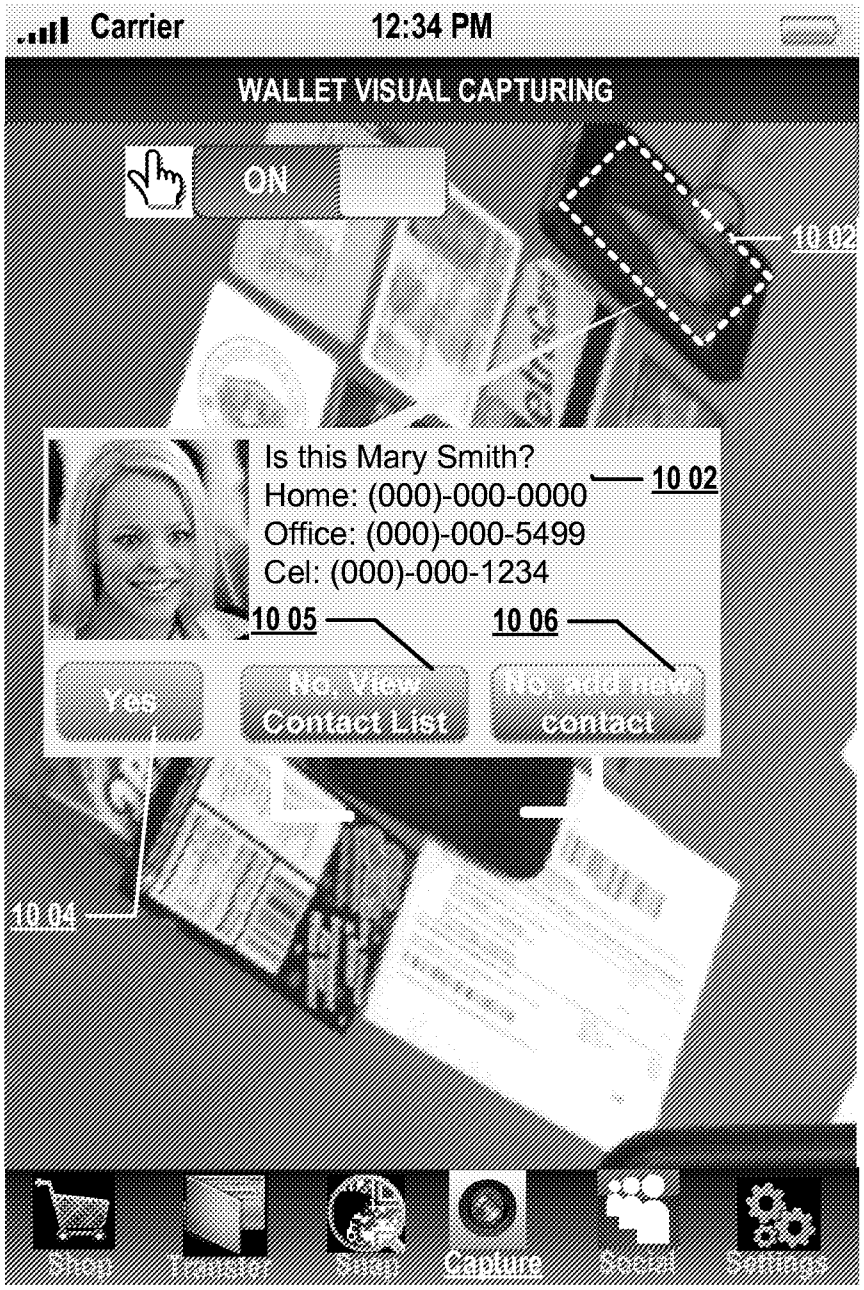
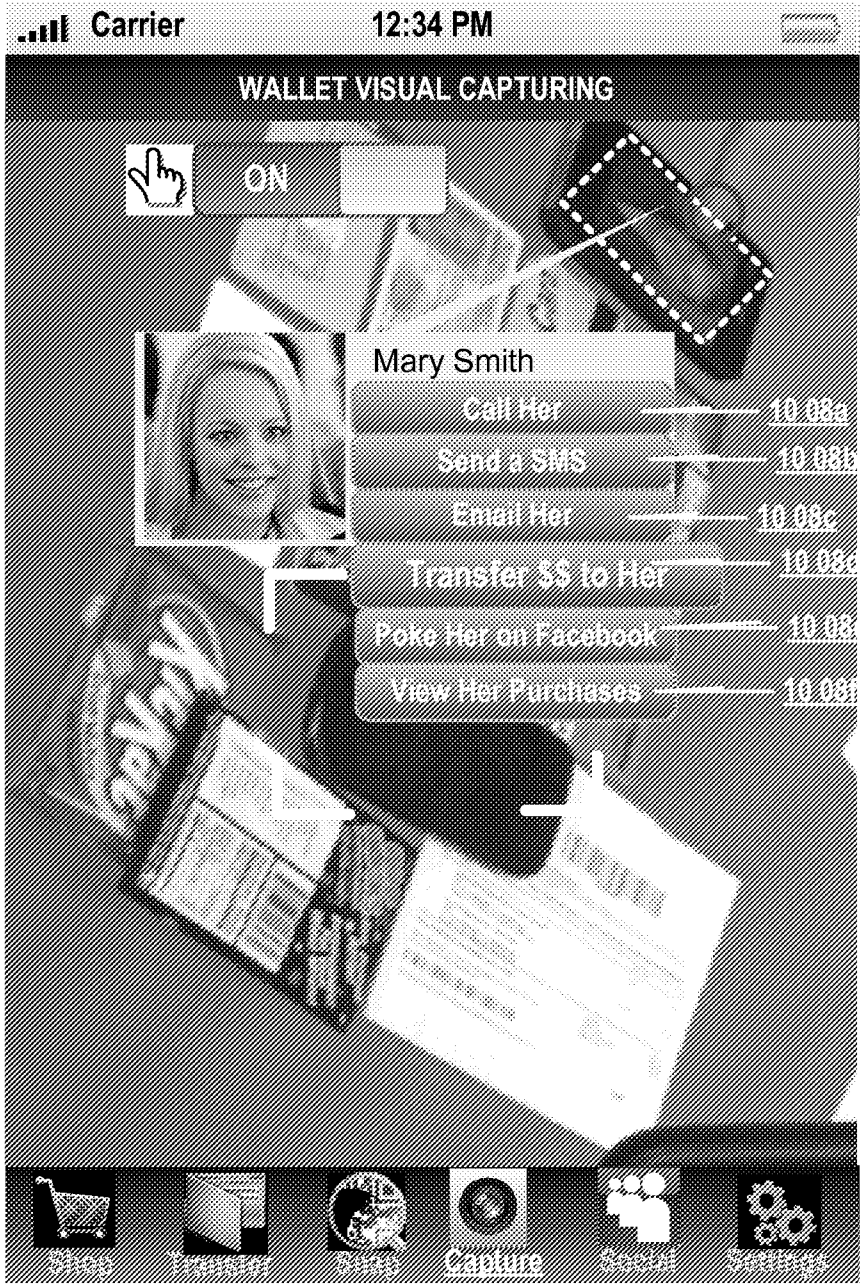


Figure 10



TVC Example Mobile UI: Social Payment via Visual Capturing

Figure 11

TVC Example Mobile UI: Visual Capturing Mode

TVC Example Mobile UI: Visual Capturing Mode

Figure 12

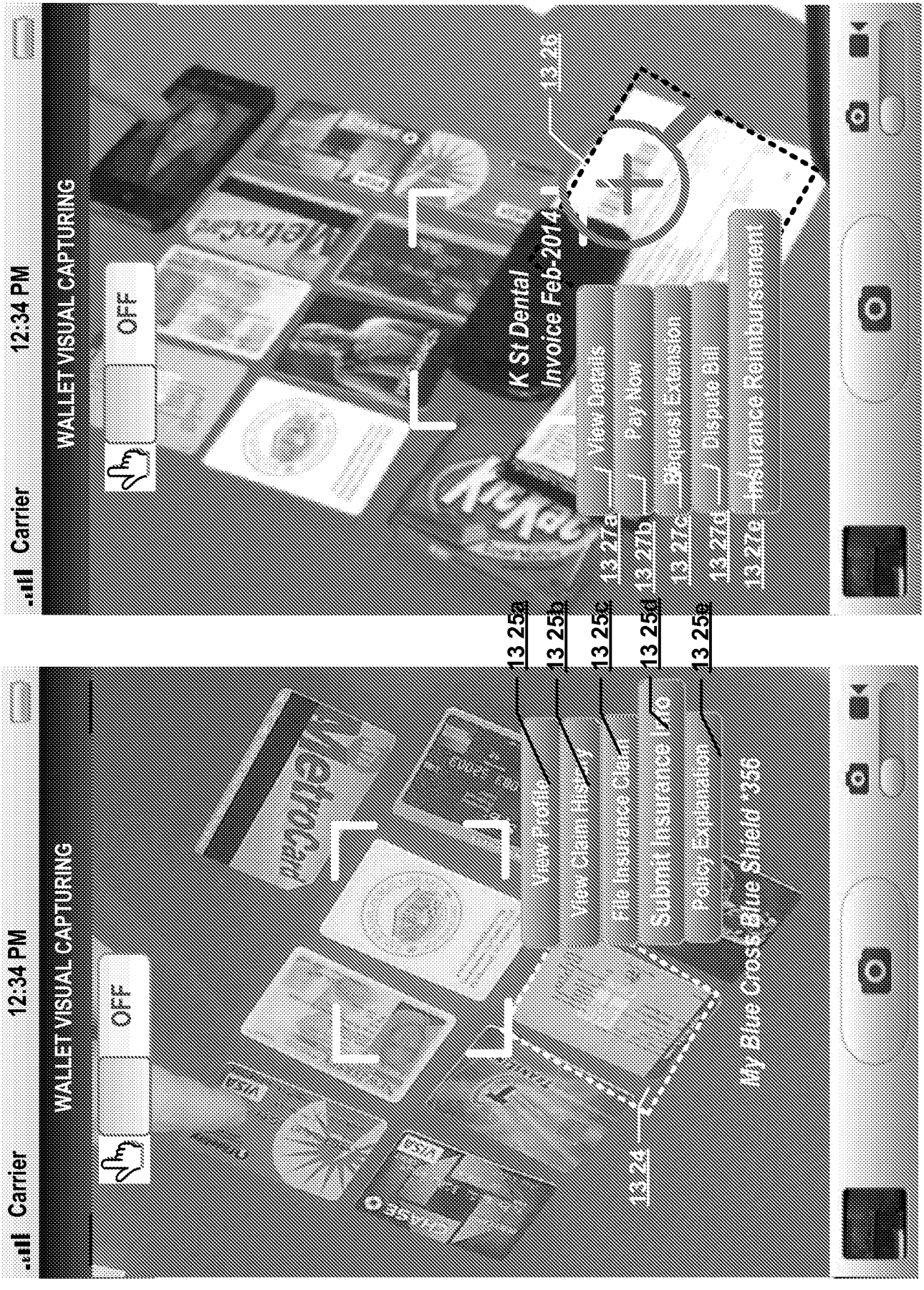
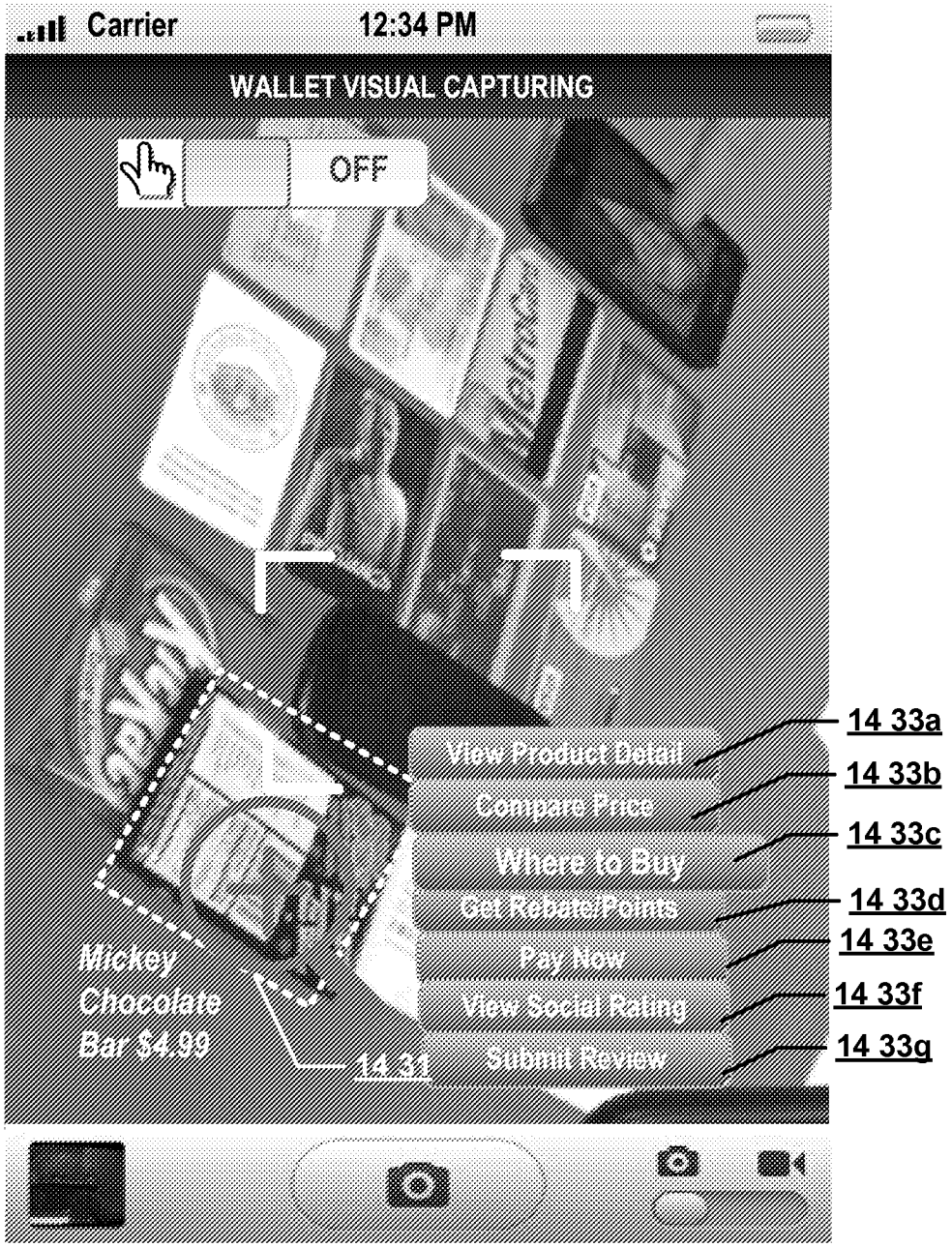


Figure 13

TVC Example Mobile UI: Visual Capturing Mode



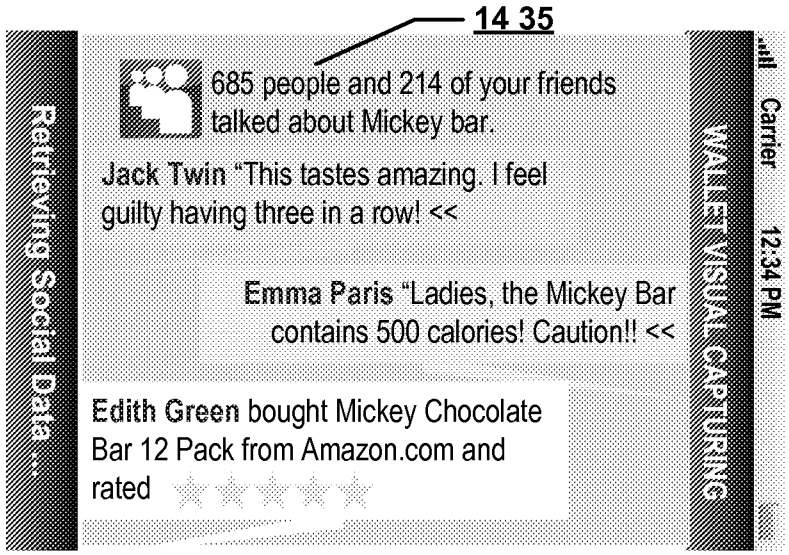


Figure 14 TVC Example Mobile UI: Visual Capturing Mode

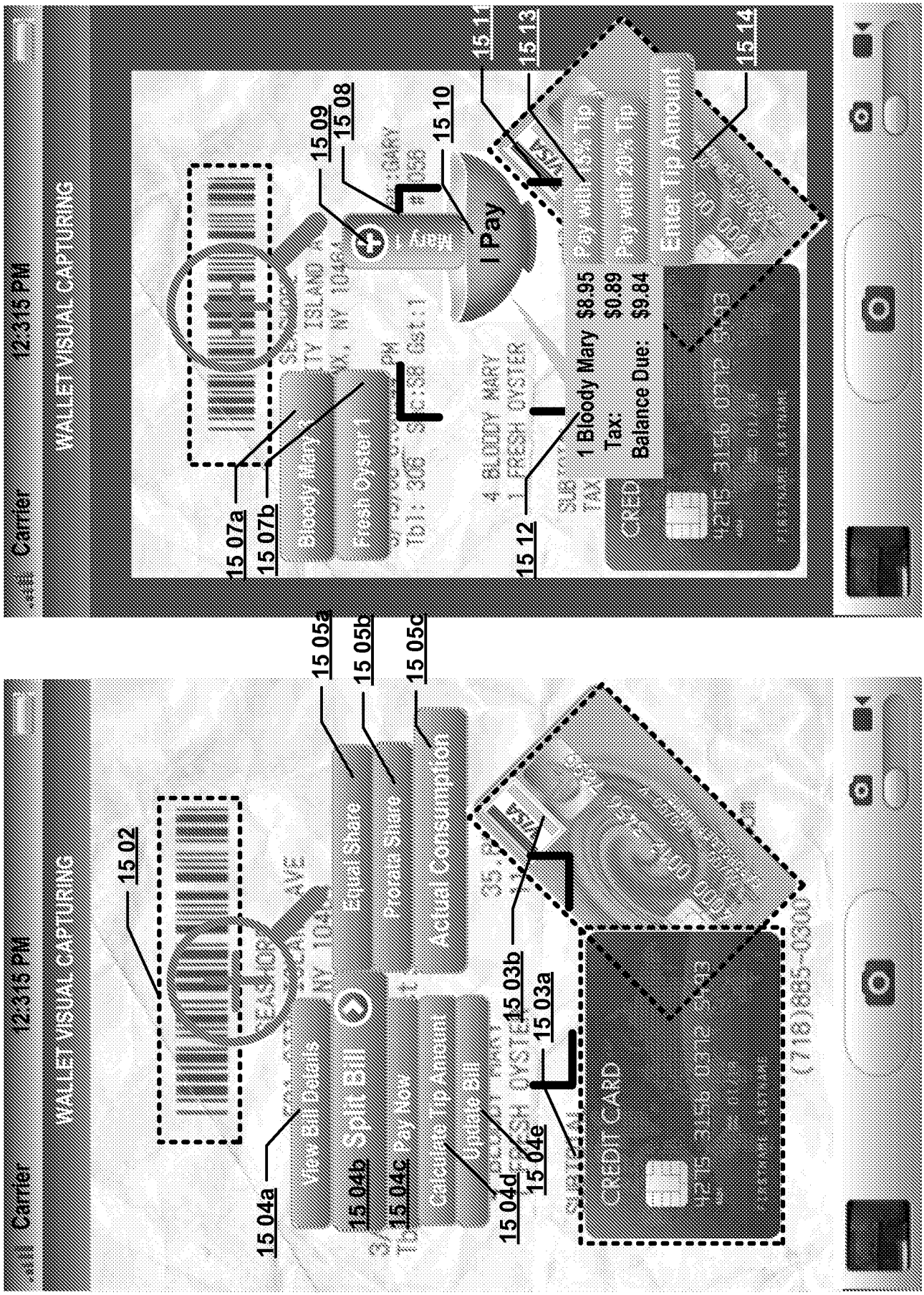
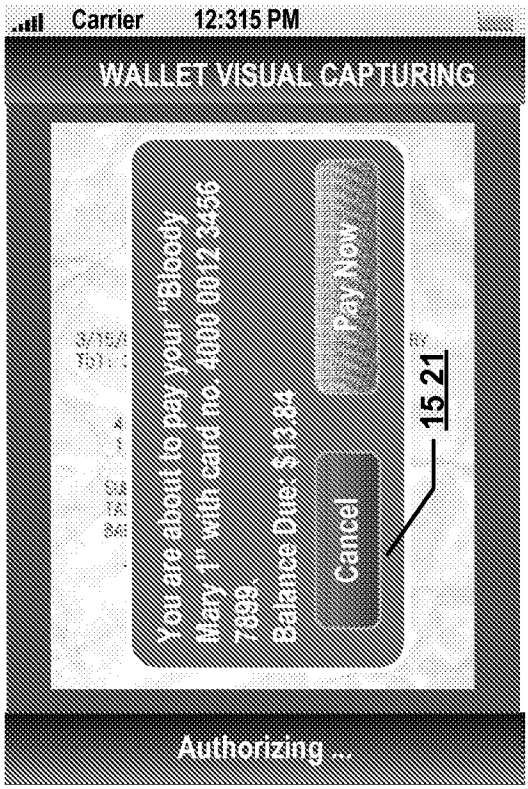
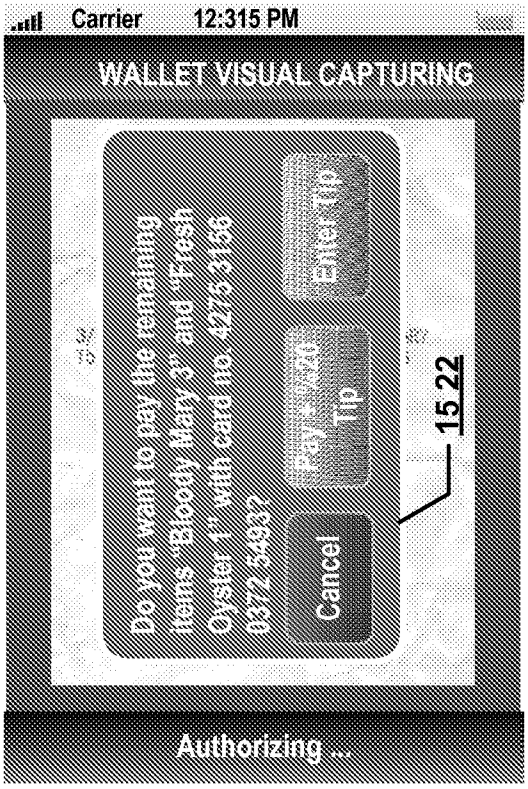


Figure 15A

TVC Example Mobile UI: Bill Tender via Visual Capturing





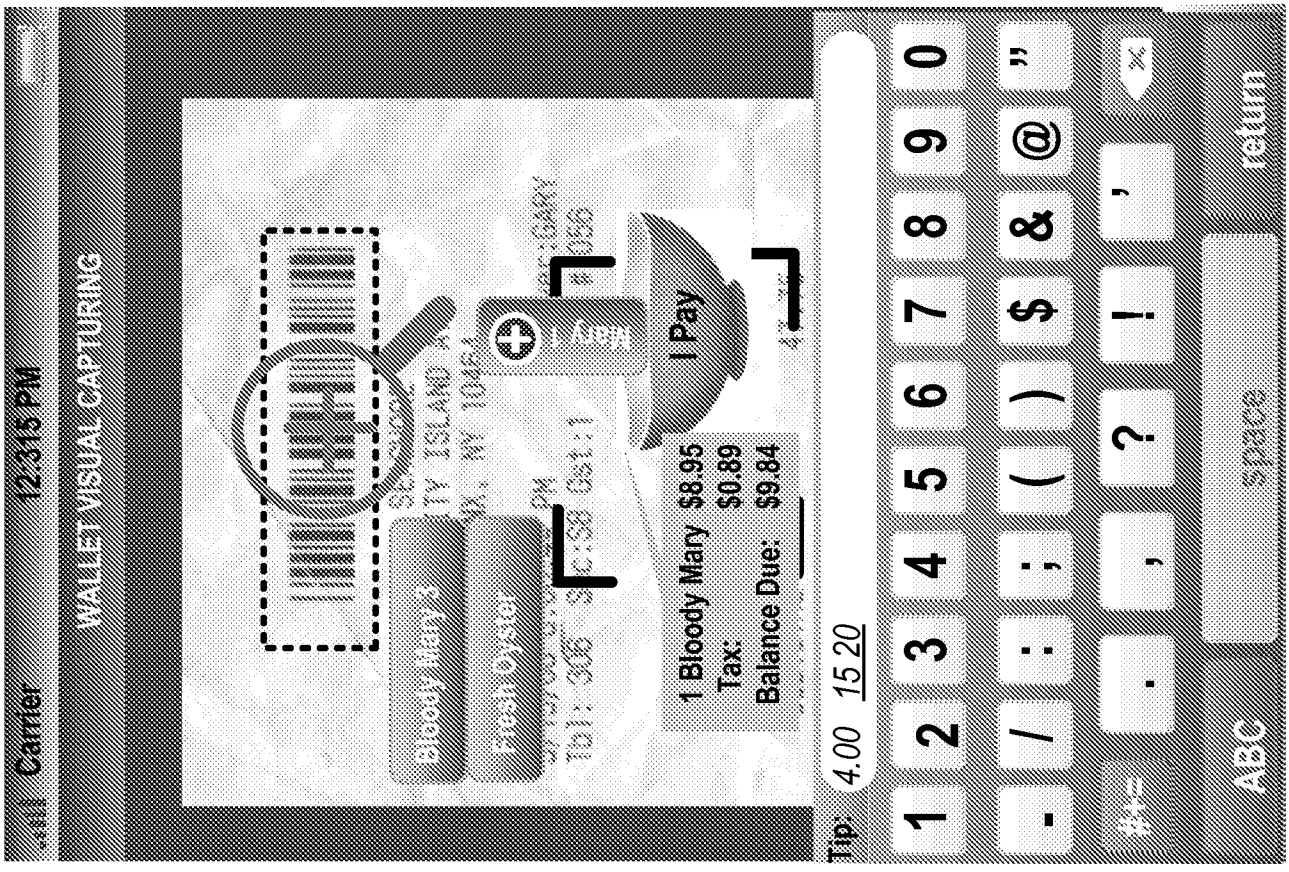
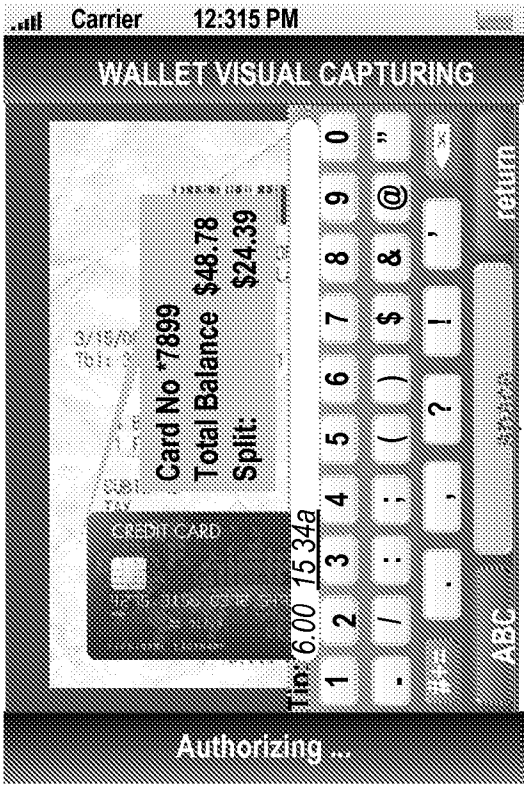
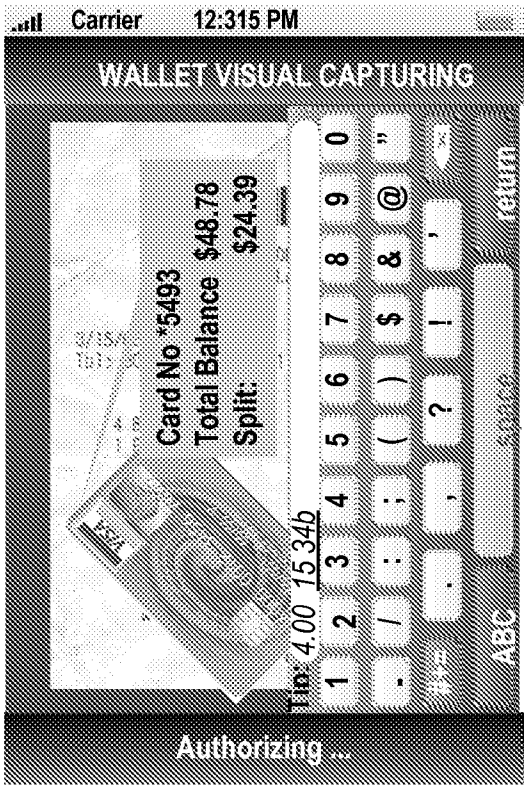


Figure 15B

TVC Example Mobile UI: Bill Tender via Visual Capturing





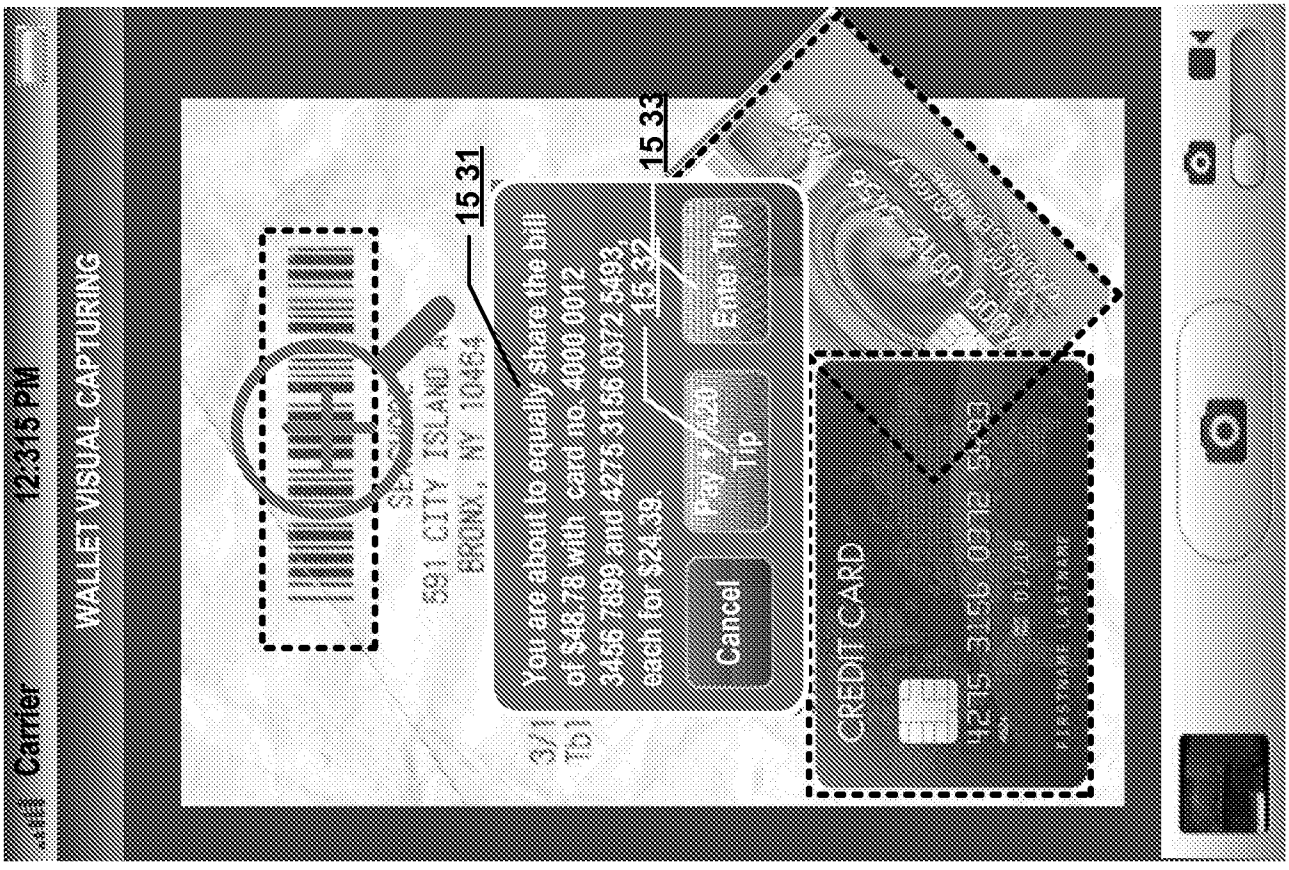


Figure 15C

TVC Example Mobile UI: Bill Tender via Visual Capturing

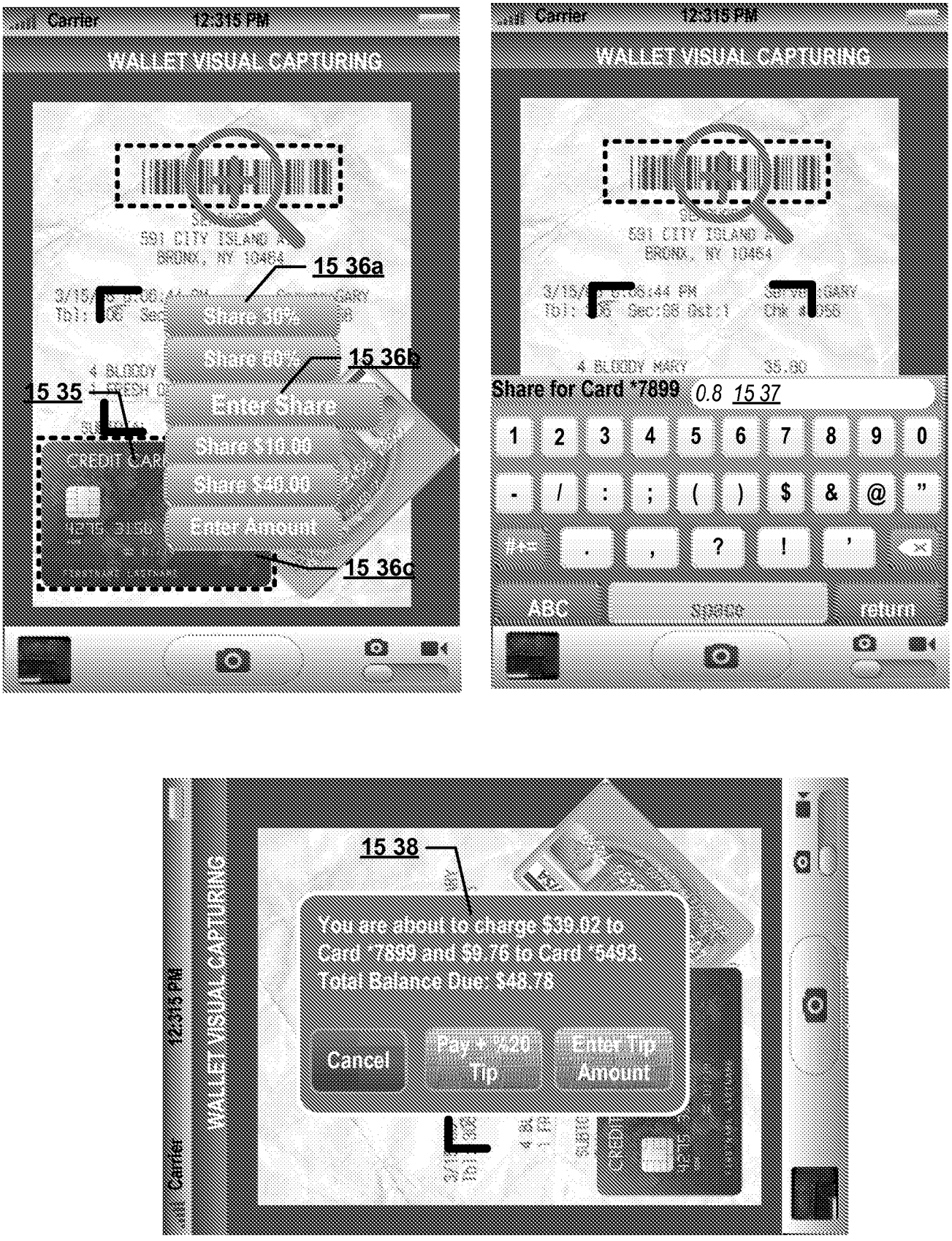


Figure 15D TVC Example Mobile UI: Bill Tender via Visual Capturing

Figure 15E TVC Example Mobile UI: Payment Authentication

Figure 15F TVC Example Mobile UI: Payment Authentication

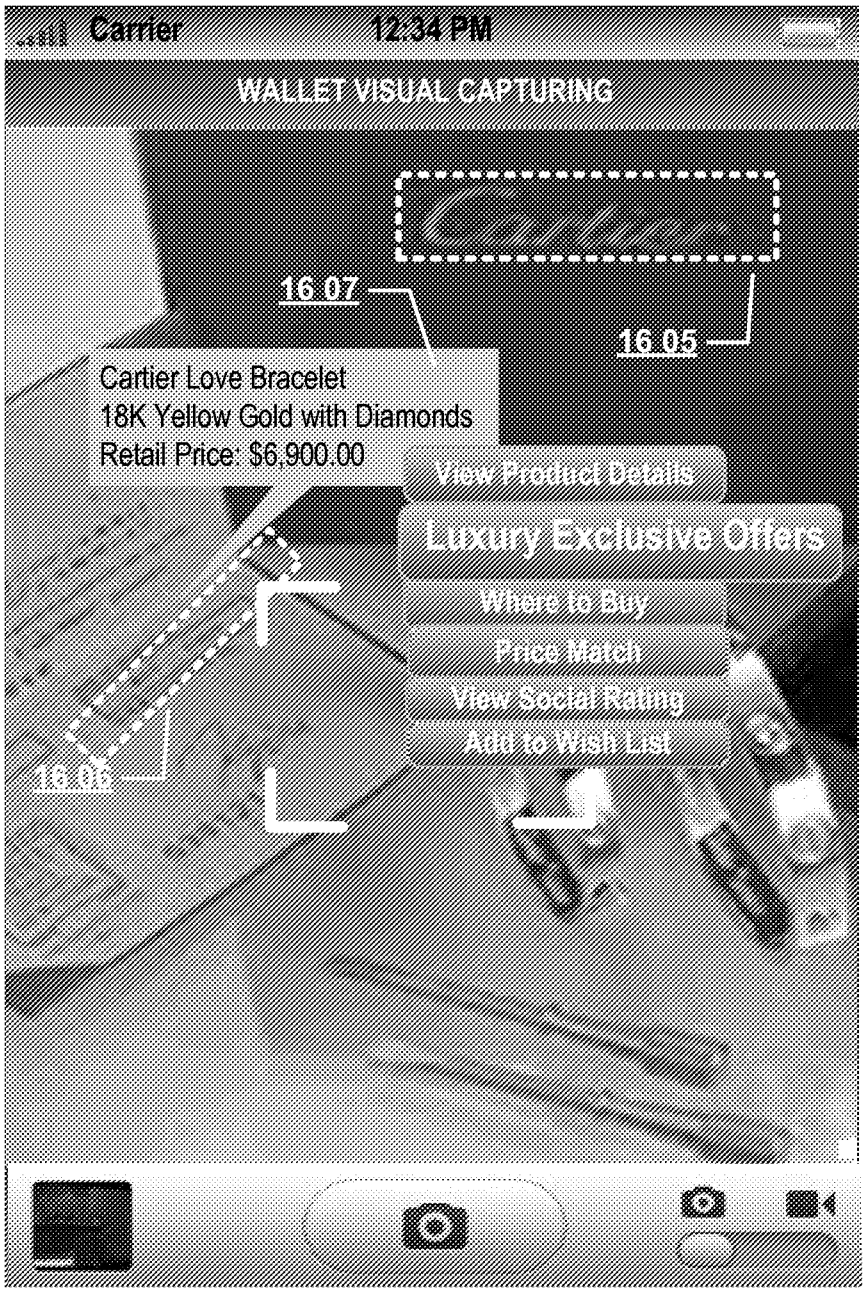
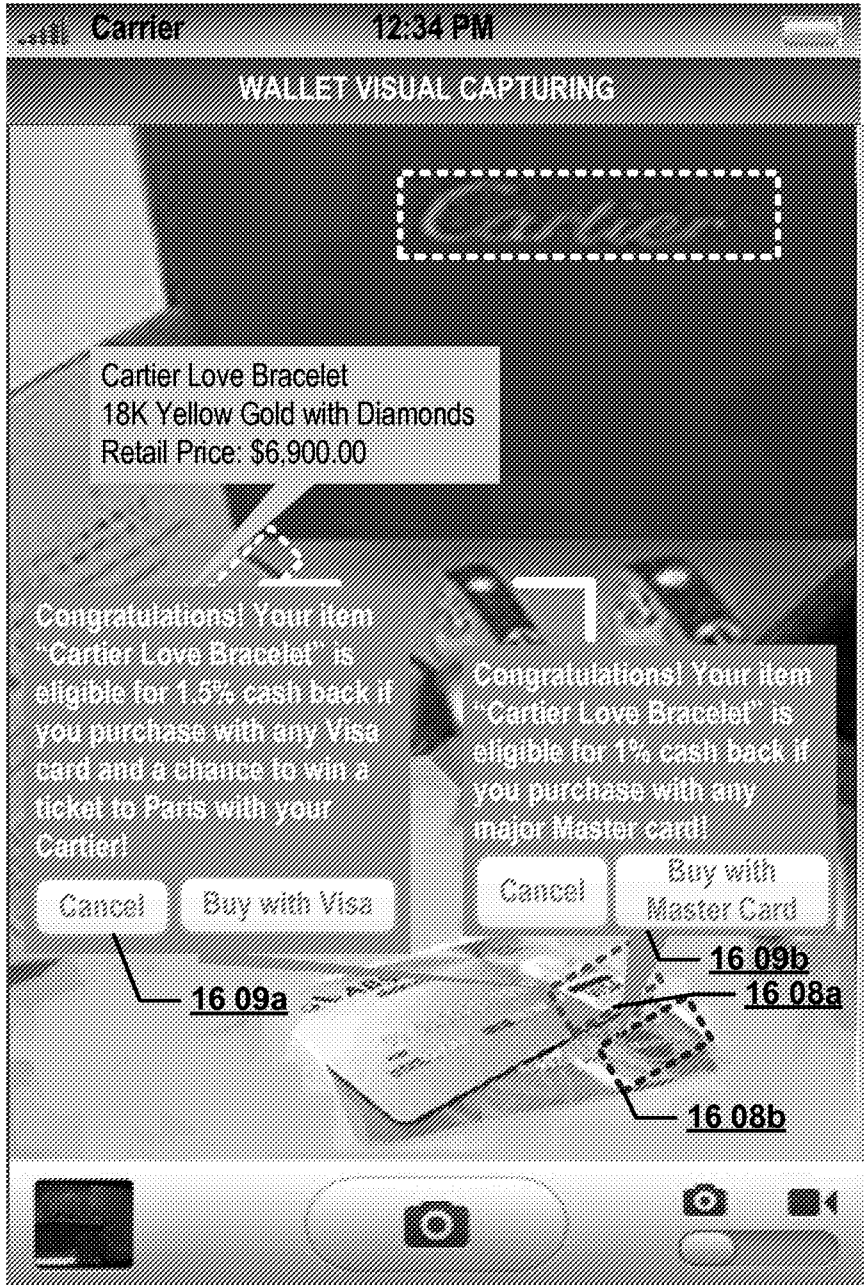


Figure 16A



TVC Example Mobile UI: Card Offering Comparison via Visual Capturing

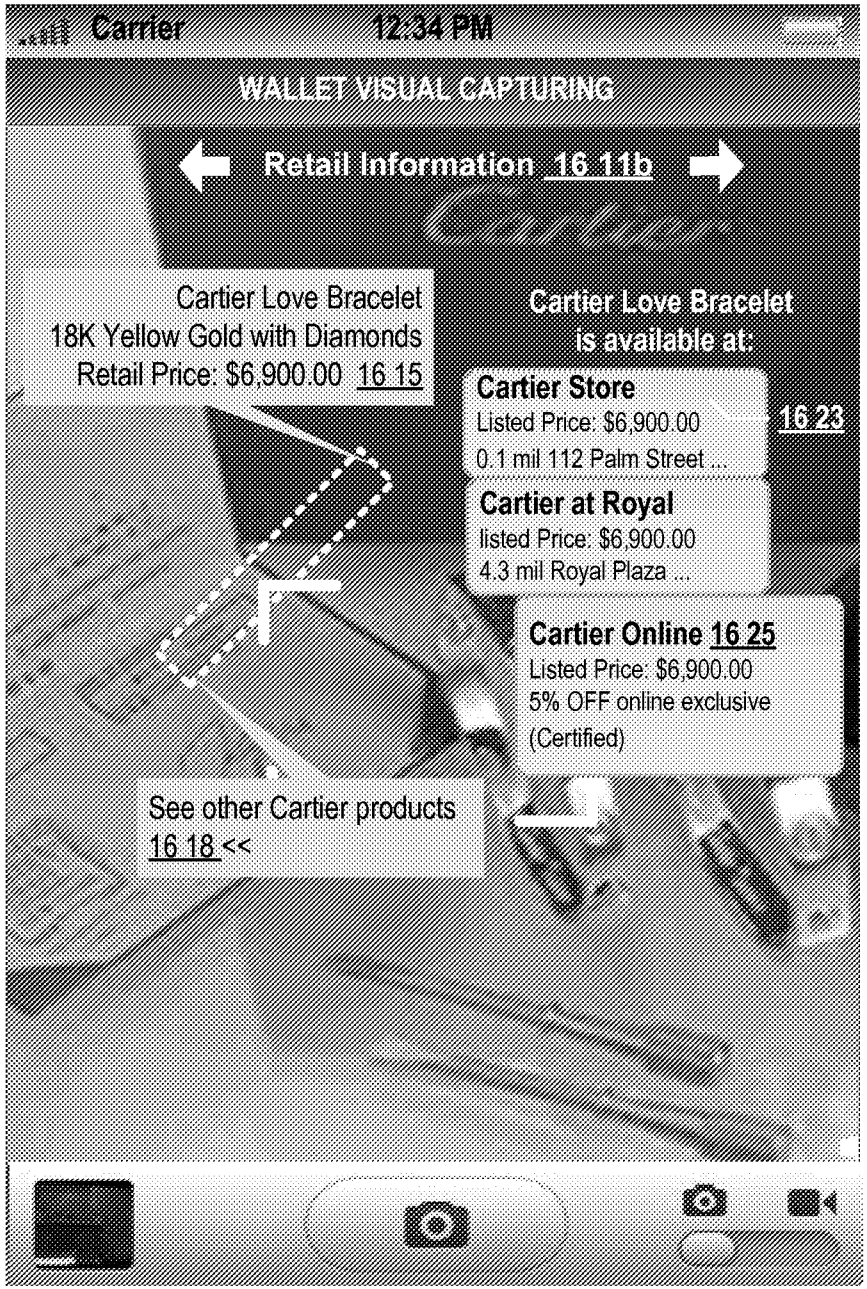


Figure 16B TVC Example Mobile UI: Card Offering Comparison via Visual Capturing

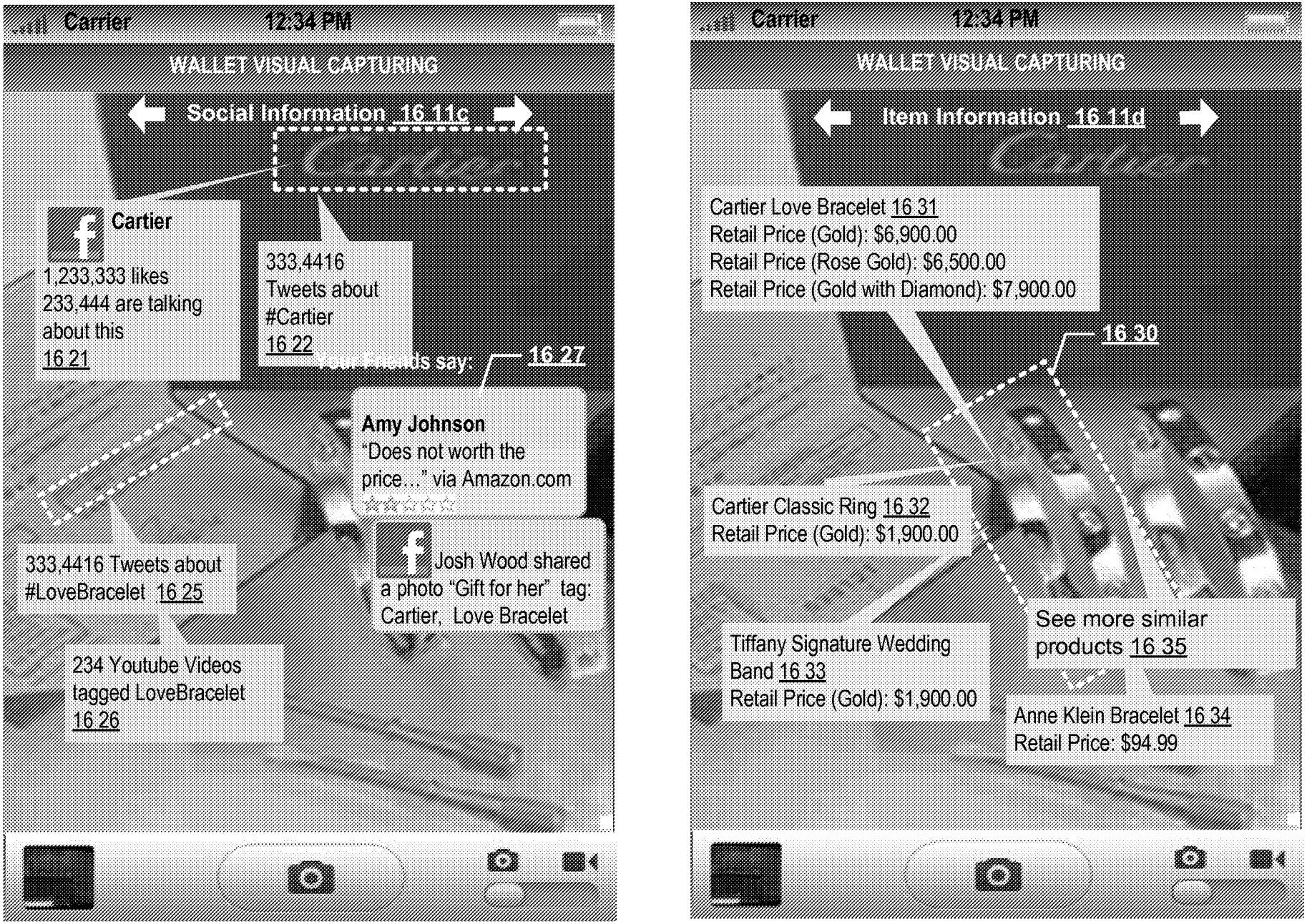
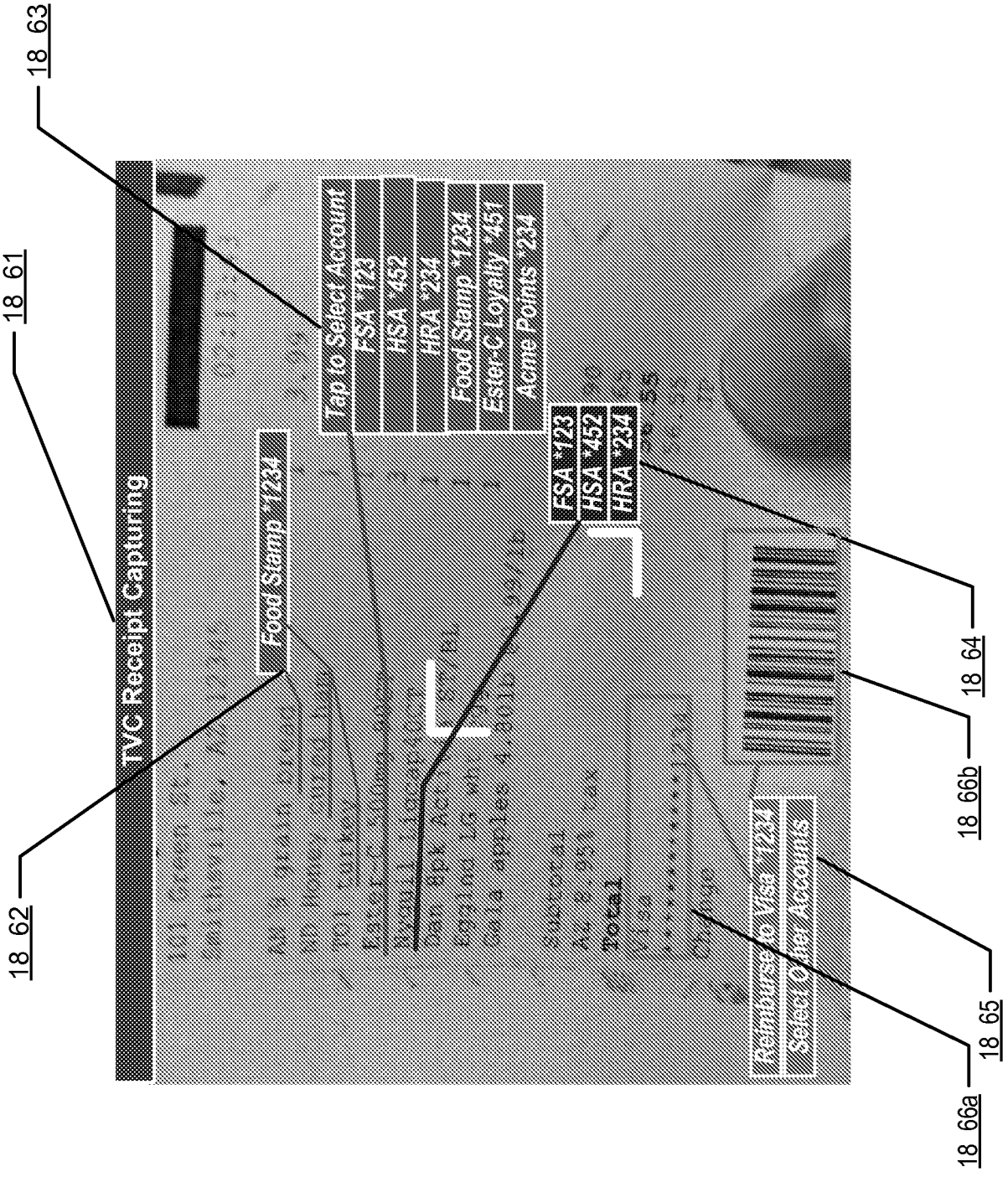


Figure 16C TVC Example Mobile UI: Card Offering Comparison via Visual Capturing

Figure 17 TVC Example Mobile Wallet UI: Augmented Reality In-Store



TVC Example Mobile Wallet UI: Augmented Reality Receipt Capturing

Figure 18

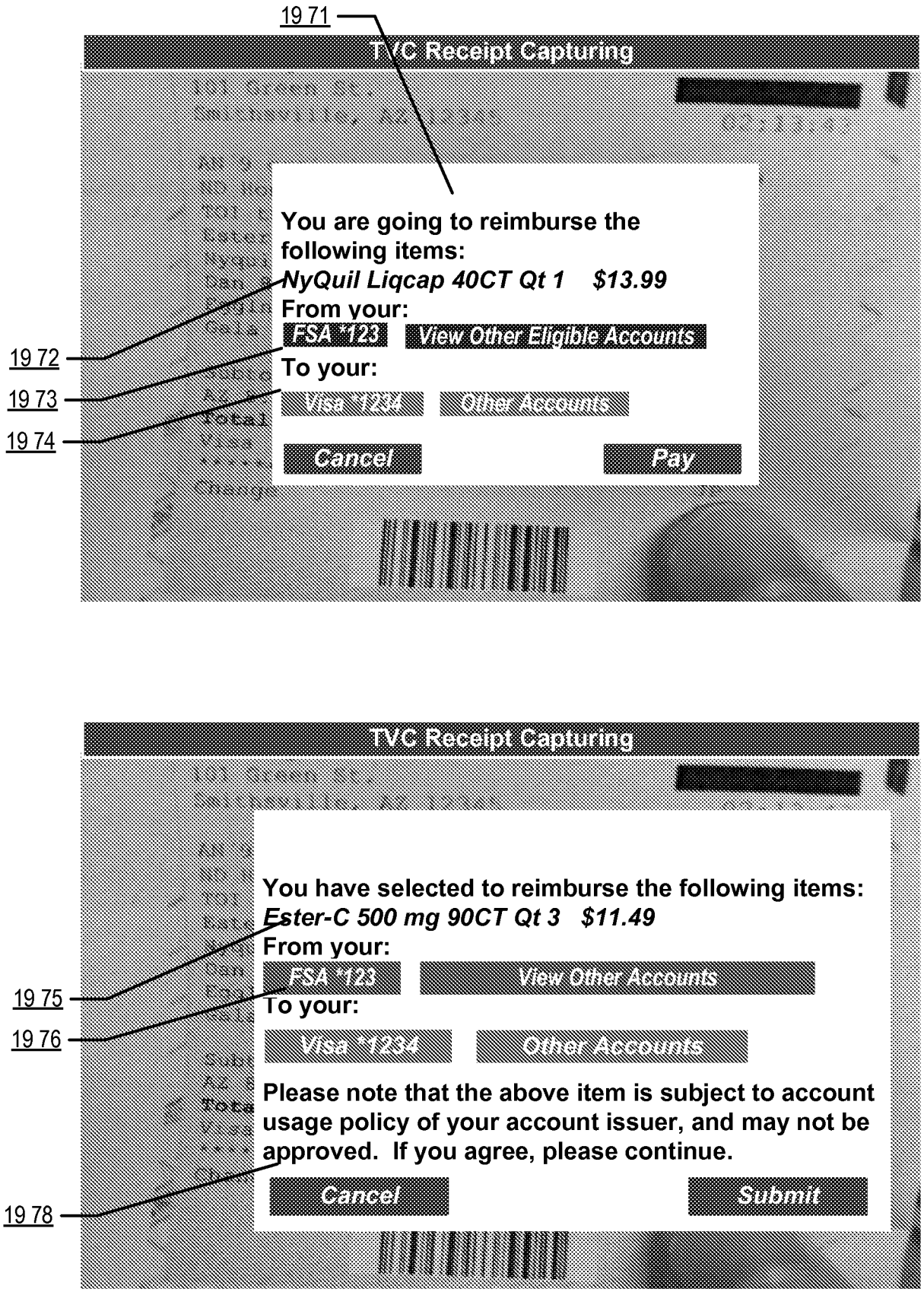
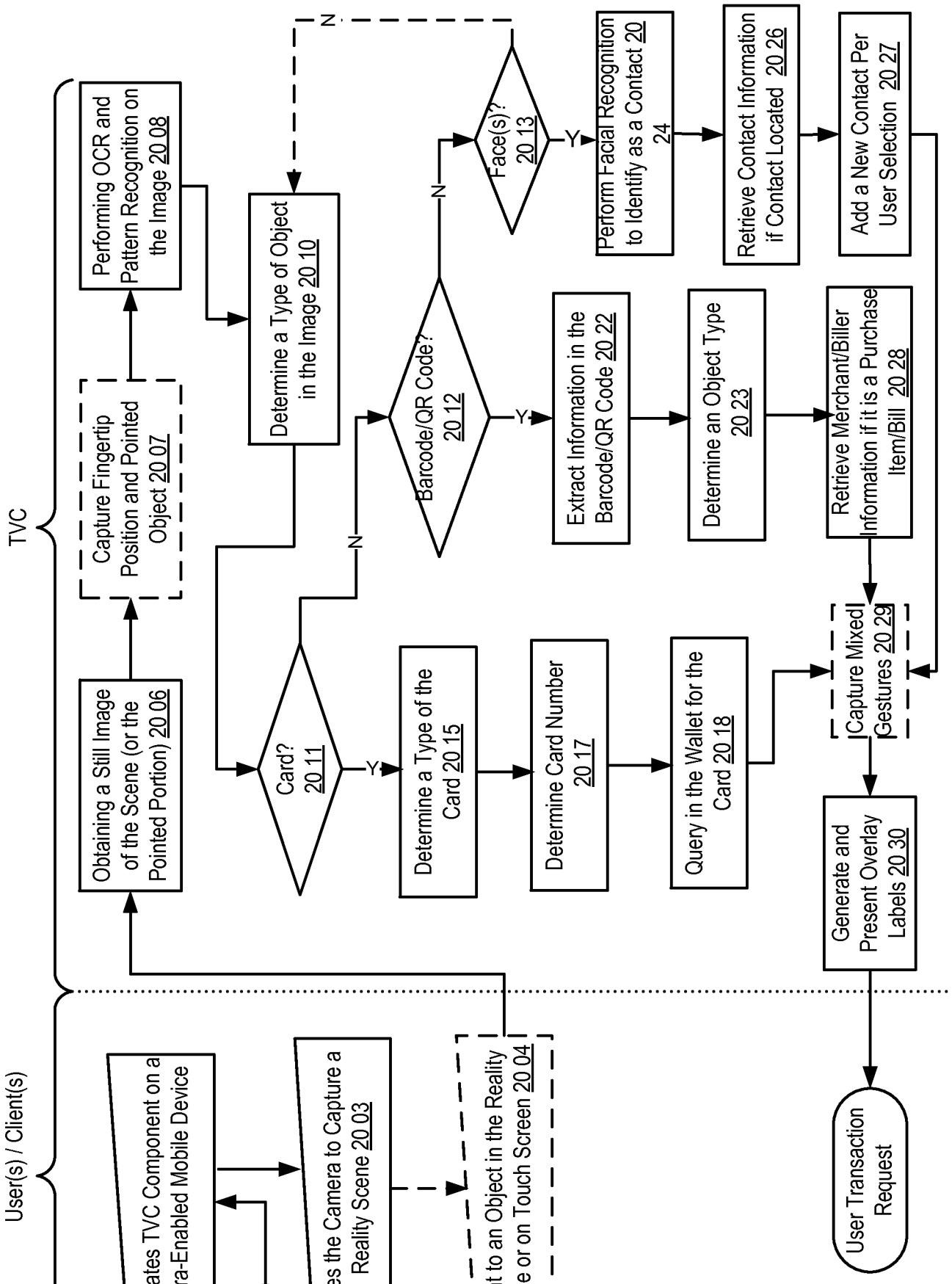
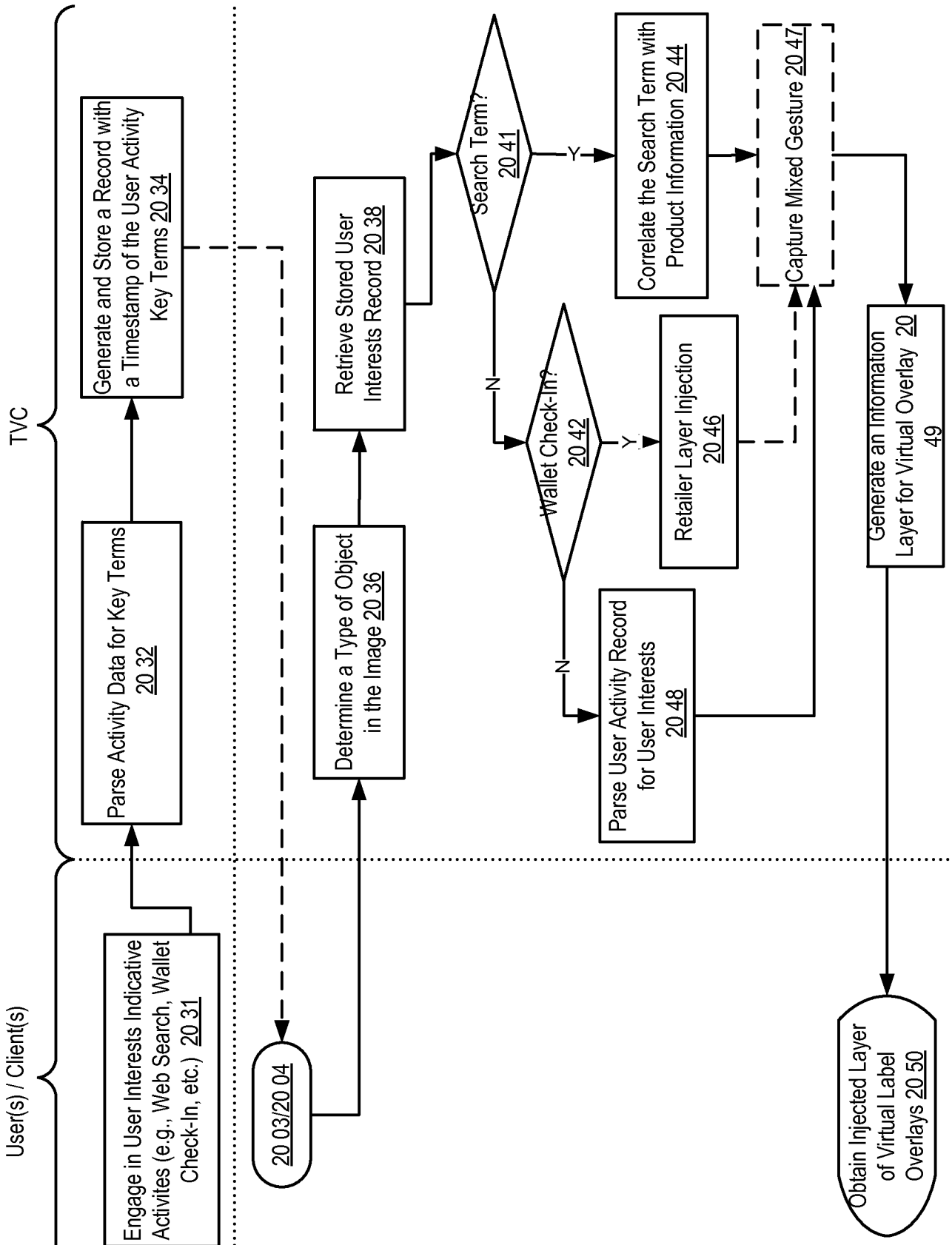


Figure 19 TVC Example Mobile Wallet UI: Augmented Reality Receipt Capturing



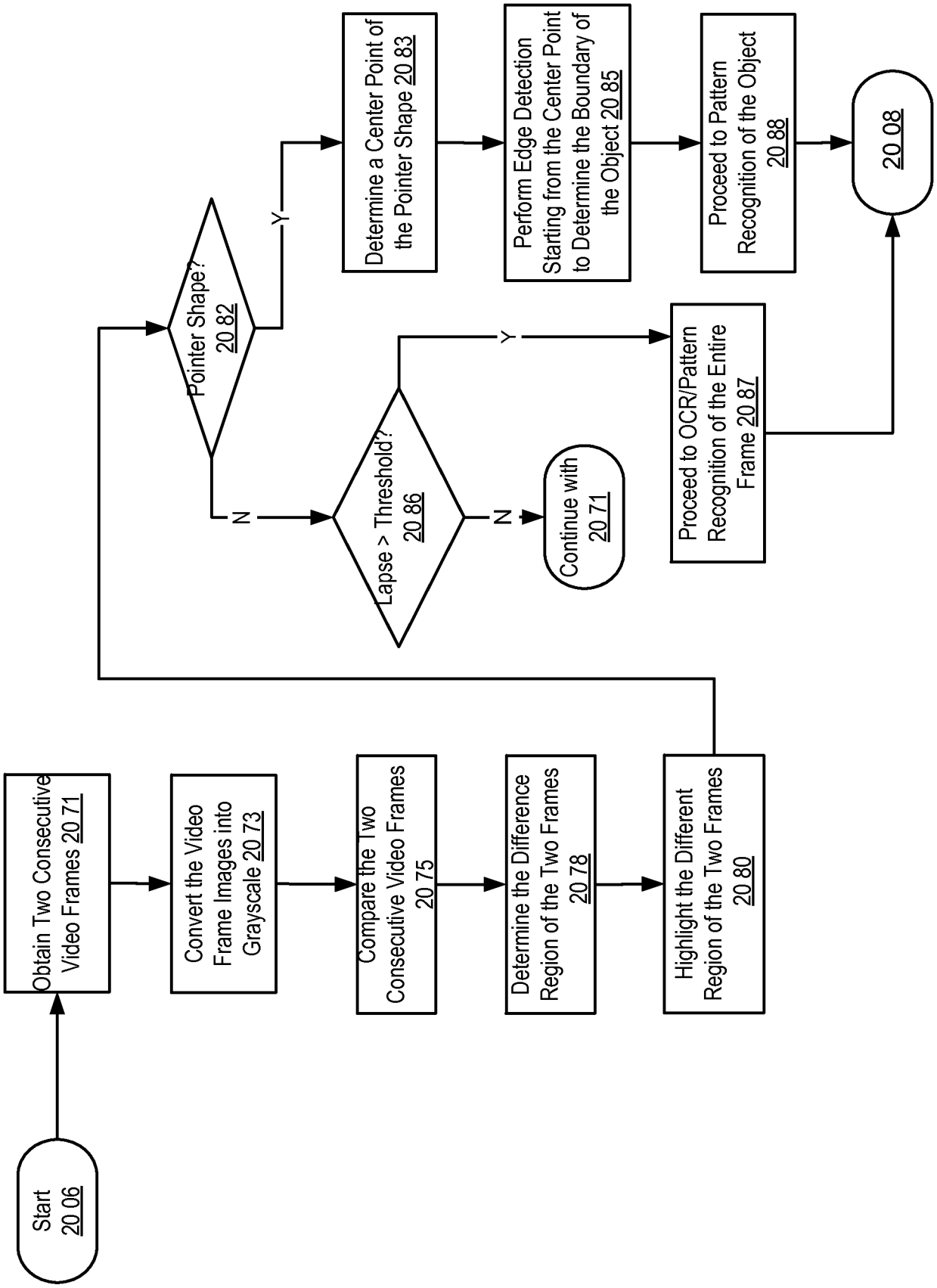
Example TVC Logic Flow: Virtual Label Overlays

Figure 20A



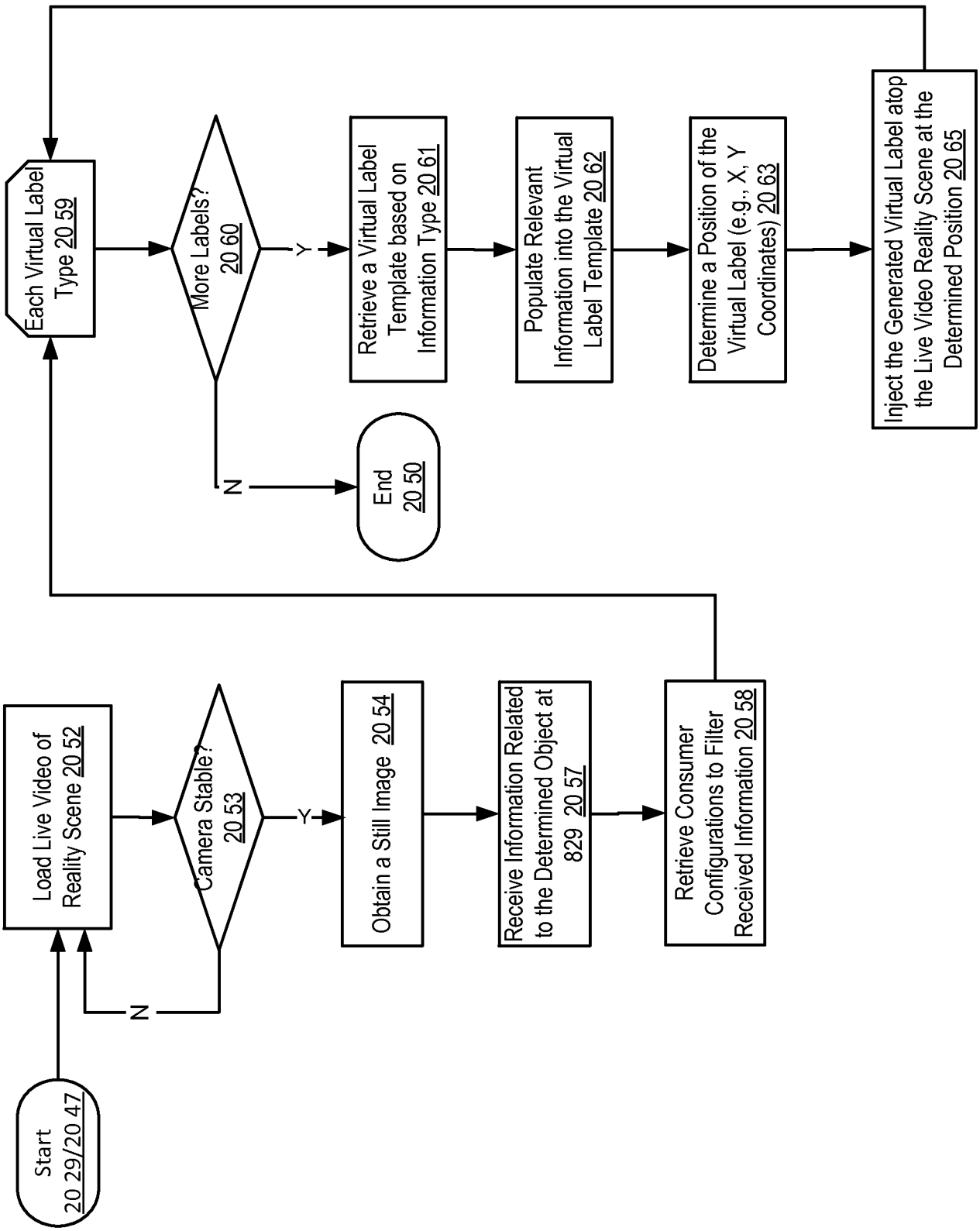
Example TVC Logic Flow: Automatic Layer Injection

Figure 20B



Example TVC Logic Flow: Fingertip Detection 20 07

Figure 20C



Example TVC Logic Flow: Virtual Label Generation

Figure 20D

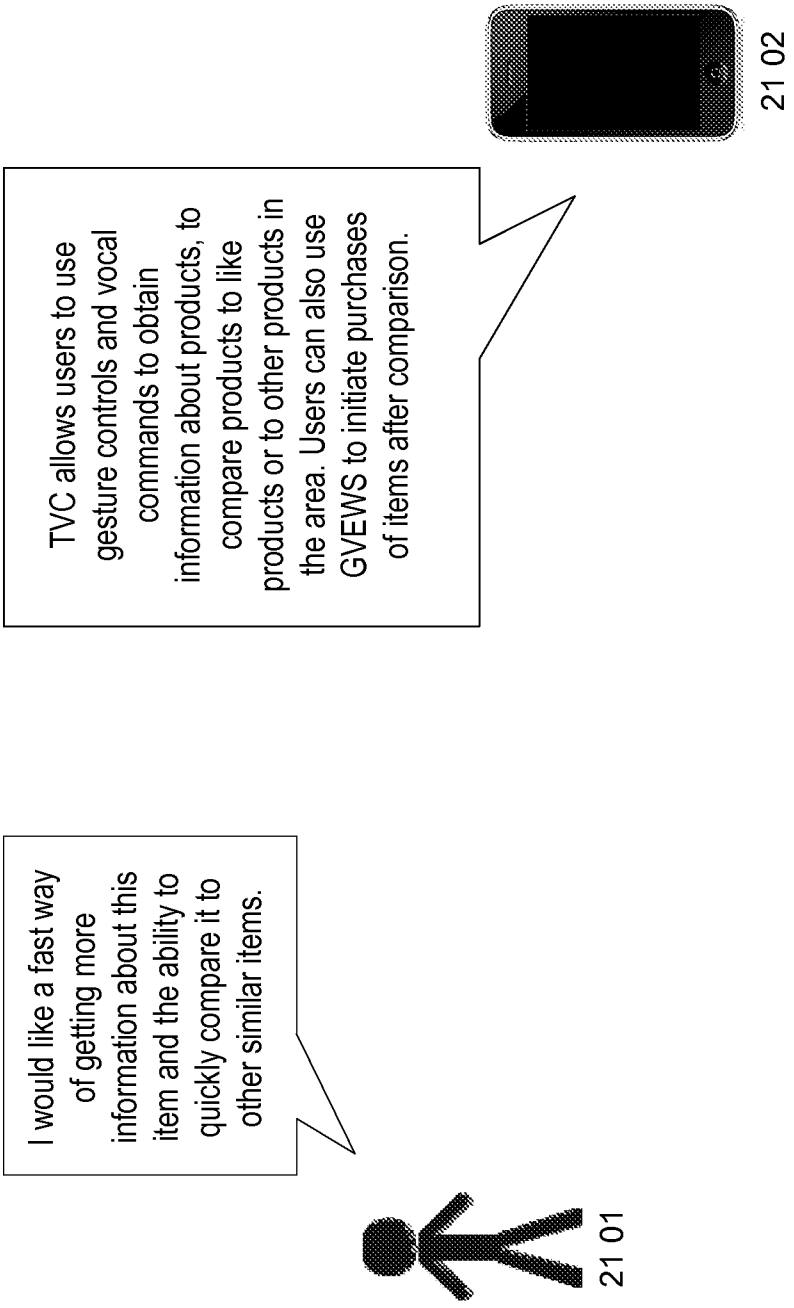
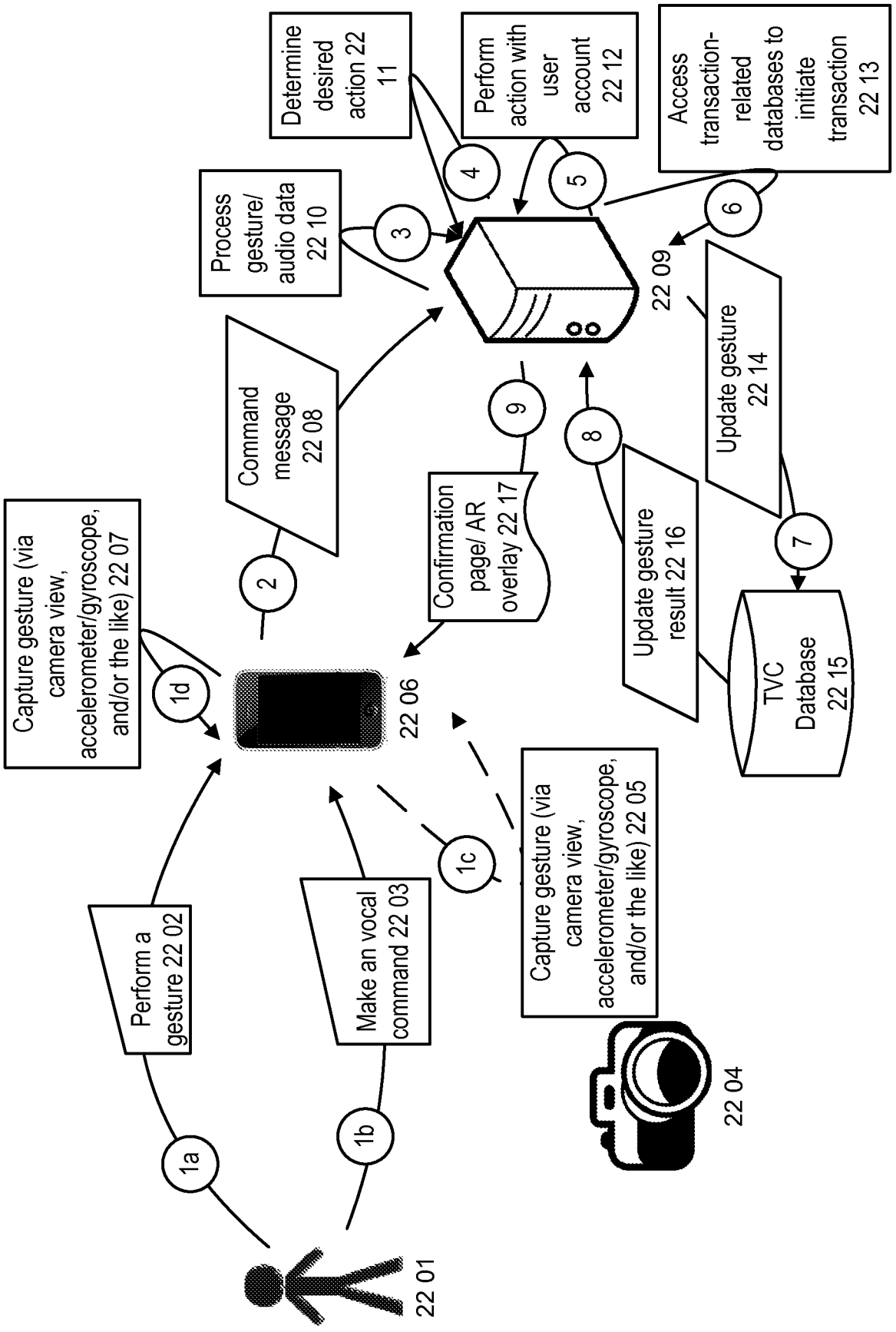

I would like a fast way of getting more information about this item and the ability to quickly compare it to other similar items.
21 01
TVC allows users to use gesture controls and vocal commands to obtain information about products, to compare products to like products or to other products in the area. Users can also use GVEWS to initiate purchases of items after comparison.
21 02

Figure 21



Audio/Gesture Conversion Component

Figure 22a

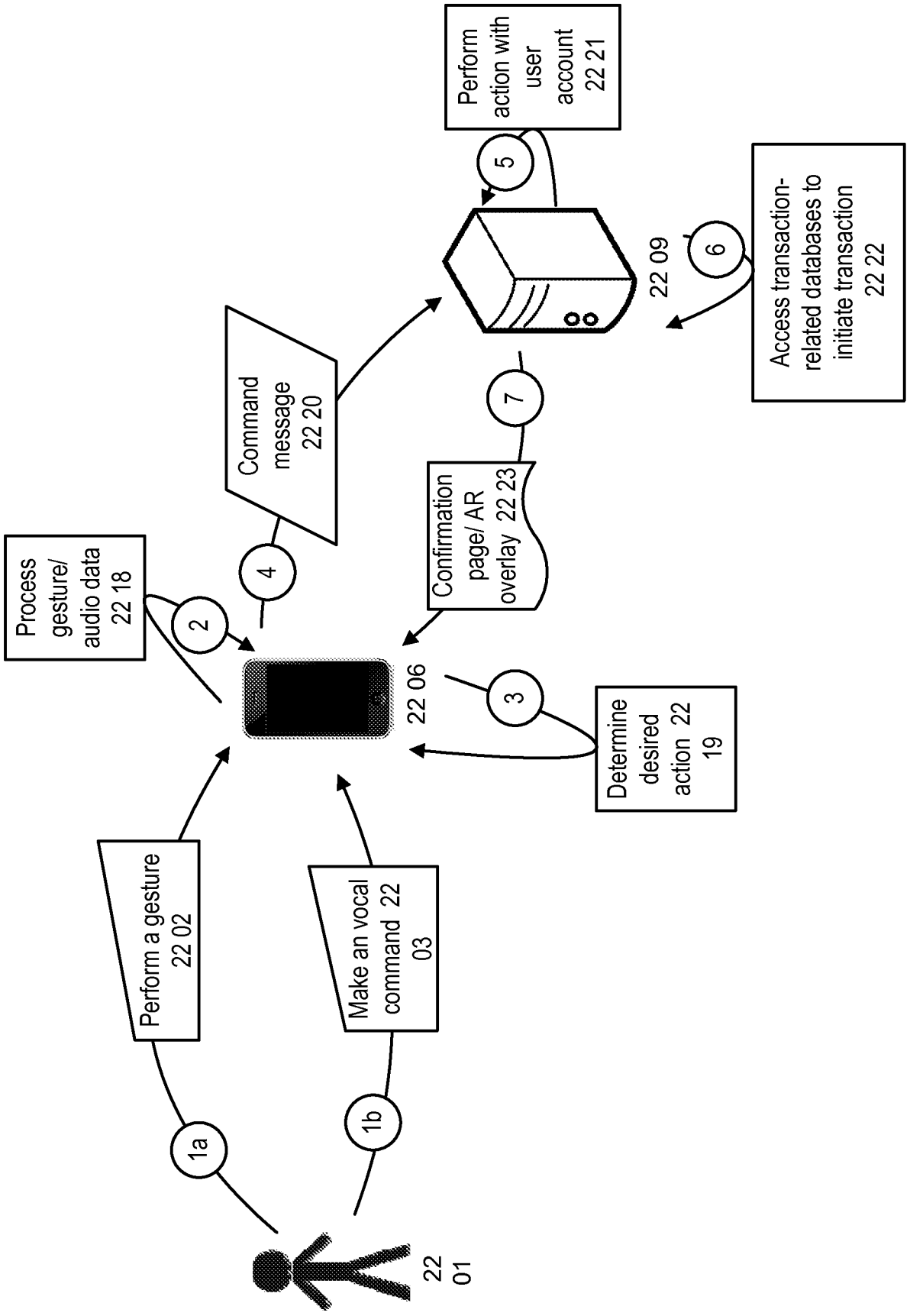

Perform action with user account 22 21
5
Access transaction-related databases to initiate transaction 22 22
6
22 09
Command message 22 20
4
Process gesture/ audio data 22 18
2
Confirmation page/ AR overlay 22 23
7
22 06
3
Determine desired action 22 19
Perform a gesture 22 02
1a
Make an vocal command 22 03
1b
22 01
Audio/Gesture Conversion Component

Figure 22b

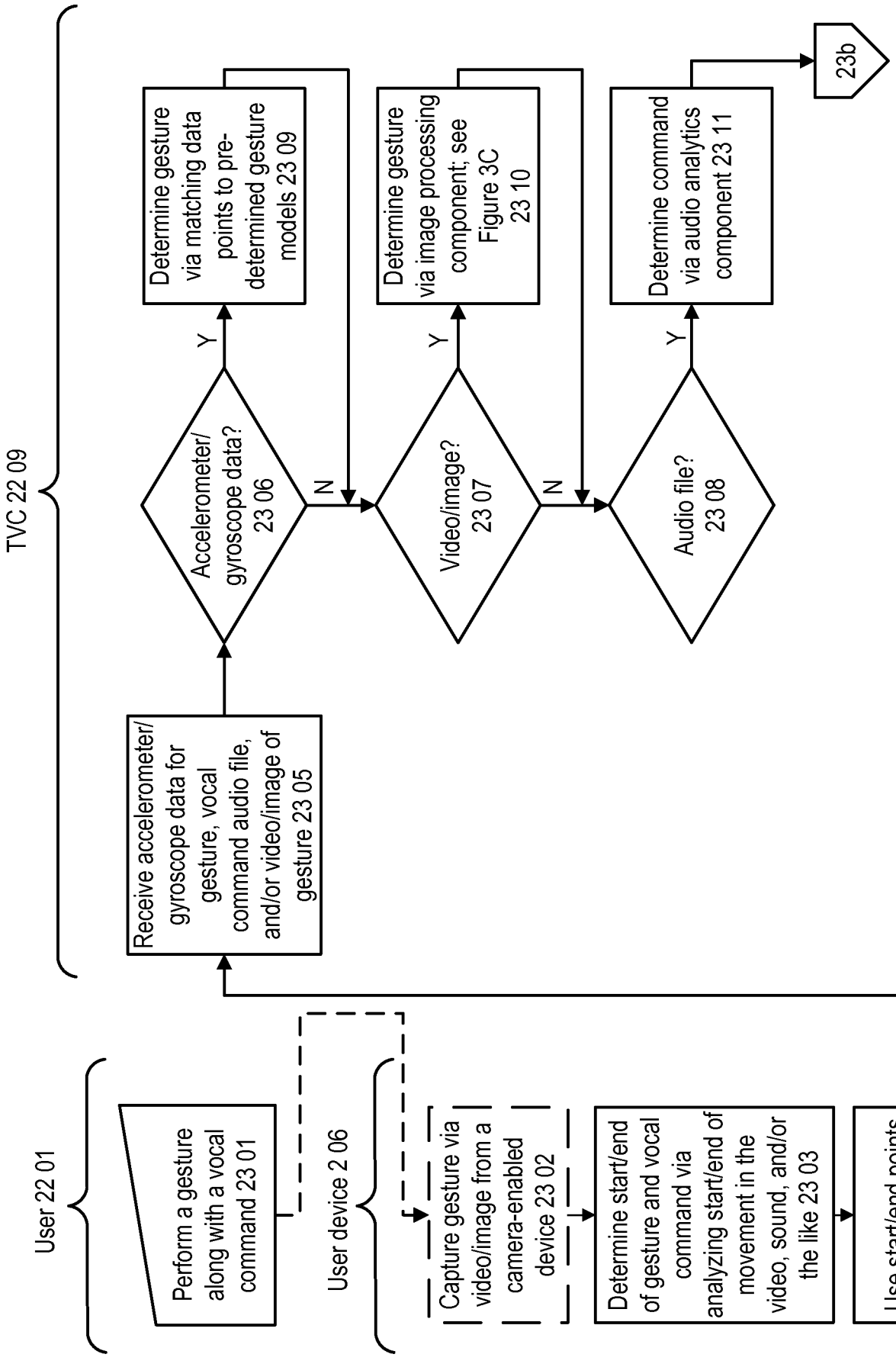

User 22 01
Perform a gesture along with a vocal command 23 01
User device 2 06
Capture gesture via video/image from a camera-enabled device 23 02
Determine start/end of gesture and vocal command via analyzing start/end of movement in the video, sound, and/or the like 23 03
Use start/end points to package gesture/ vocal data 23 04
TVC 22 09
Receive accelerometer/ gyroscope data for gesture, vocal command audio file, and/or video/image of gesture 23 05
Accelerometer/ gyroscope data? 23 06
Y
Determine gesture via matching data points to pre-determined gesture models 23 09
N
Video/image? 23 07
Y
Determine gesture via image processing component; see Figure 3C 23 10
N
Audio file? 23 08
Y
Determine command via audio analytics component 23 11
23b

Figure 23a

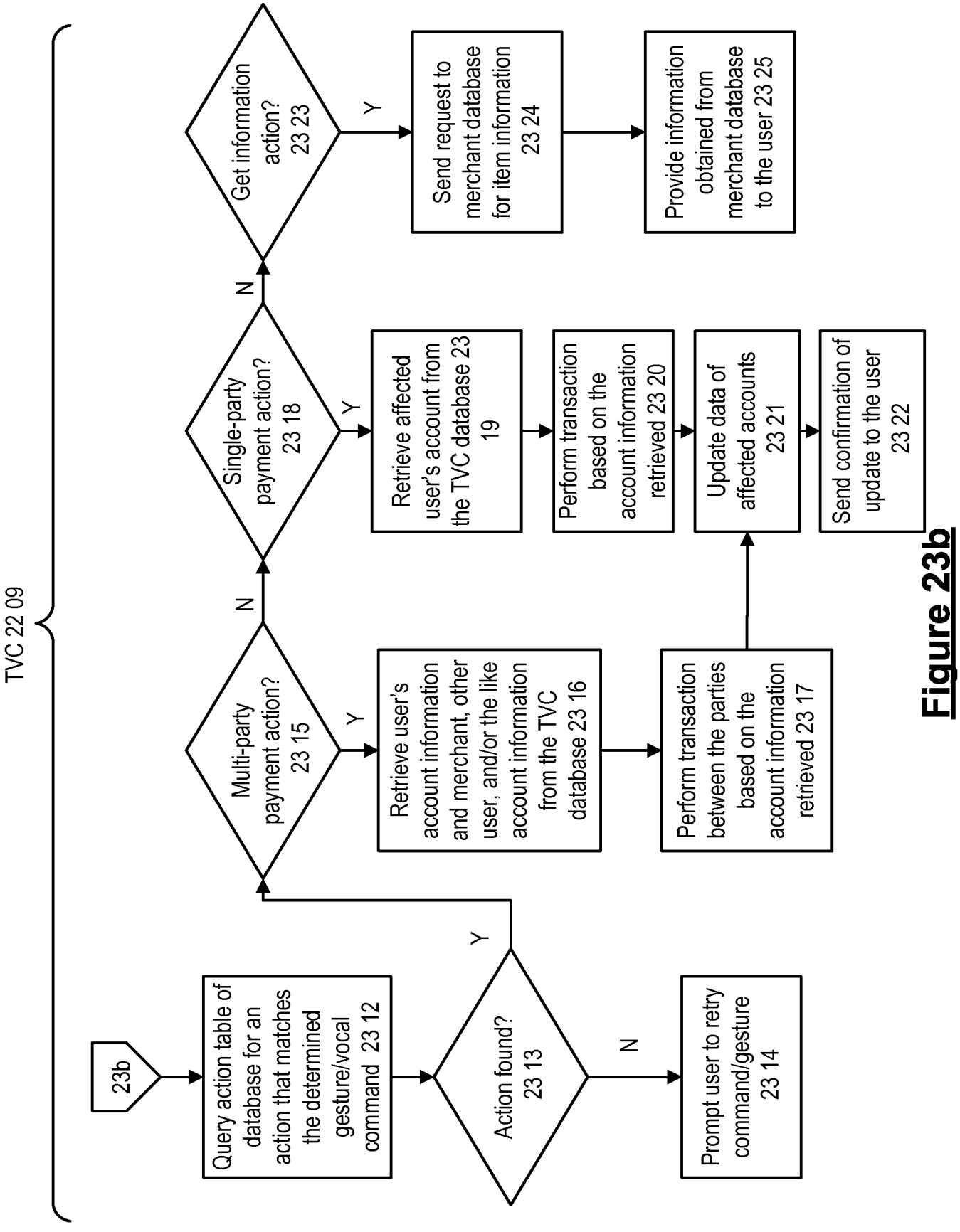

TVC 22 09
23b
Query action table of database for an action that matches the determined gesture/vocal command 23 12
Action found? 23 13
Y
N
Prompt user to retry command/gesture 23 14
Multi-party payment action? 23 15
Y
N
Retrieve user's account information and merchant, other user, and/or the like account information from the TVC database 23 16
Perform transaction between the parties based on the account information retrieved 23 17
Single-party payment action? 23 18
Y
N
Retrieve affected user's account from the TVC database 23 19
Perform transaction based on the account information retrieved 23 20
Update data of affected accounts 23 21
Send confirmation of update to the user 23 22
Get information action? 23 23
Y
Send request to merchant database for item information 23 24
Provide information obtained from merchant database to the user 23 25

Figure 23b

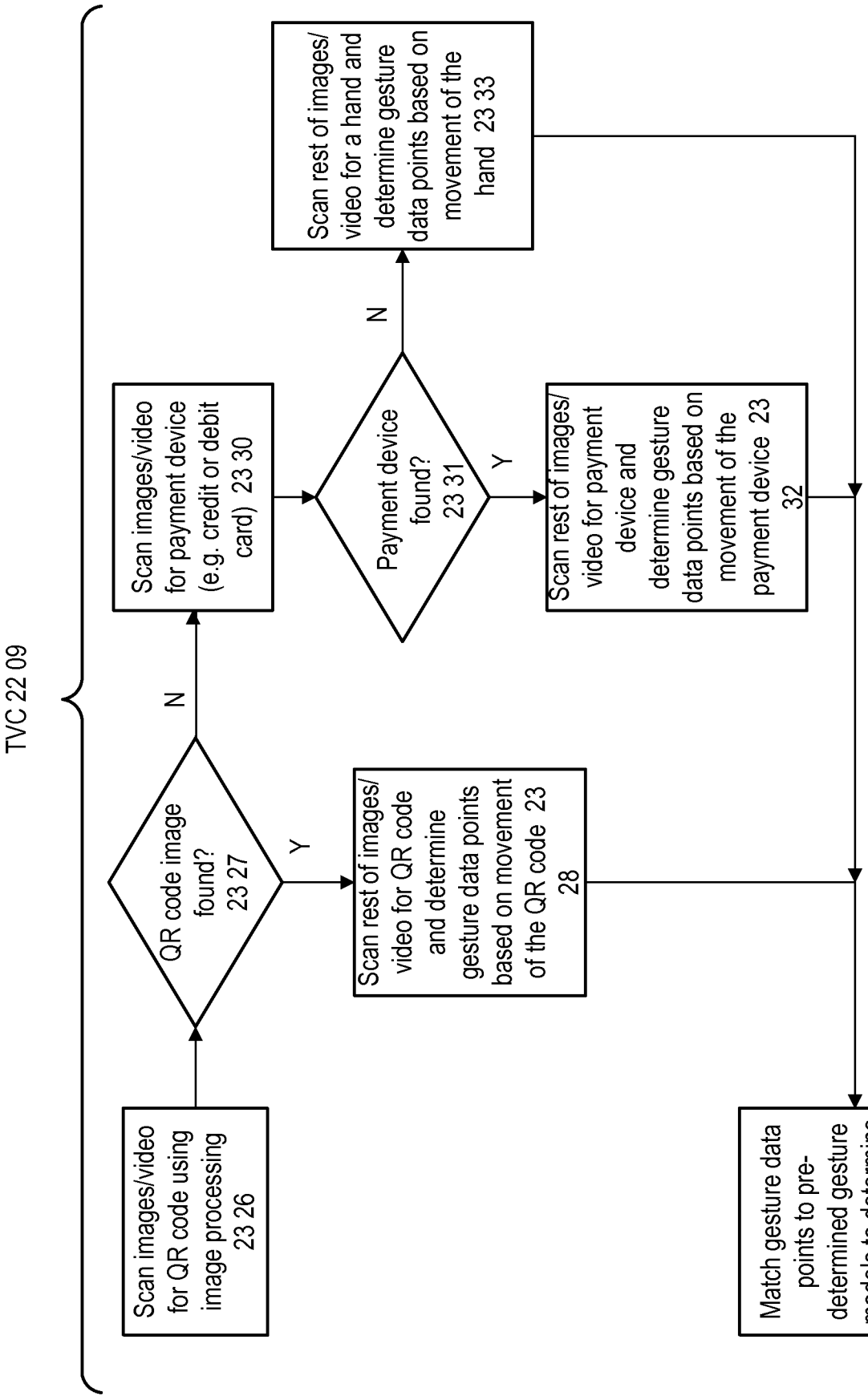

TVC 22 09
Scan images/video for QR code using image processing 23 26
QR code image found? 23 27
N
Y
Scan images/video for payment device (e.g. credit or debit card) 23 30
Scan rest of images/ video for QR code and determine gesture data points based on movement of the QR code 23 28
Payment device found? 23 31
N
Y
Scan rest of images/ video for a hand and determine gesture data points based on movement of the hand 23 33
Scan rest of images/ video for payment device and determine gesture data points based on movement of the payment device 23 32
Match gesture data points to pre-determined gesture models to determine gesture 23 29

Figure 23c

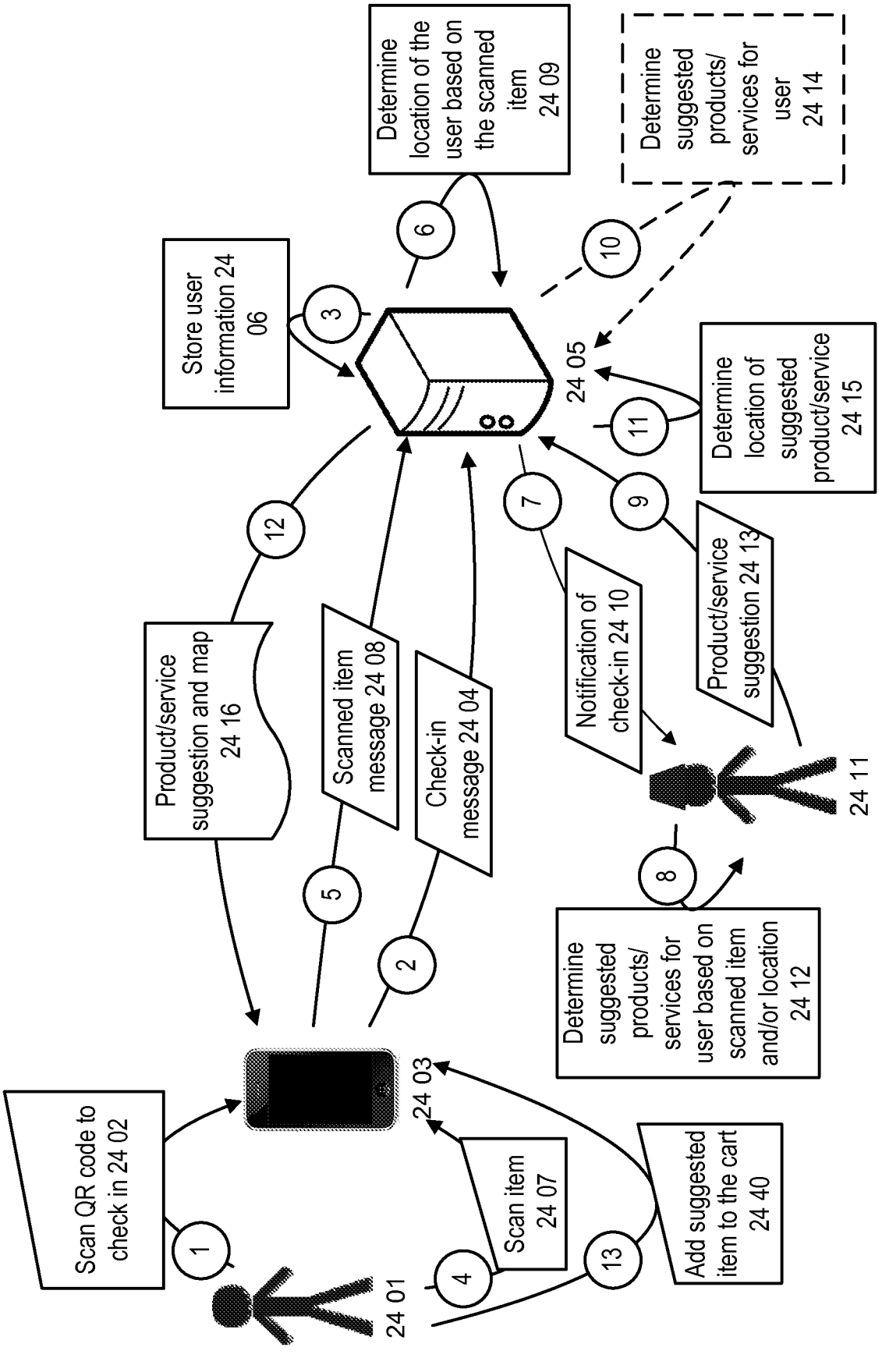


Figure 24a

Store-Generated Productt Recommendation Component

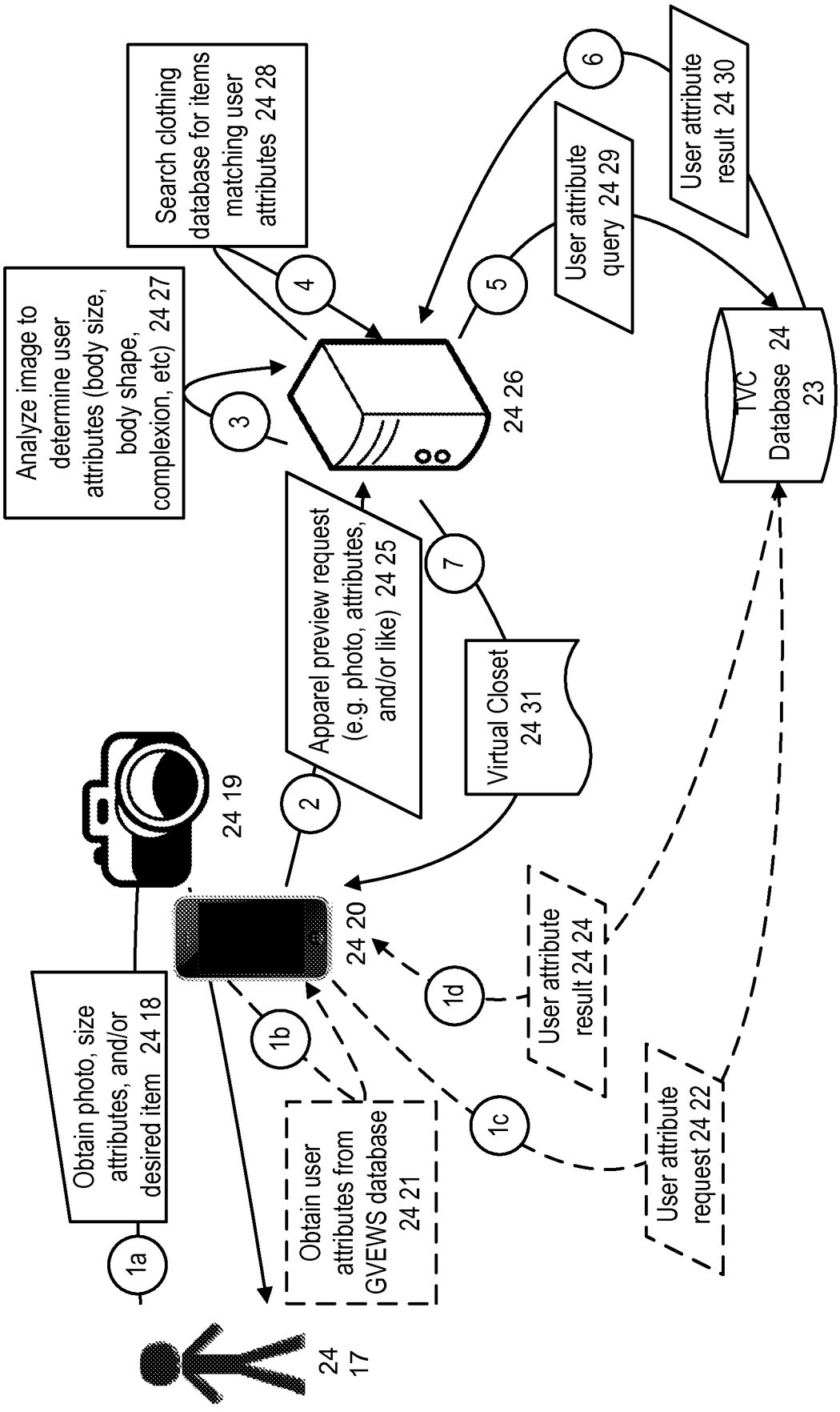

Obtain photo, size attributes, and/or desired item 24 18
1a
24 17
Obtain user attributes from GVEWS database 24 21
1b
1c
User attribute request 24 22
User attribute result 24 24
1d
24 20
24 19
Apparel preview request (e.g. photo, attributes, and/or like) 24 25
2
Virtual Closet 24 31
7
Analyze image to determine user attributes (body size, body shape, complexion, etc) 24 27
3
Search clothing database for items matching user attributes 24 28
4
24 26
5
User attribute query 24 29
6
User attribute result 24 30
TVC Database 24 23
Virtual Store Previewing Component

Figure 24b

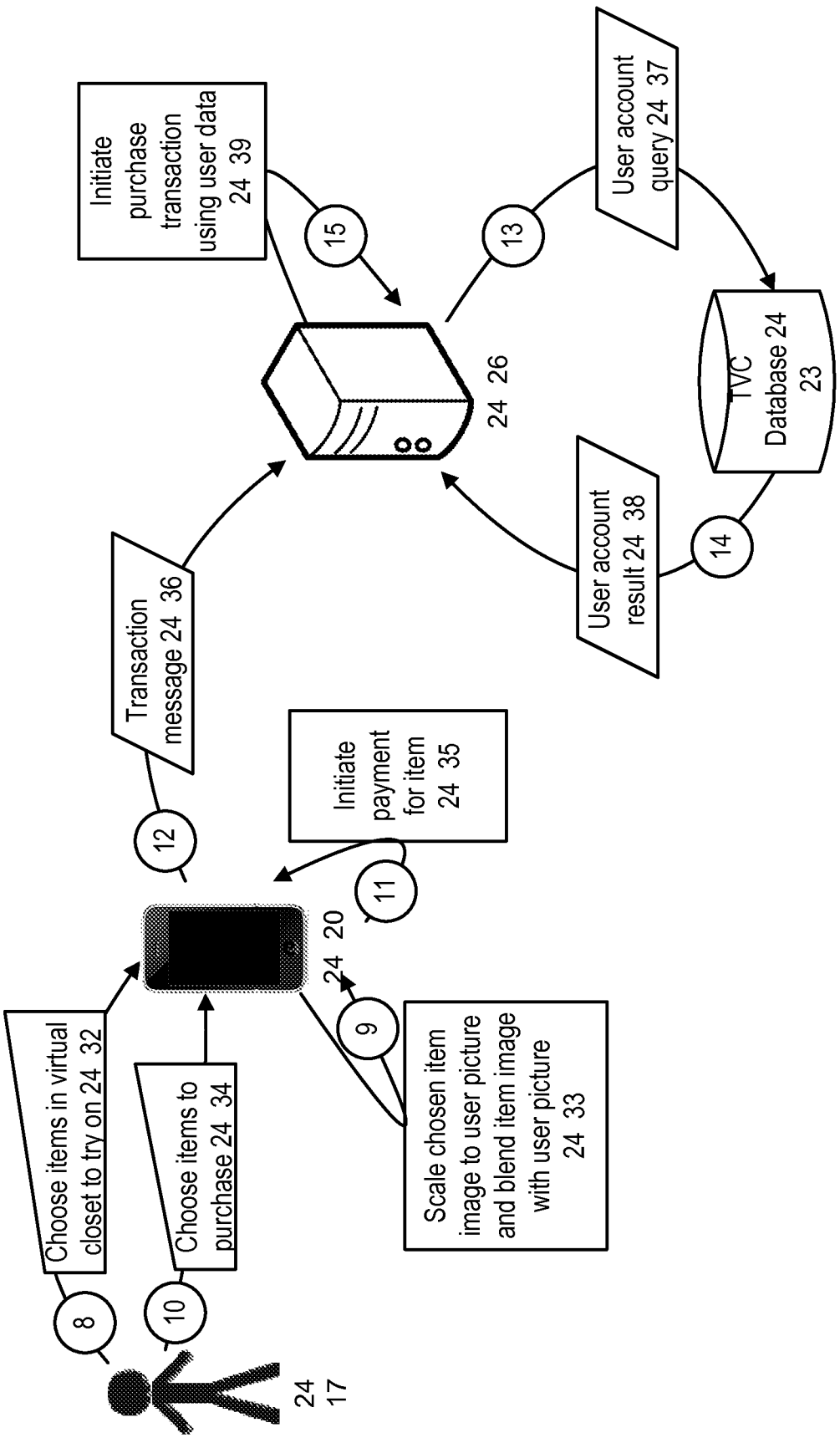


Figure 24c

Virtual Store Previewing Component

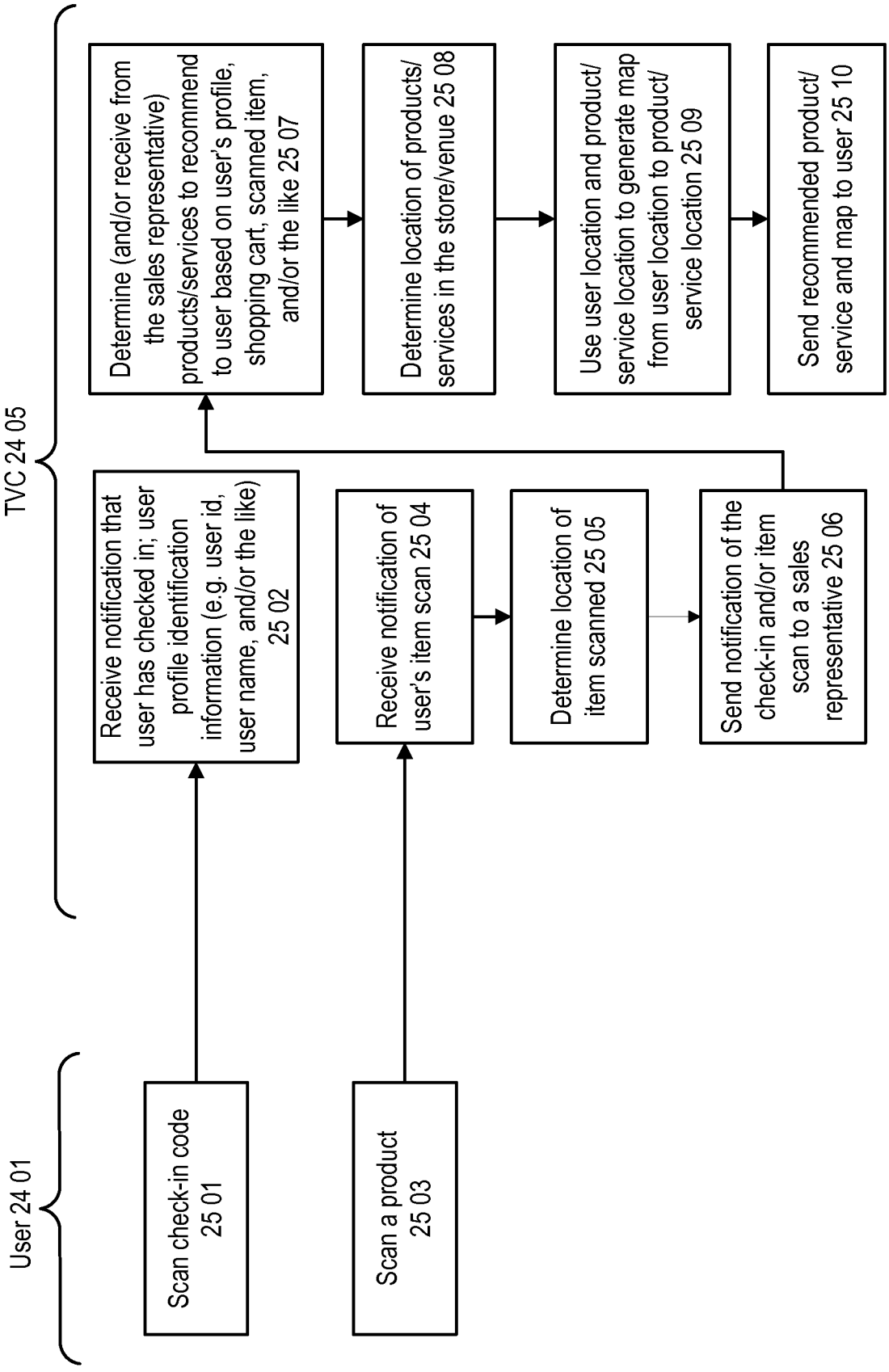

User 24 01
Scan check-in code 25 01
Scan a product 25 03
TVC 24 05
Receive notification that user has checked in; user profile identification information (e.g. user id, user name, and/or the like) 25 02
Receive notification of user's item scan 25 04
Determine location of item scanned 25 05
Send notification of the check-in and/or item scan to a sales representative 25 06
Determine (and/or receive from the sales representative) products/services to recommend to user based on user's profile, shopping cart, scanned item, and/or the like 25 07
Determine location of products/ services in the store/venue 25 08
Use user location and product/ service location to generate map from user location to product/ service location 25 09
Send recommended product/ service and map to user 25 10

Figure 25a

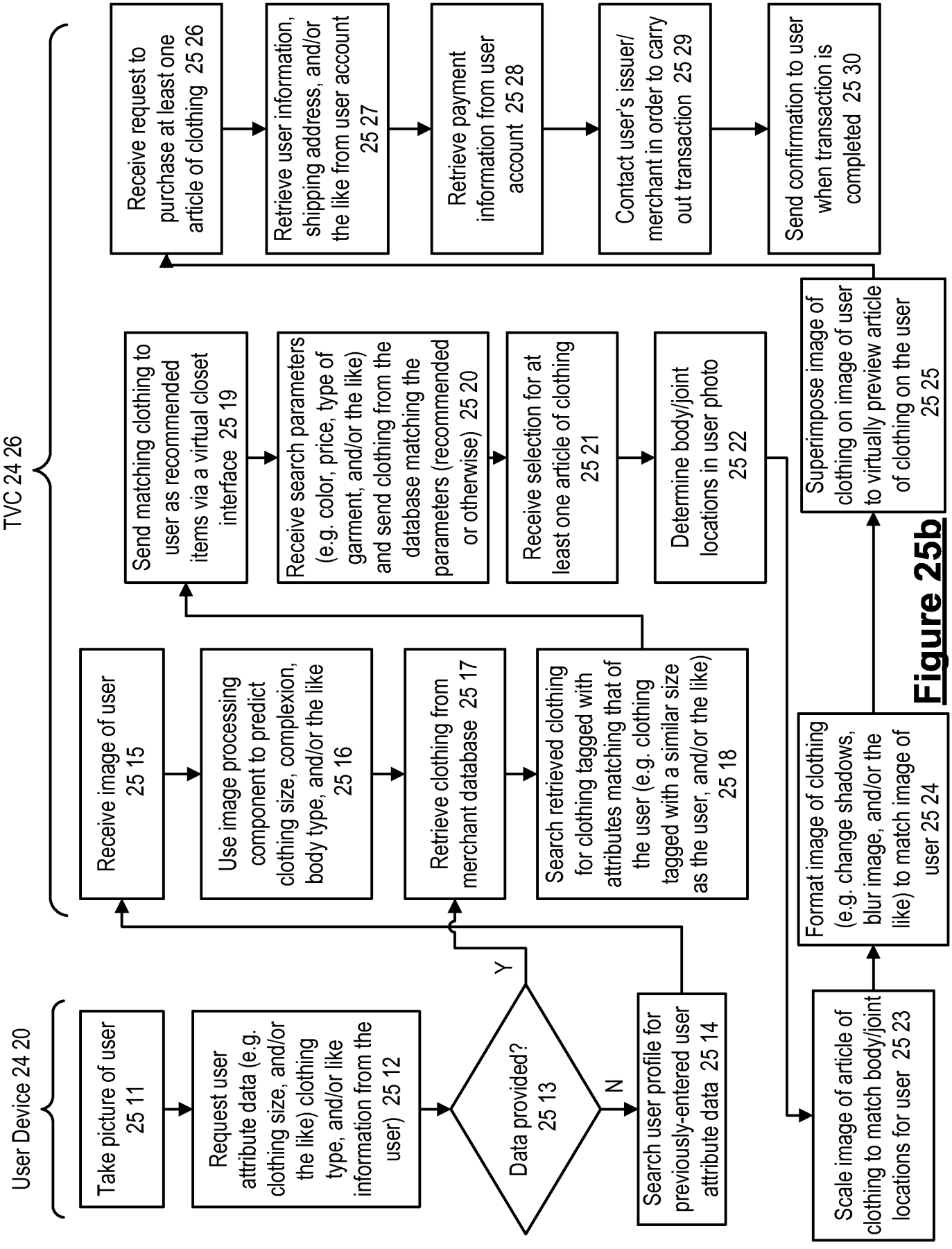
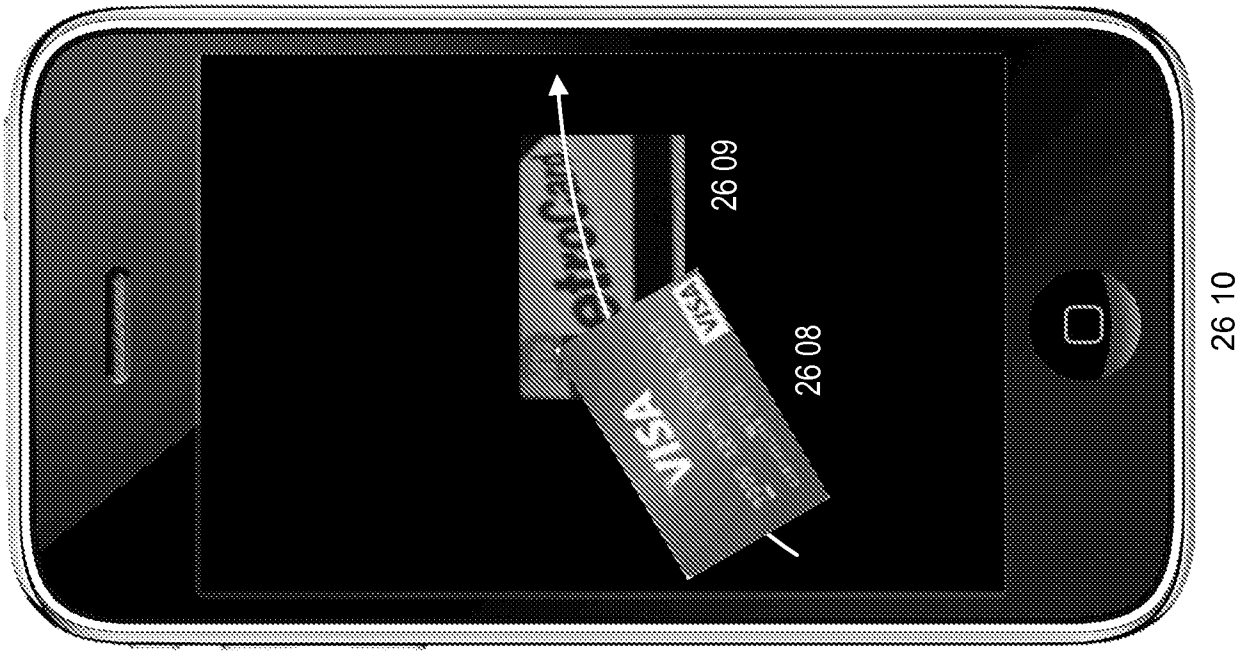

User Device 24 20
Take picture of user 25 11
Request user attribute data (e.g. clothing size, and/or the like) clothing type, and/or like information from the user) 25 12
Data provided? 25 13
Y
N
Search user profile for previously-entered user attribute data 25 14
TVC 24 26
Receive image of user 25 15
Use image processing component to predict clothing size, complexion, body type, and/or the like 25 16
Retrieve clothing from merchant database 25 17
Search retrieved clothing for clothing tagged with attributes matching that of the user (e.g. clothing tagged with a similar size as the user, and/or the like) 25 18
Send matching clothing to user as recommended items via a virtual closet interface 25 19
Receive search parameters (e.g. color, price, type of garment, and/or the like) and send clothing from the database matching the parameters (recommended or otherwise) 25 20
Receive selection for at least one article of clothing 25 21
Determine body/joint locations in user photo 25 22
Scale image of article of clothing to match body/joint locations for user 25 23
Format image of clothing (e.g. change shadows, blur image, and/or the like) to match image of user 25 24
Superimpose image of clothing on image of user to virtually preview article of clothing on the user 25 25
Receive request to purchase at least one article of clothing 25 26
Retrieve user information, shipping address, and/or the like from user account 25 27
Retrieve payment information from user account 25 28
Contact user's issuer/ merchant in order to carry out transaction 25 29
Send confirmation to user when transaction is completed 25 30

Figure 25b

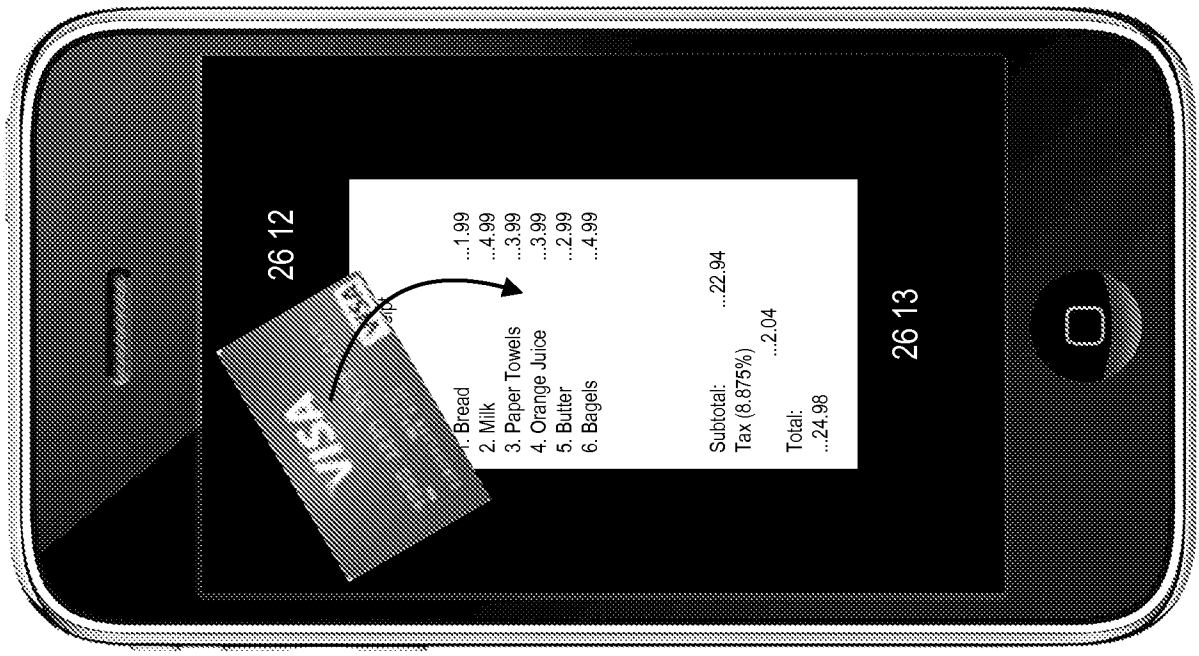
Receipt
26 03
1. Bread ...1.99
2. Milk ...4.99
3. Paper Towels ...3.99
4. Orange Juice ...3.99
5. Butter ...2.99
6. Bagels ...4.99
Subtotal: ...22.94
Tax (8.875%) ...2.04
Total: ...24.98
26 02
26 01
Receipt
...1.99
...4.99
...3.99
...3.99
...2.99
...4.99
Subtotal:
Total: ...24.98
26 06
Pay the total with the active wallet.
26 05
26 04

Figure 26a



Add $20 to Metro Card using this credit card.
26 07

Figure 26b



Pay this bill using this credit card.
26 11

Figure 26c

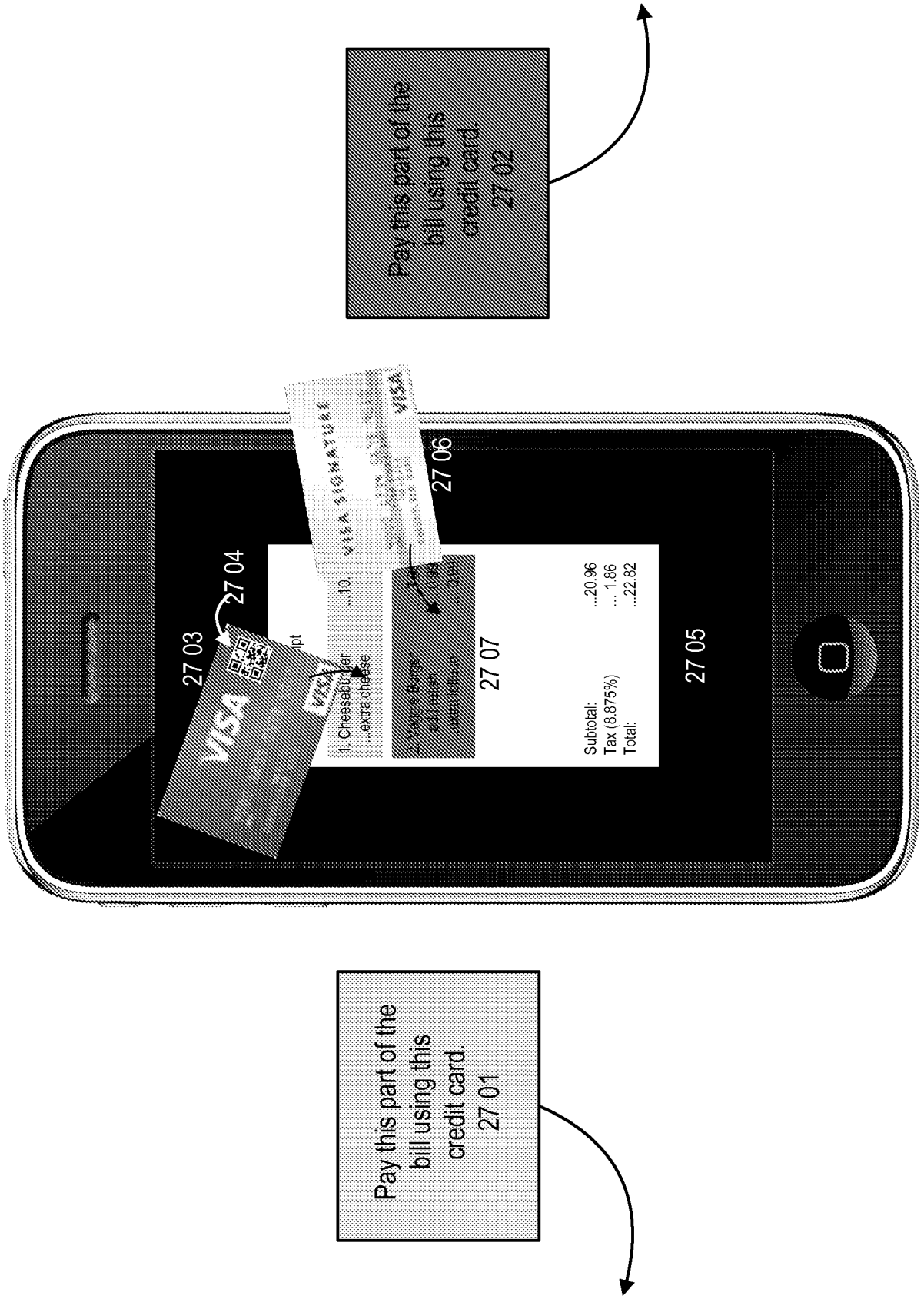

Pay this part of the bill using this credit card.
27 02
27 06
27 04
27 03
27 07
27 05
27 08
Subtotal: ...20.96
Tax (8.875%) ... 1.86
Total: ...22.82
Pay this part of the bill using this credit card.
27 01

Figure 27

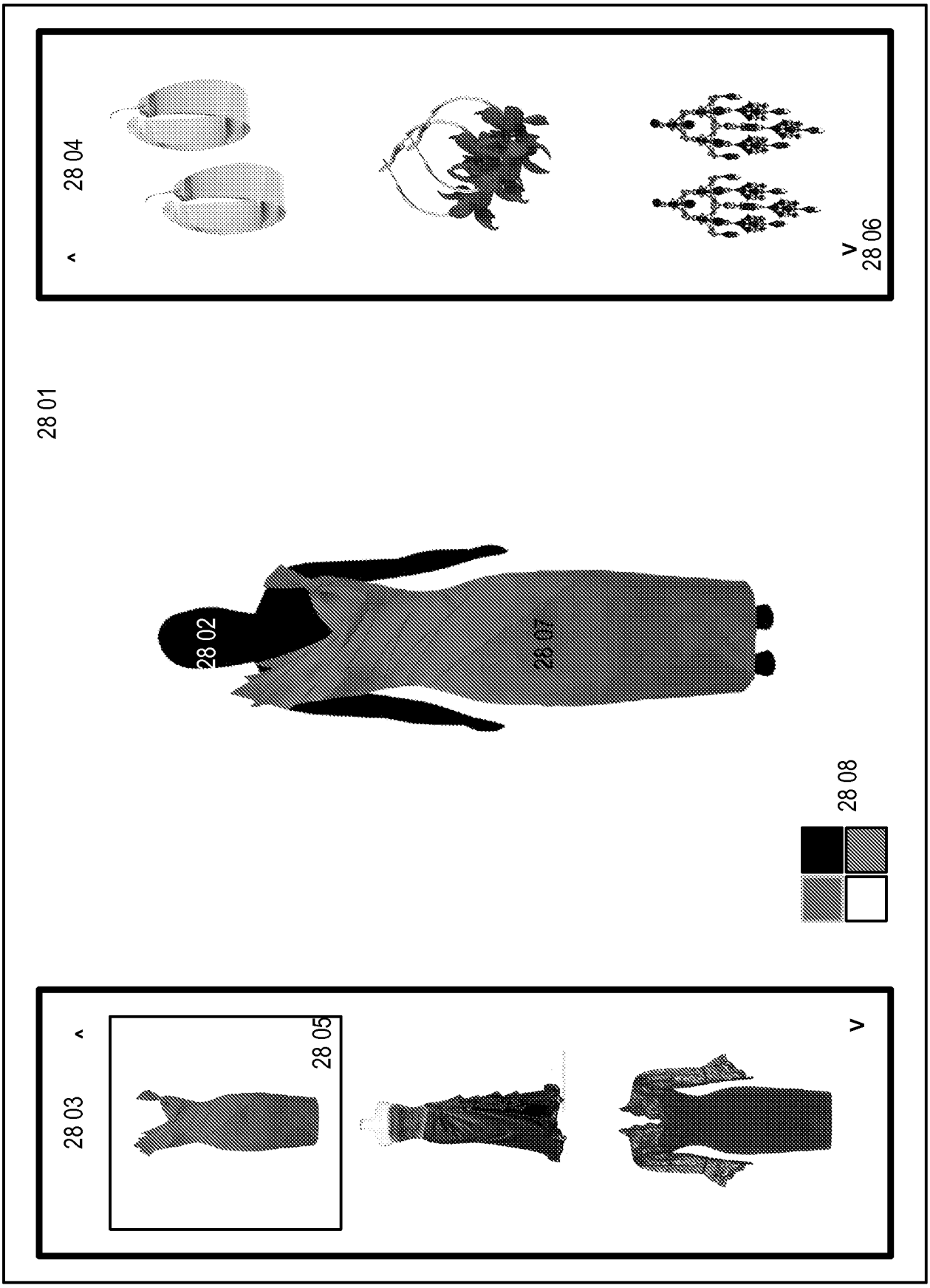

28 01
28 02
28 03
28 04
28 05
28 06
28 07
28 08
Augmented Reality (AR) Overlay Component

Figure 28

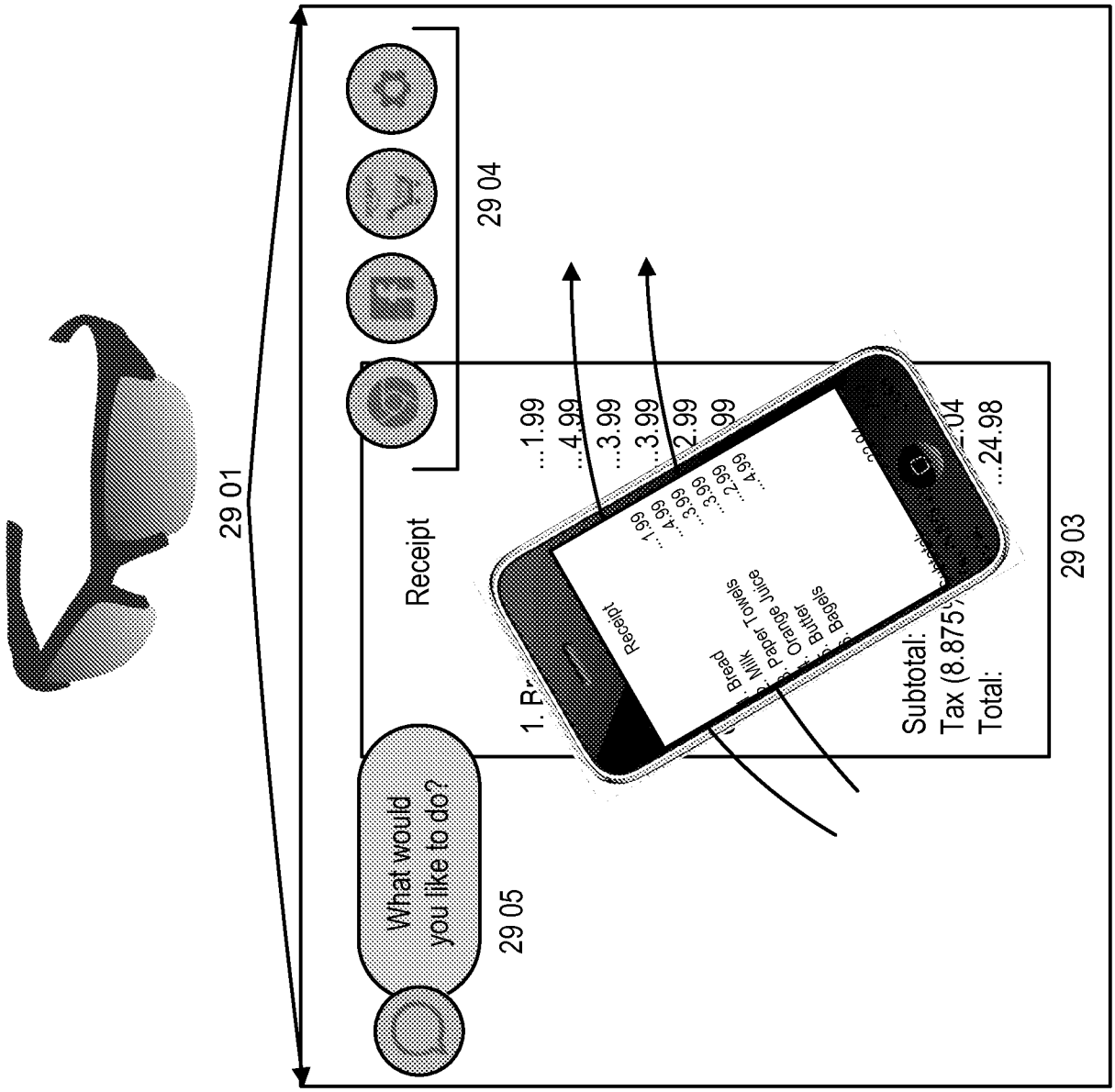

29 01
29 02
29 03
29 04
29 05
Receipt
What would you like to do?
Subtotal:
Total:
...24.98

Figure 29

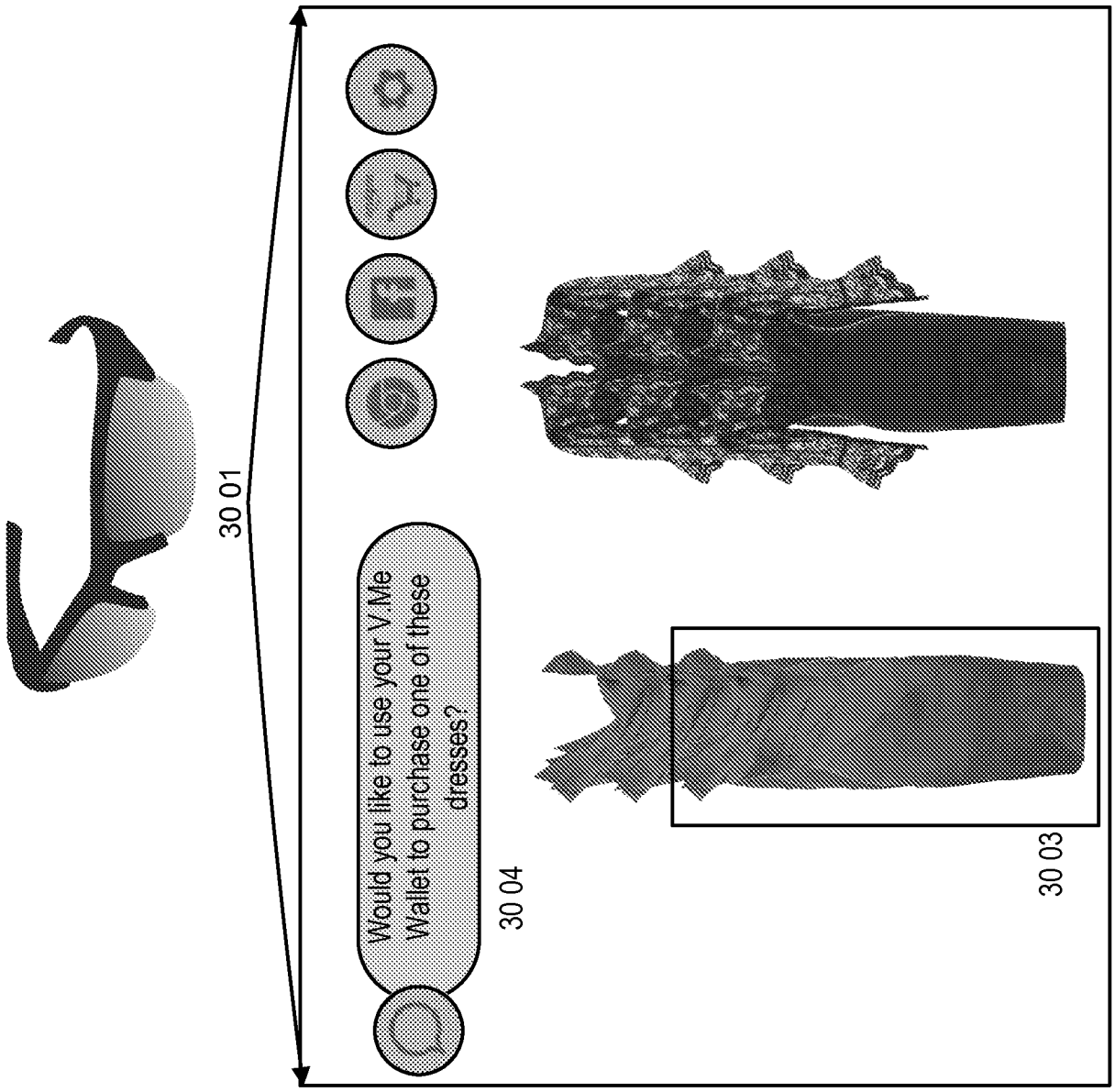

30 01
Would you like to use your V.Me Wallet to purchase one of these dresses?
30 04
30 02
30 03

Figure 30

Example: Virtual Wallet Mobile App - Feature Overview

FIGURE 31

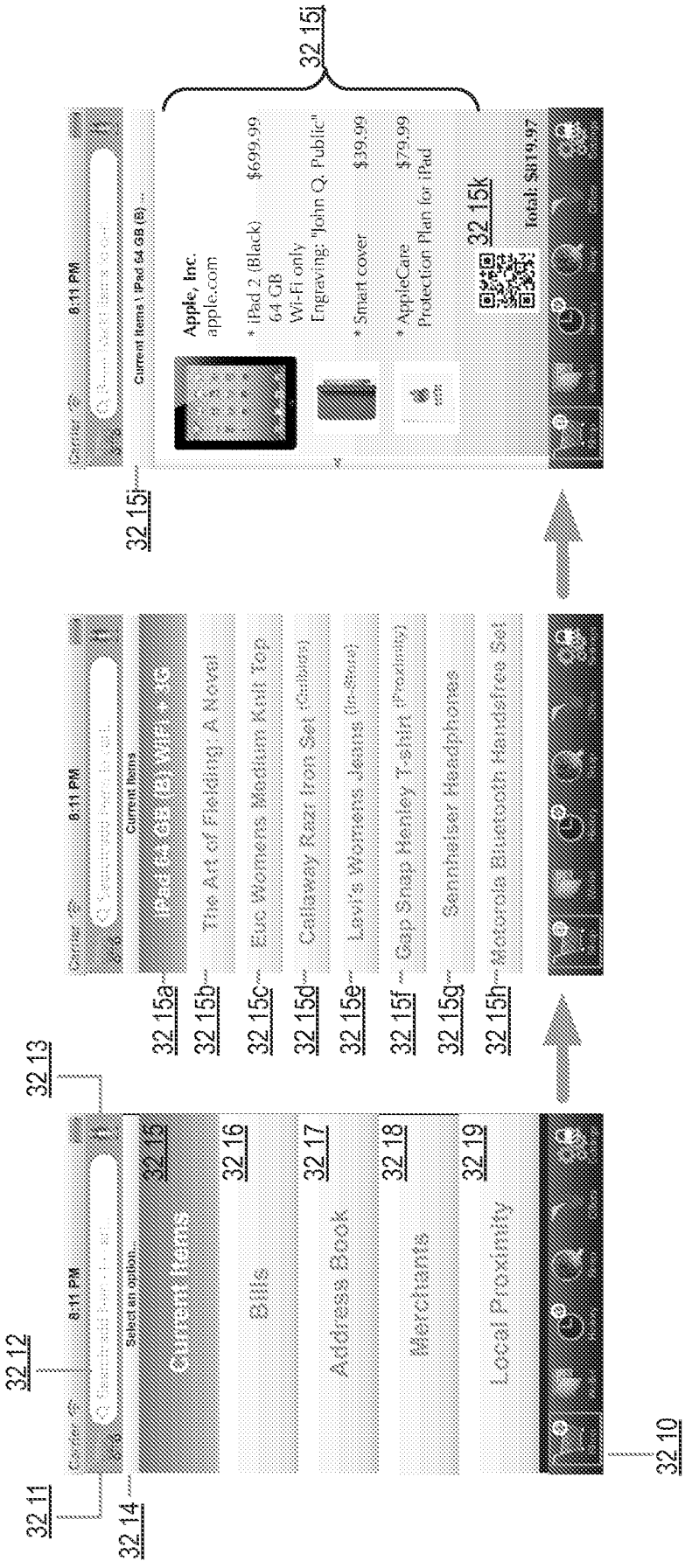
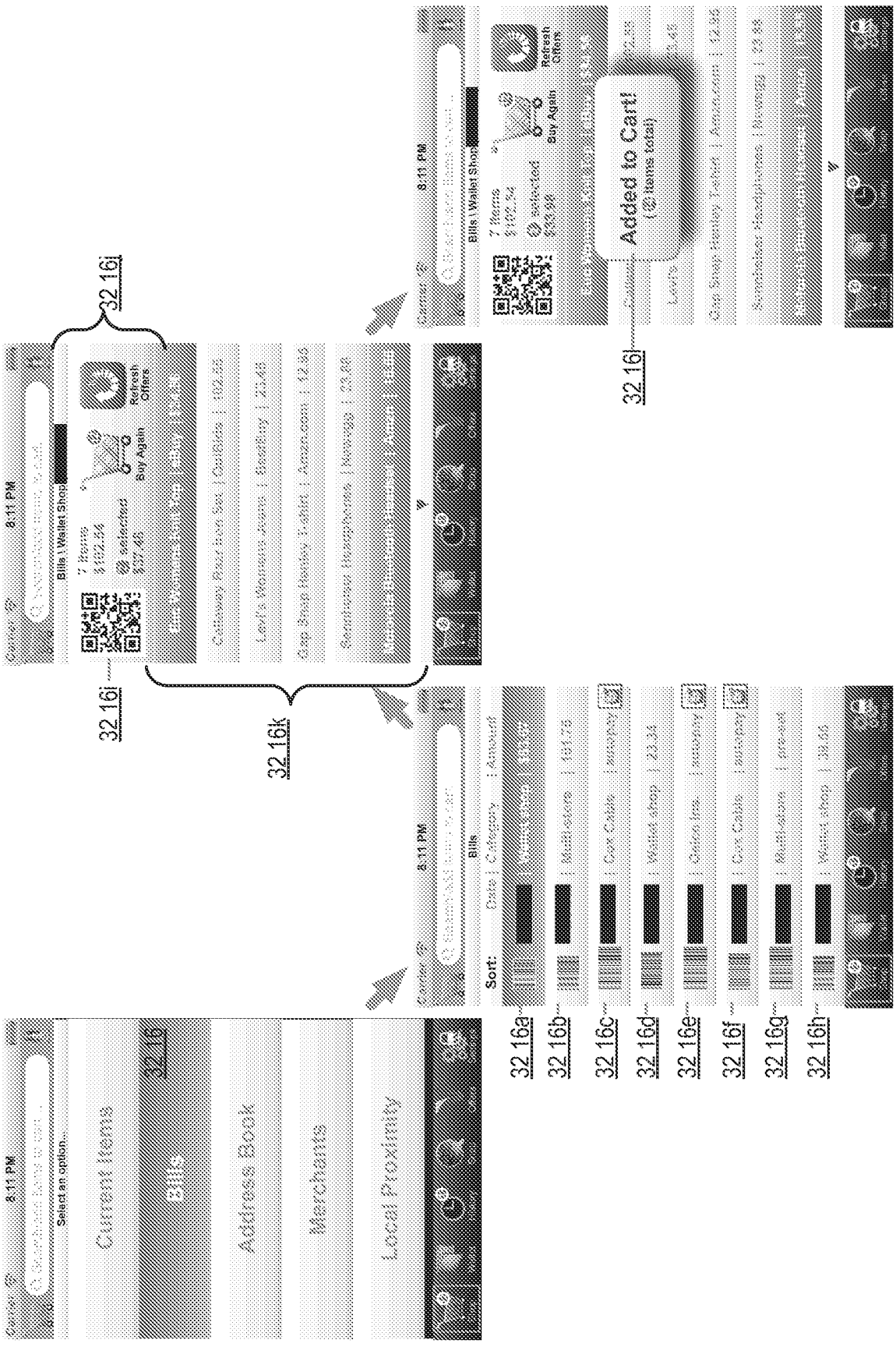


FIGURE 32A

Example: Virtual Wallet Mobile App - Shopping Mode



Example: Virtual Wallet Mobile App - Shopping Mode

FIGURE 32B

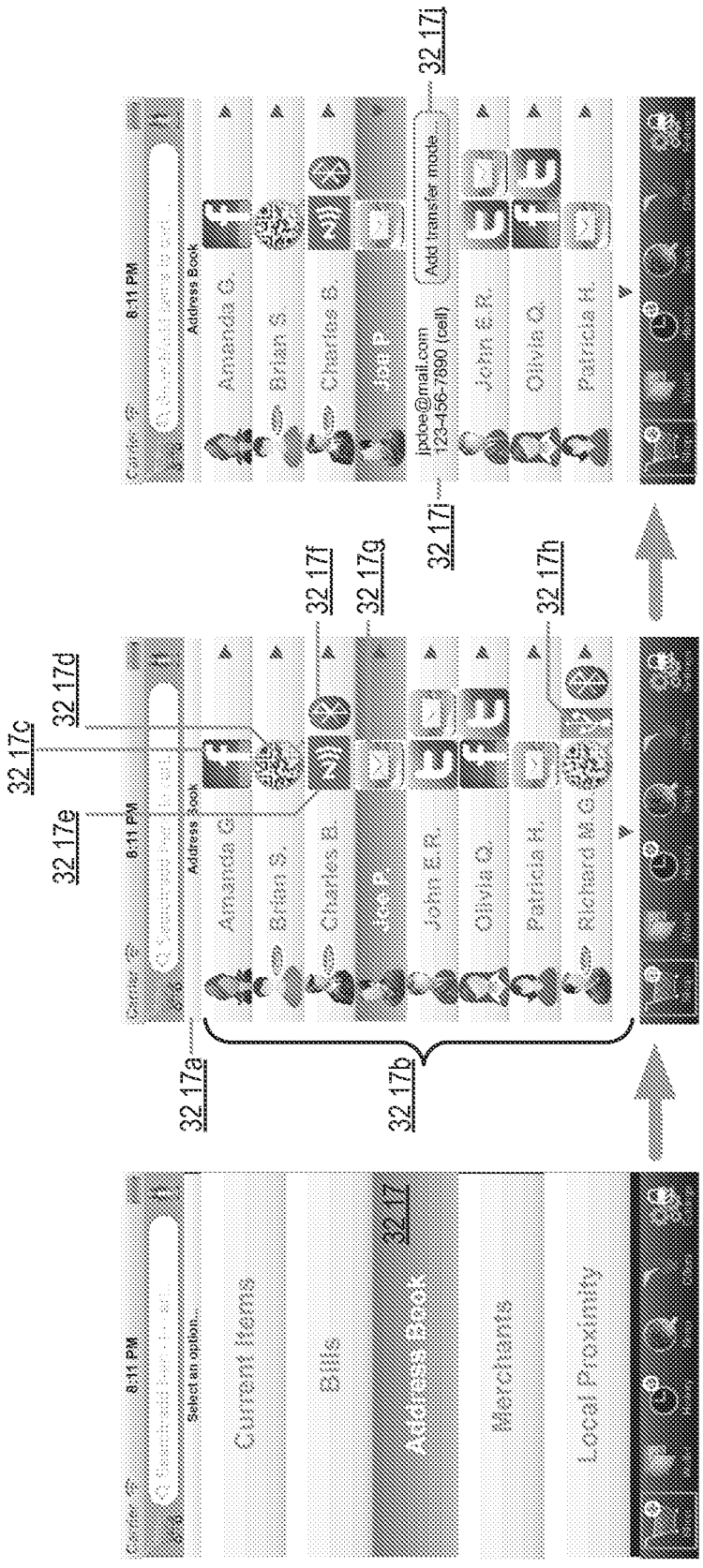


FIGURE 32C

Example: Virtual Wallet Mobile App - Shopping Mode

FIGURE 32D

Example: Virtual Wallet Mobile App - SocialPay Mode

Example: Virtual Wallet Mobile App - Shopping Mode

FIGURE 32E

Example: Virtual Wallet Mobile App - Shopping Mode

FIGURE 32F

Example: Virtual Wallet Mobile App - Shopping Mode

FIGURE 32G

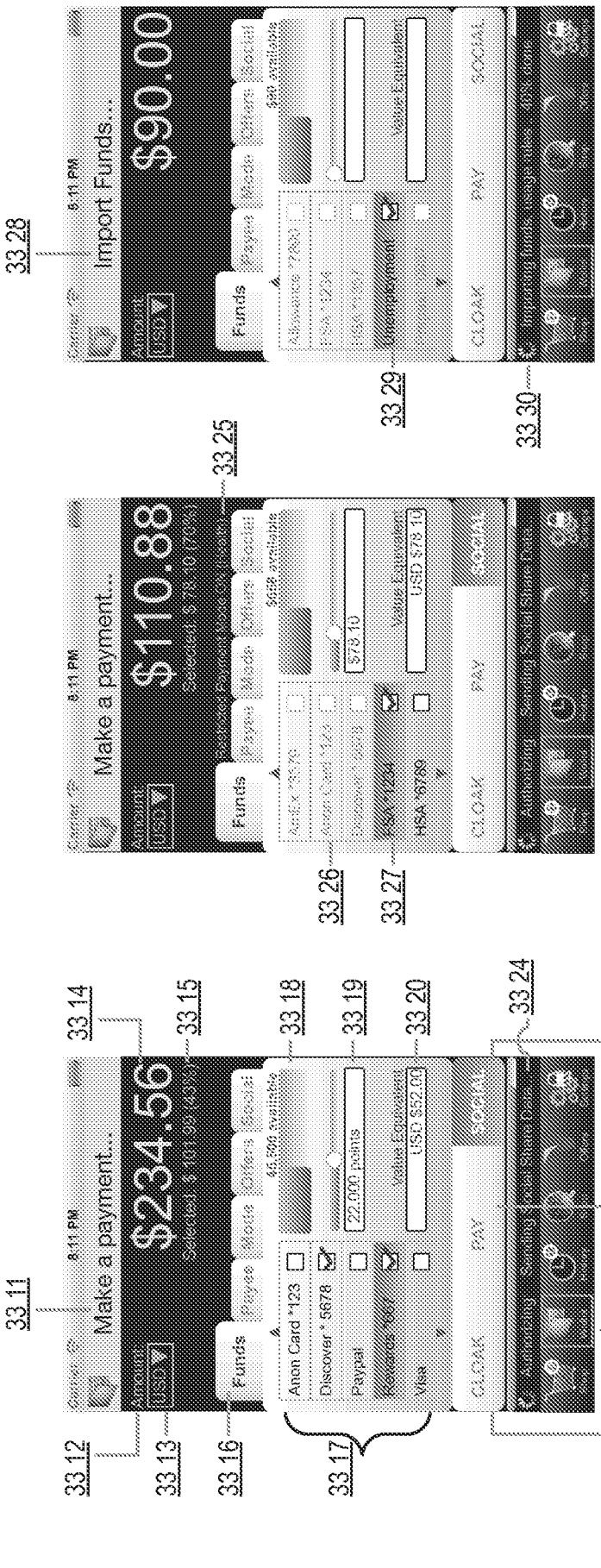


FIGURE 33A

Example: Virtual Wallet Mobile App - Payment Mode

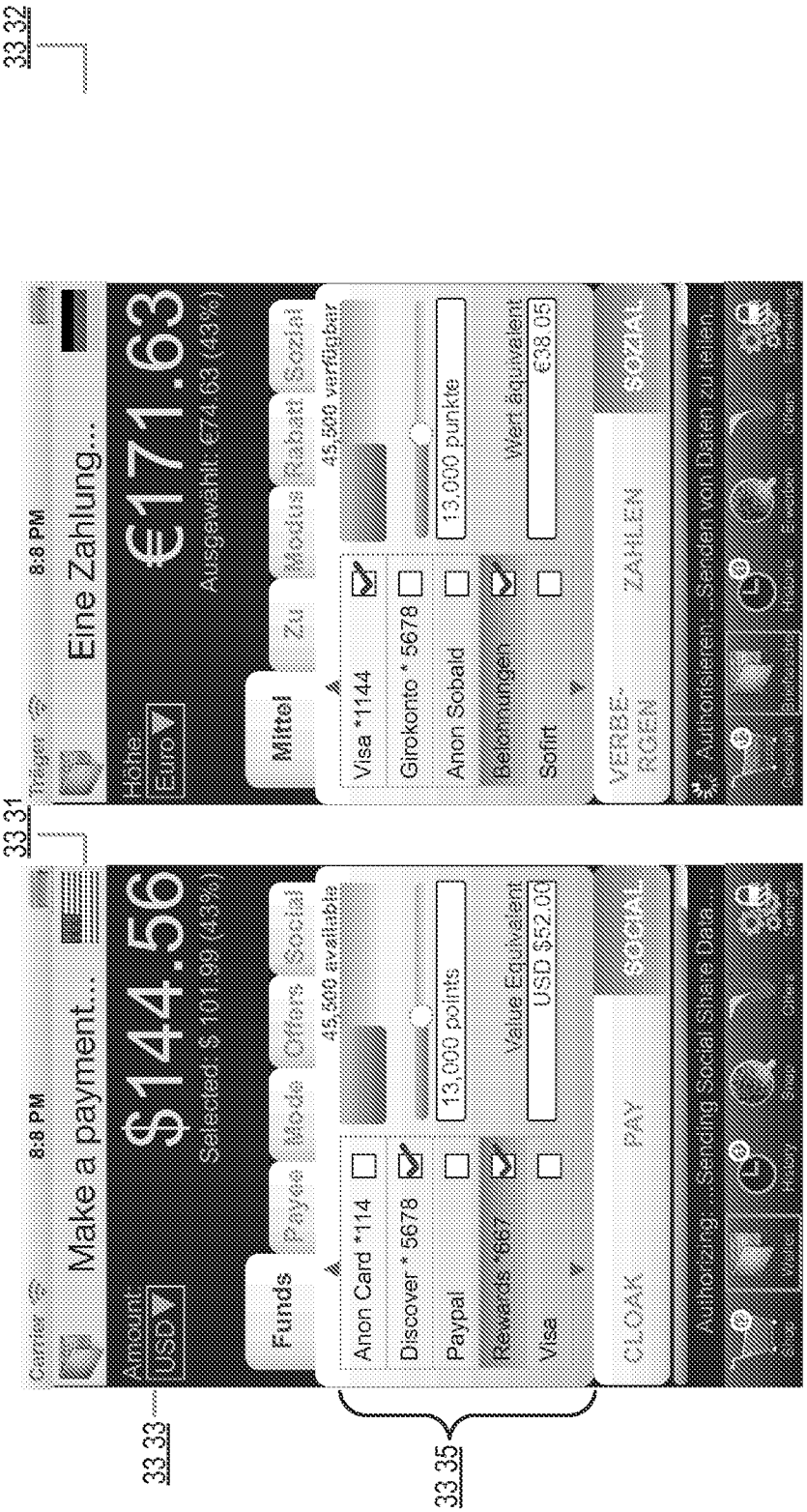


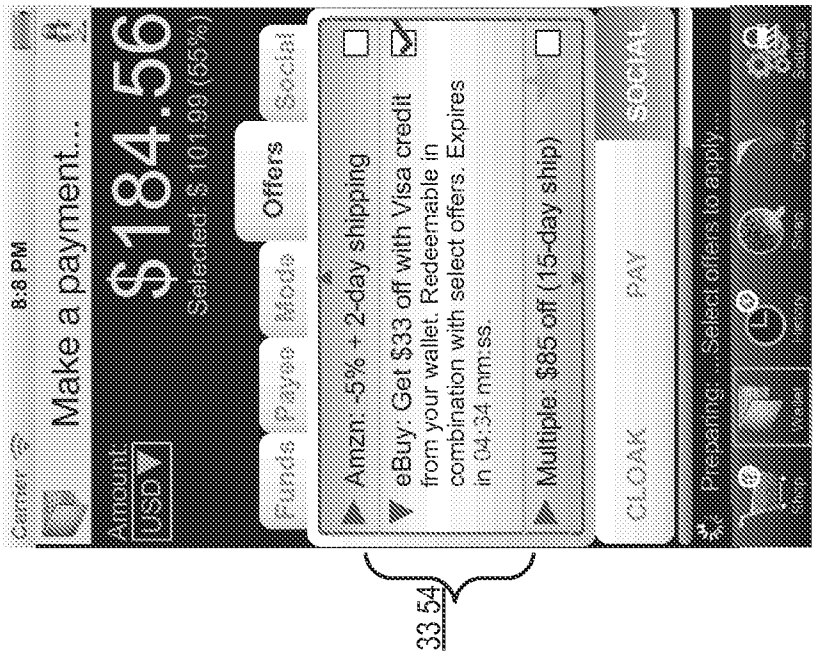
FIGURE 33B Example: Virtual Wallet Mobile App - Dynamic Payment Optimization

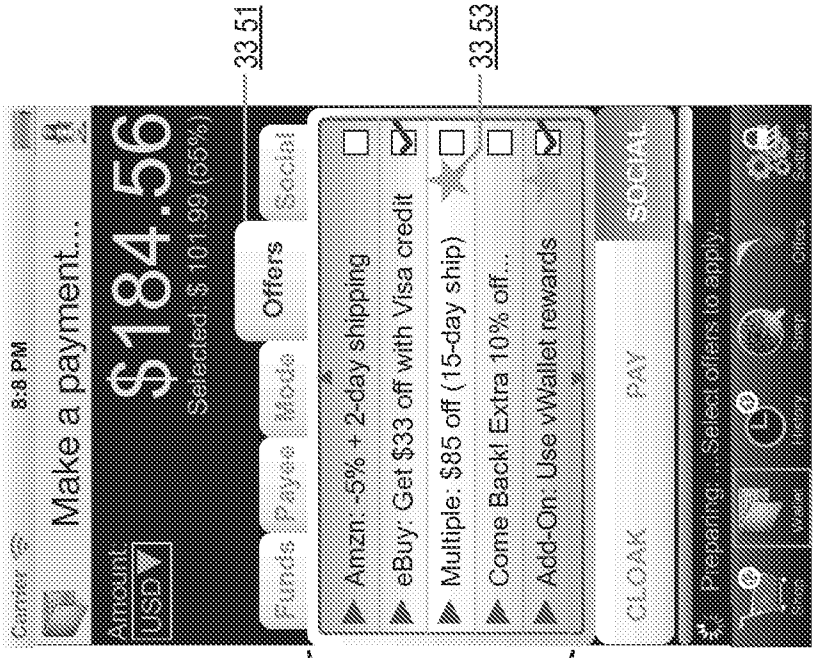
FIGURE 33C

Example: Virtual Wallet Mobile App

Example: Virtual Wallet Mobile App

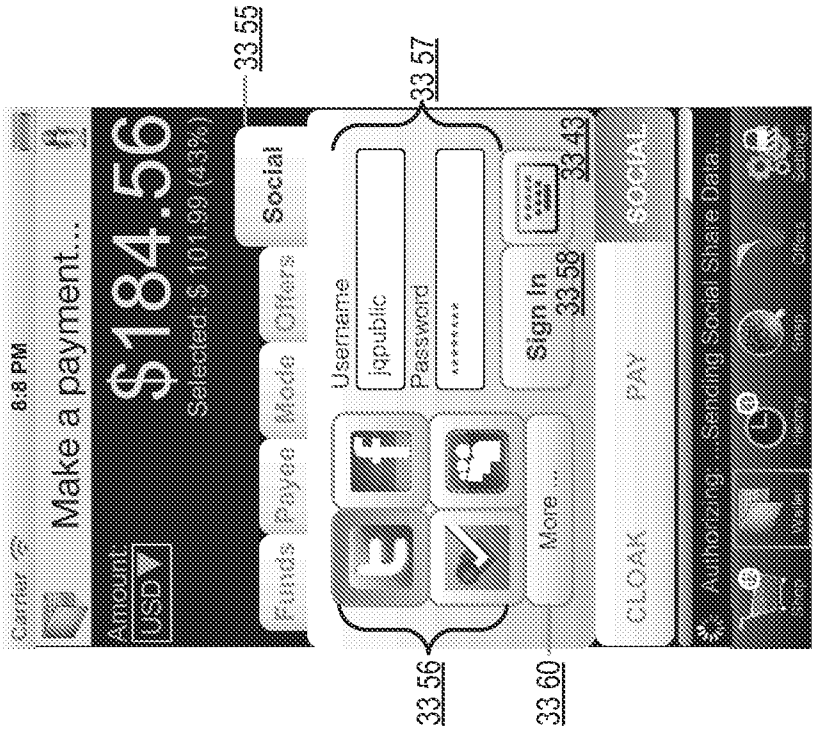
FIGURE 33D





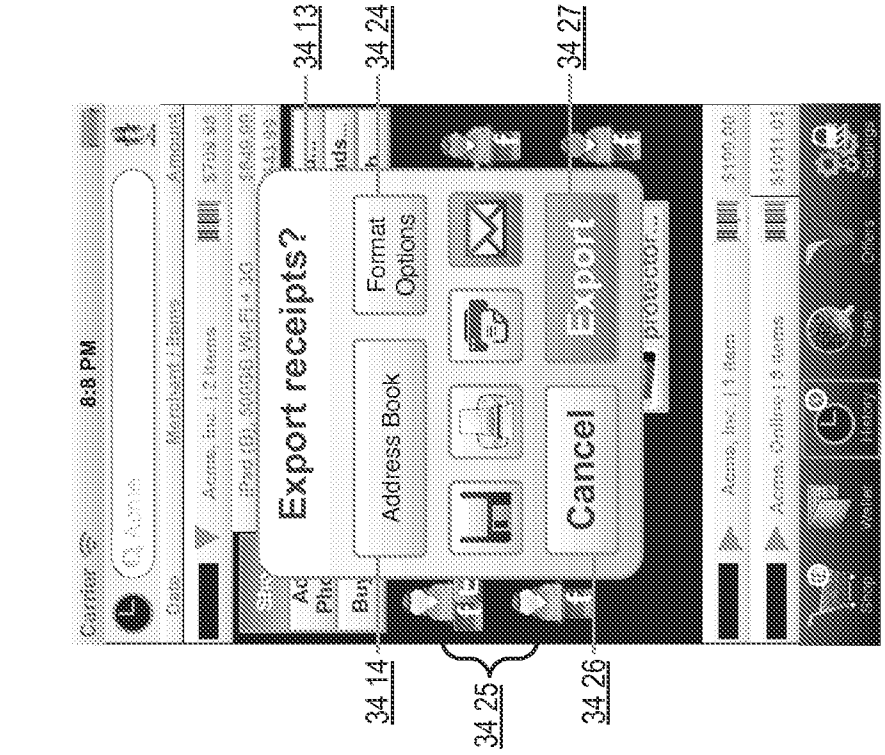
Example: Virtual Wallet Mobile App

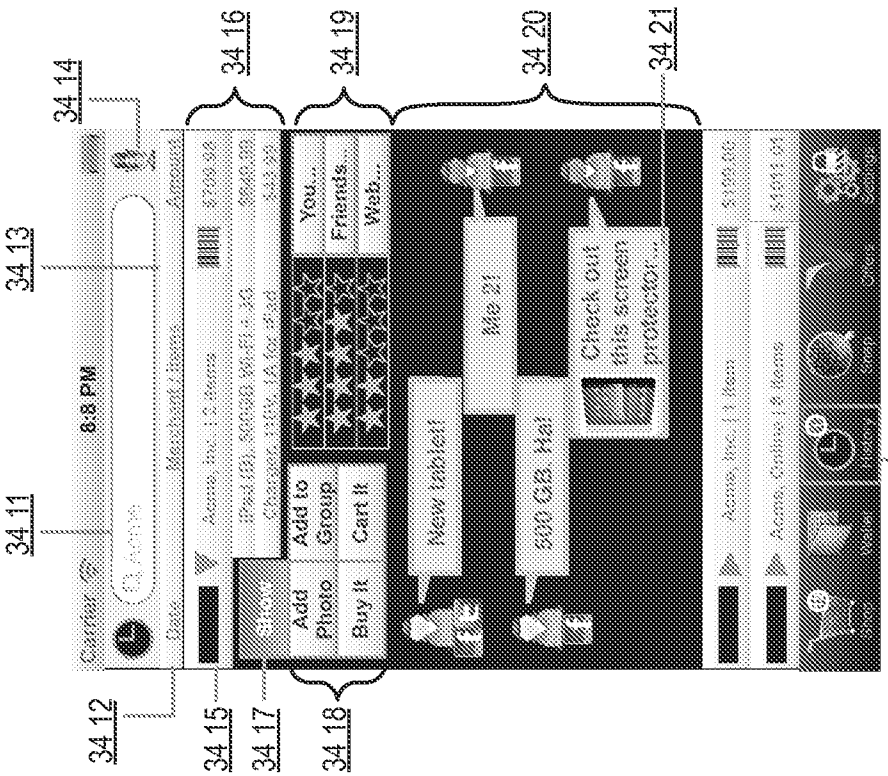
FIGURE 33E



Example: Virtual Wallet Mobile App

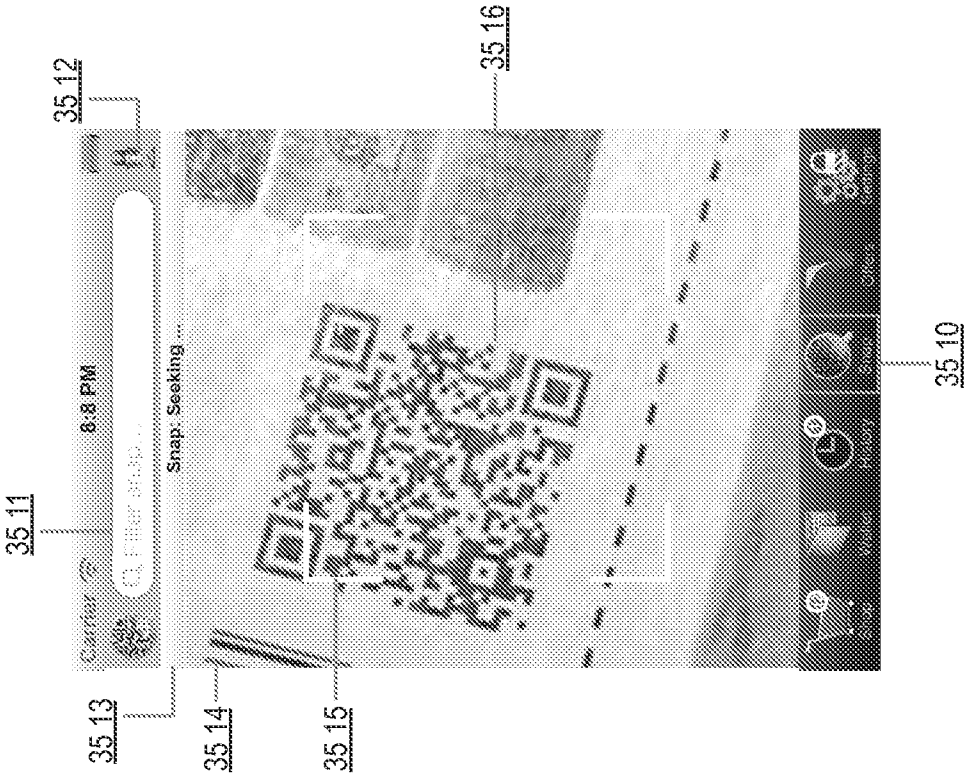
FIGURE 33F





Example: Virtual Wallet Mobile App - History

FIGURE 34

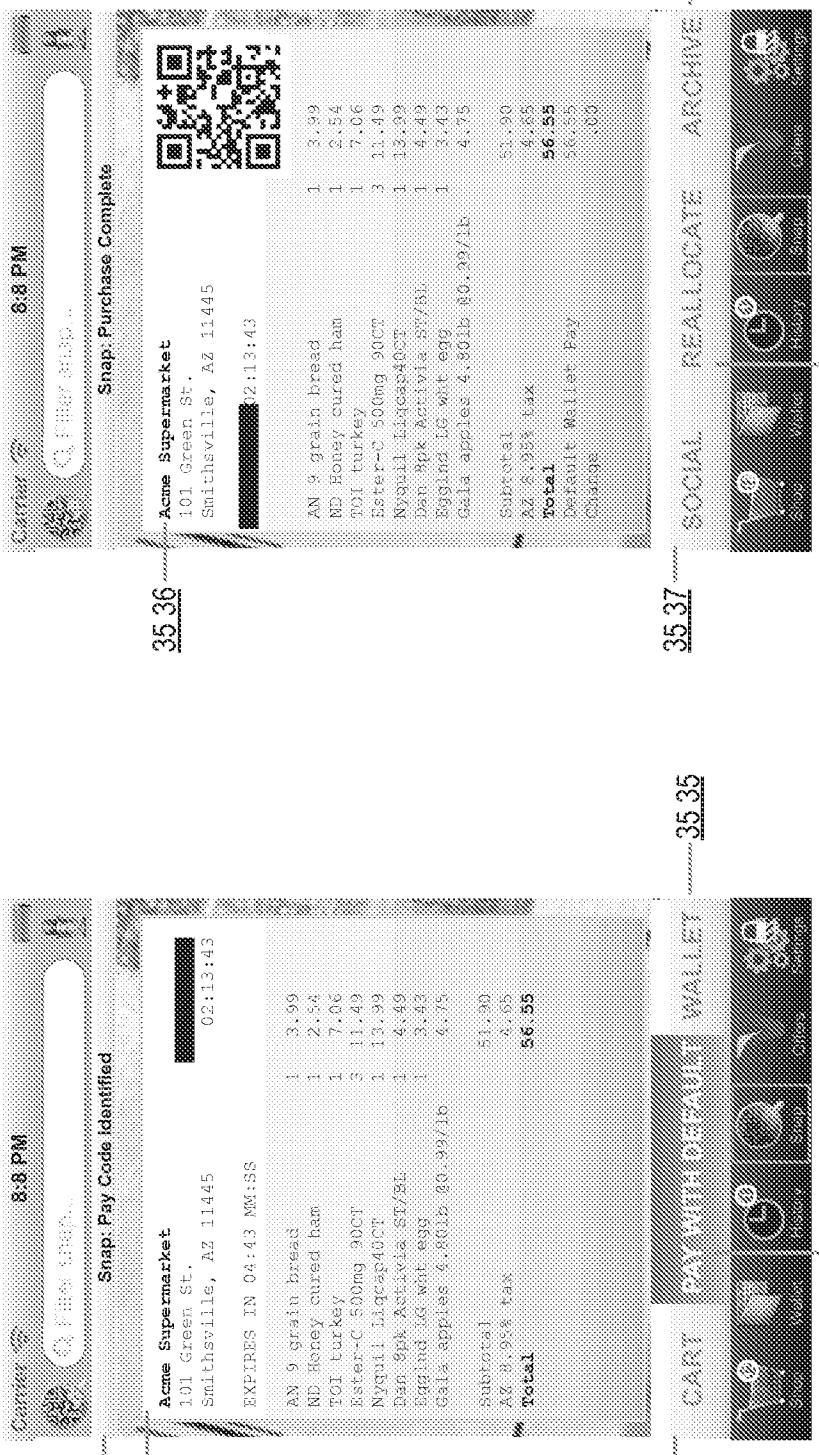


Example: Virtual Wallet Mobile App - Snap Mode

FIGURE 35A

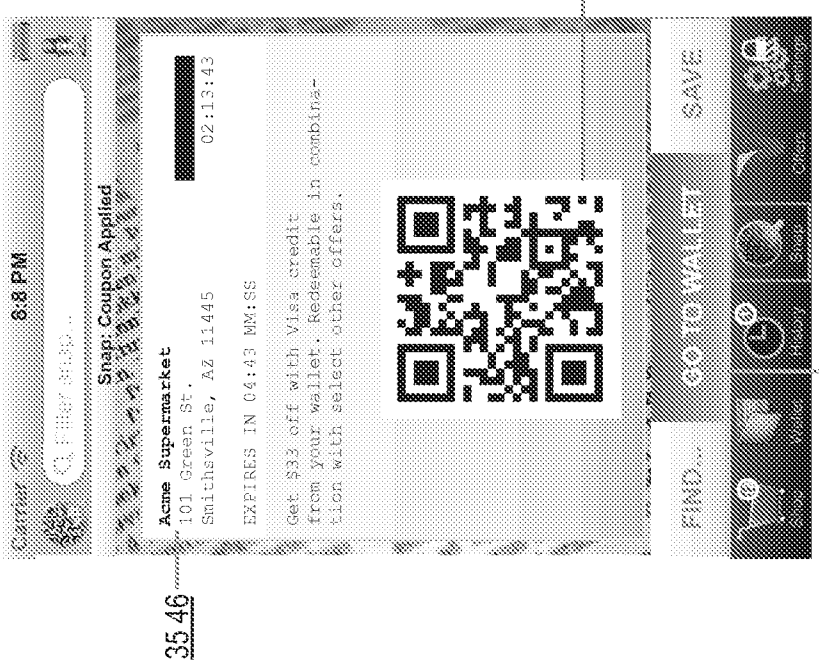
FIGURE 35B

Example: Virtual Wallet Mobile App - Snap Mode



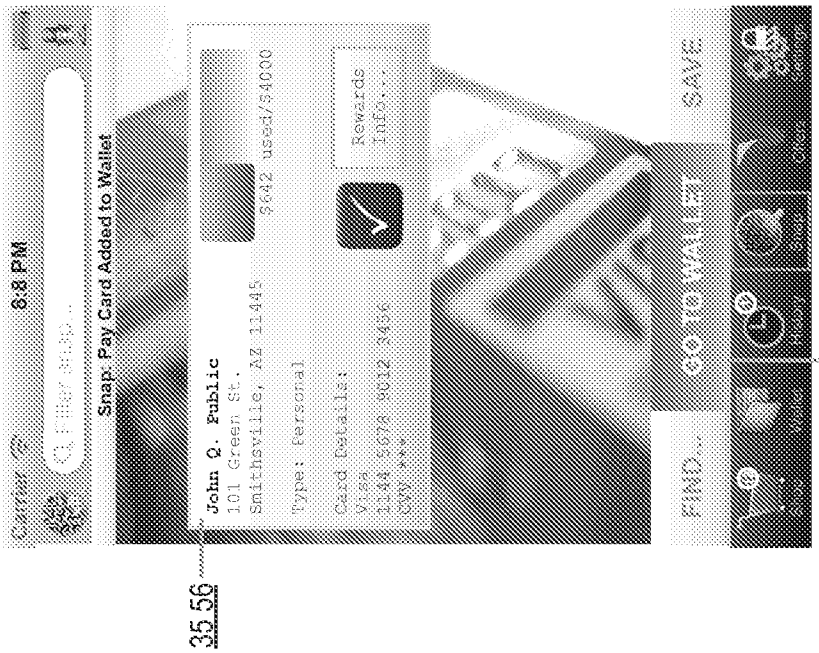
Example: Virtual Wallet Mobile App - Snap Mode

FIGURE 35C



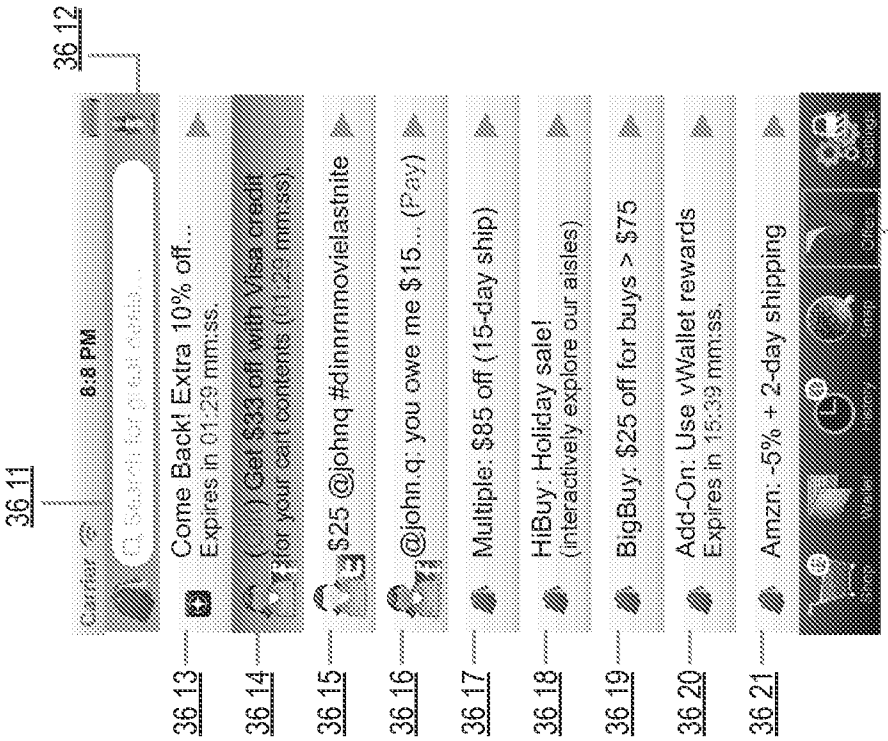
Example: Virtual Wallet Mobile App - Snap Mode

FIGURE 35D



Example: Virtual Wallet Mobile App - Snap Mode

FIGURE 35E



Example: Virtual Wallet Mobile App - Offers

FIGURE 36

Example: Virtual Wallet Mobile App

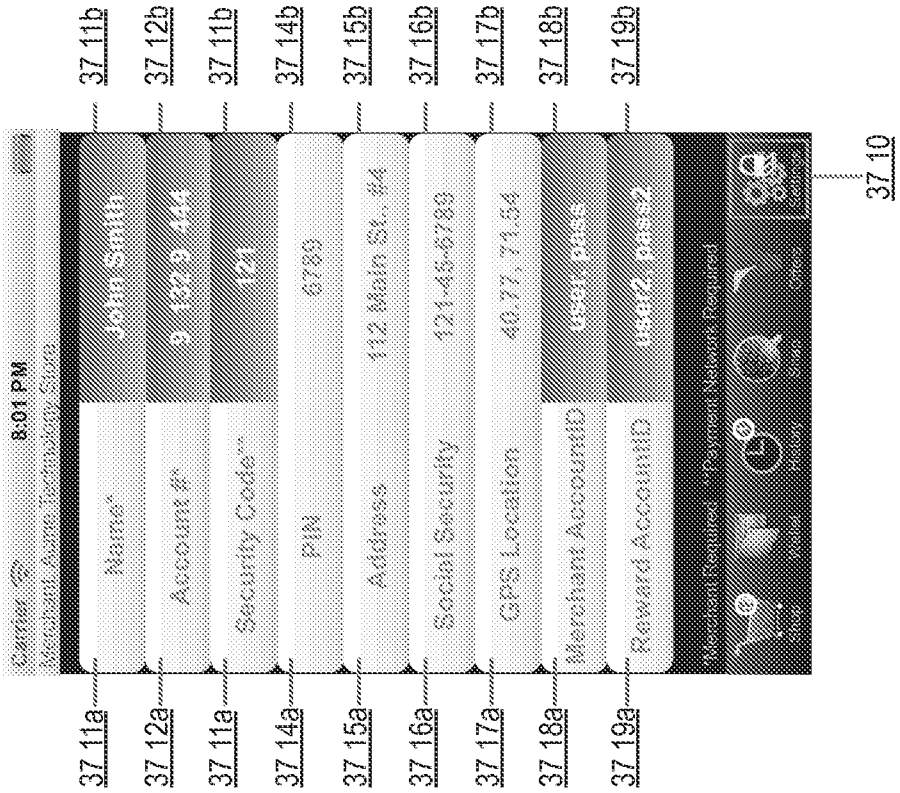


FIGURE 37A

Example: Virtual Wallet Mobile App

FIGURE 37B

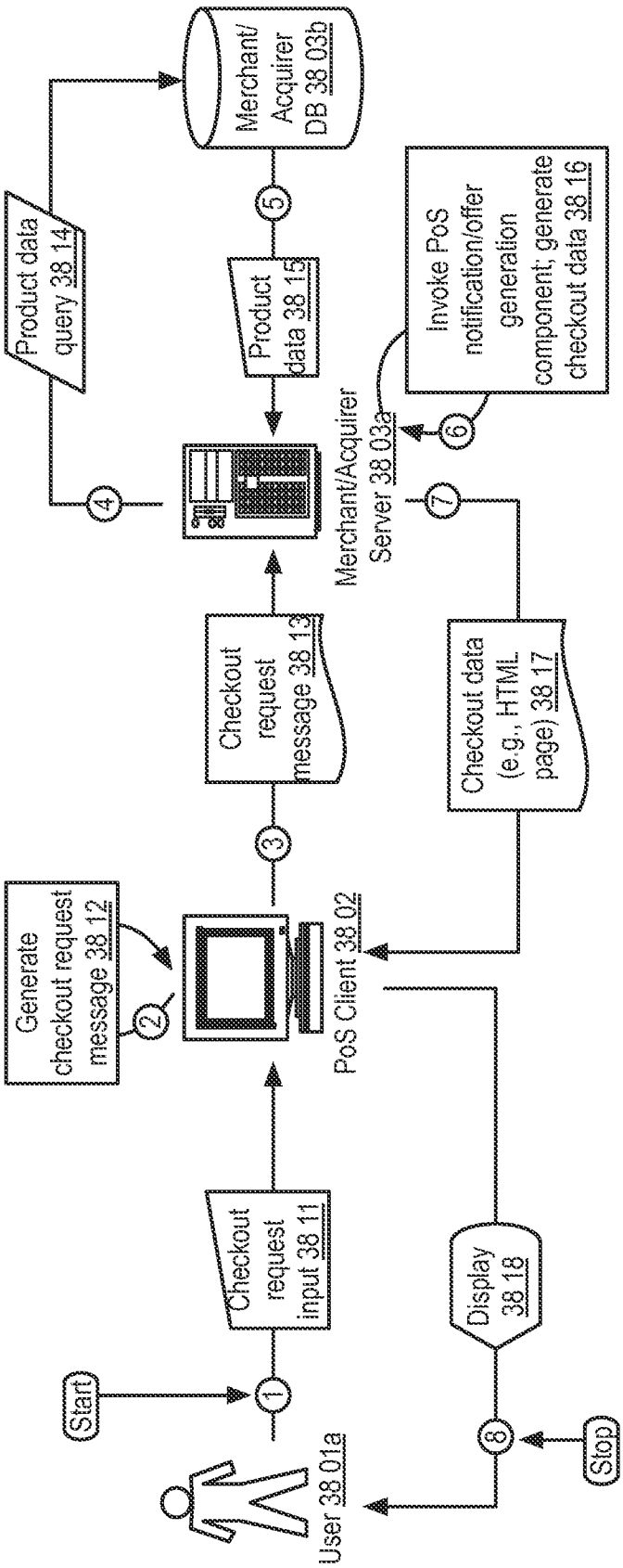
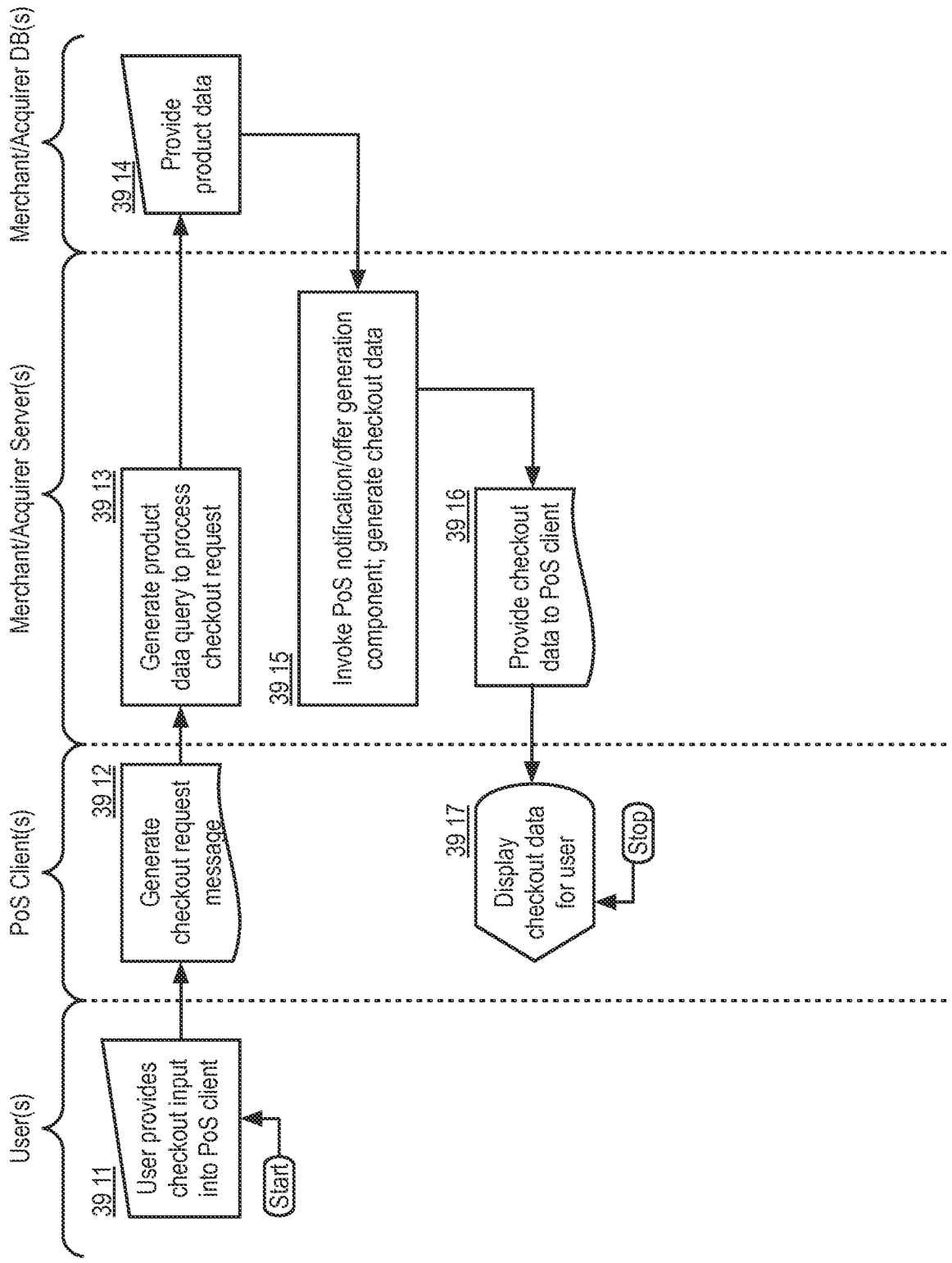


FIGURE 38 Example Data Flow: User Purchase Checkout



Example Logic Flow: User Purchase Checkout ("UPC") component 3900

FIGURE 39

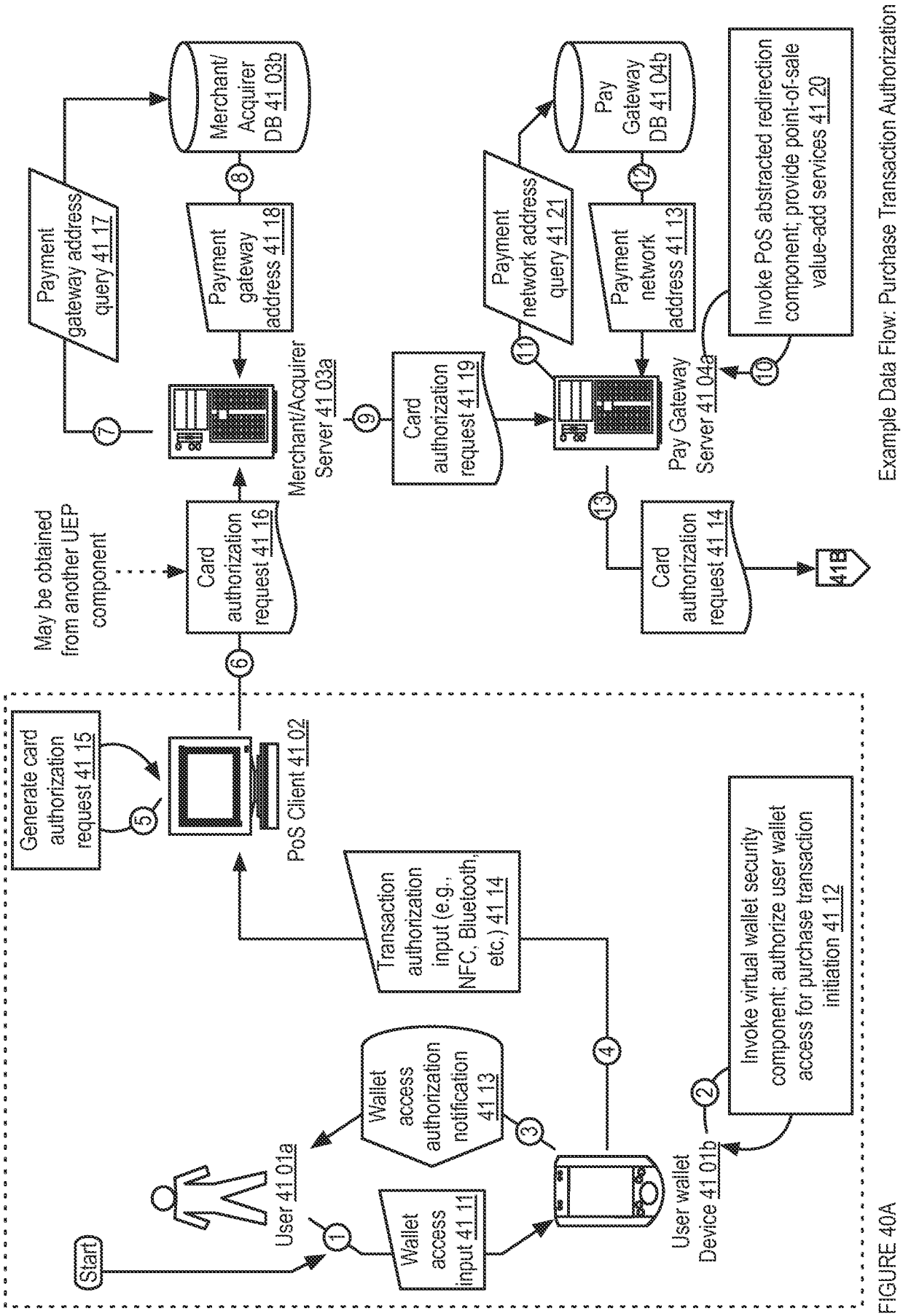


FIGURE 40A Example Data Flow: Purchase Transaction Authorization

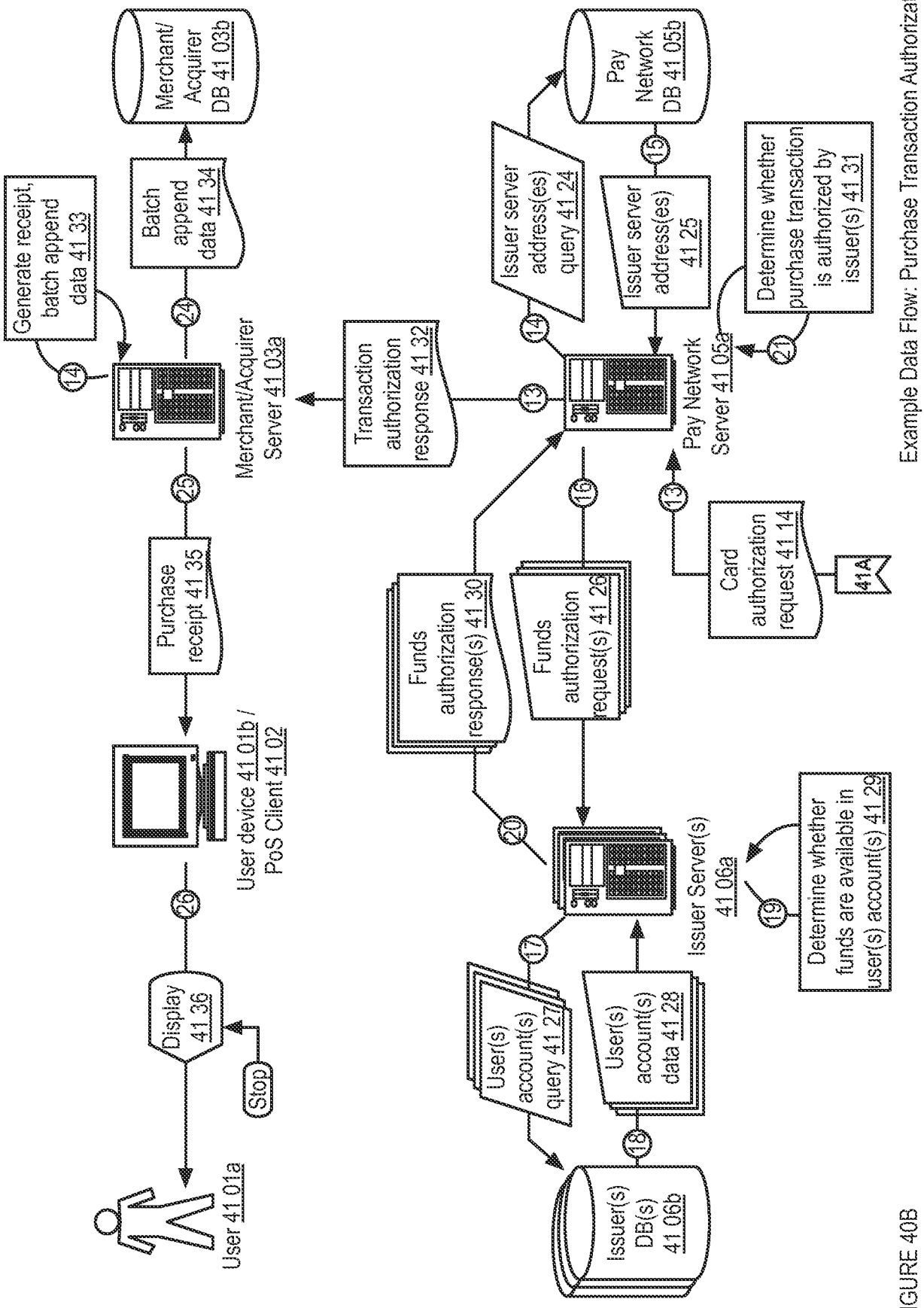


FIGURE 40B

Example Data Flow: Purchase Transaction Authorization

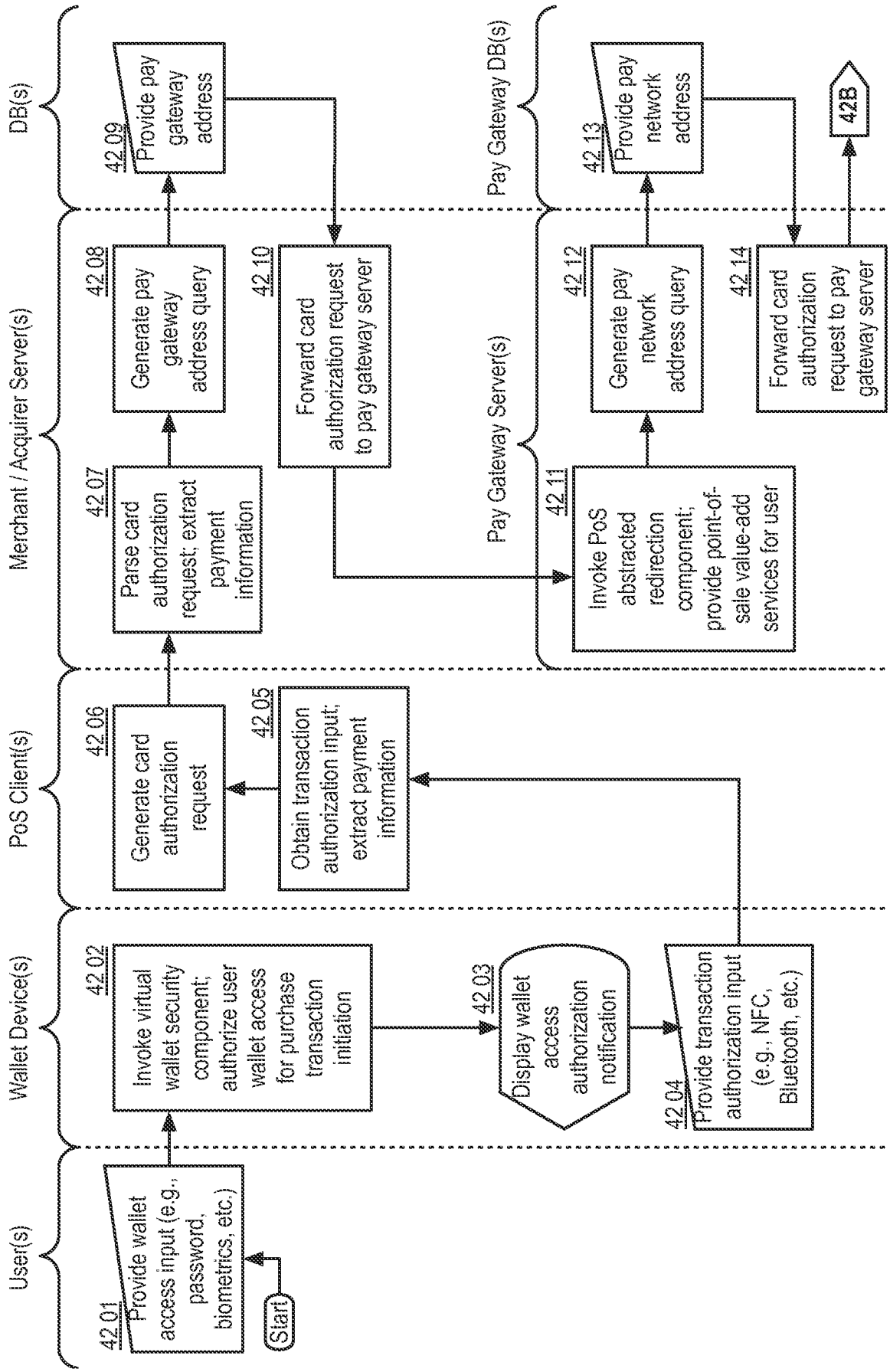


FIGURE 41A

Example: Purchase Transaction Authorization ("PTA") component 4200

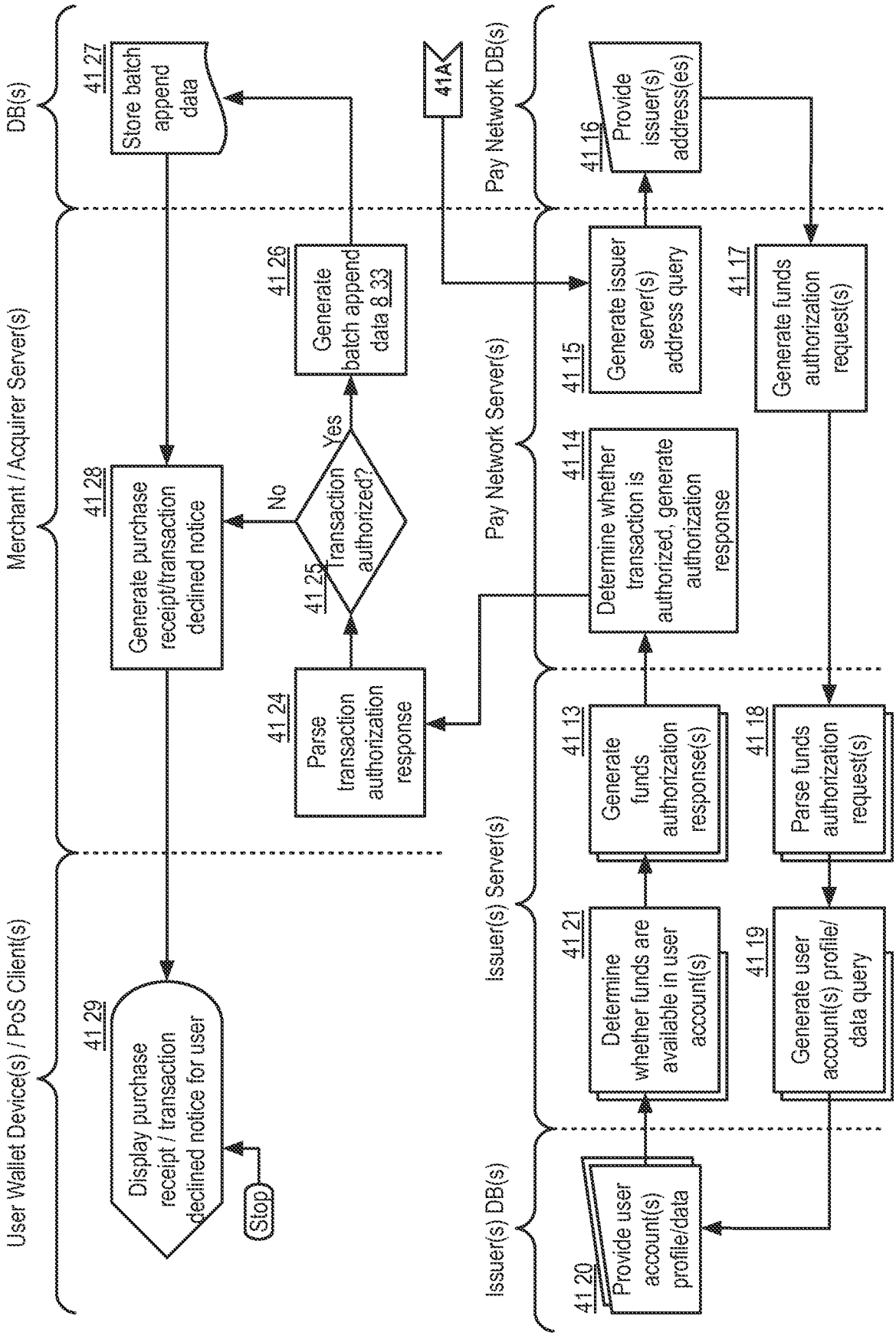


FIGURE 41B

Example: Purchase Transaction Authorization ("PTA") component 4100

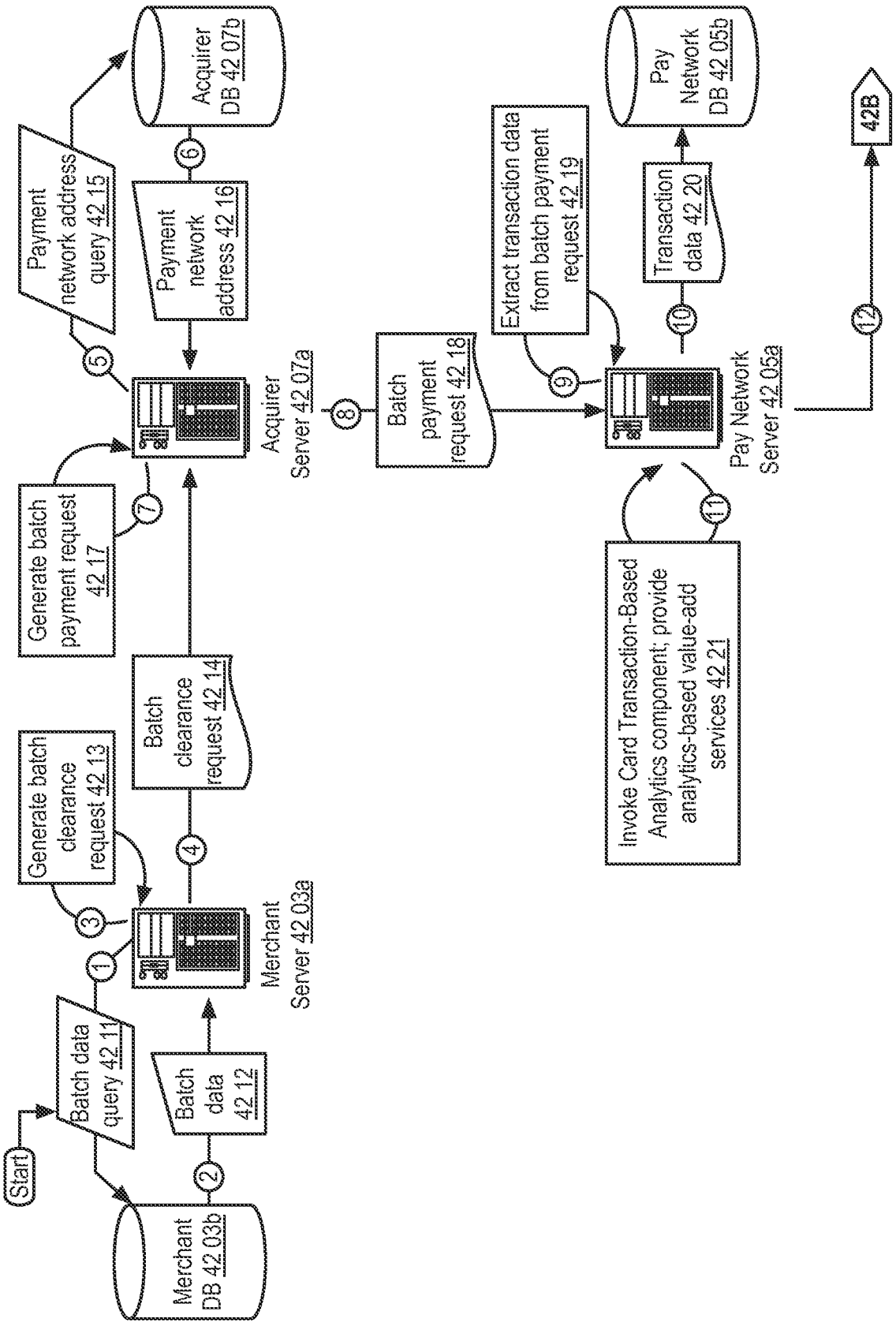


FIGURE 42A Example Data Flow: Purchase Transaction Clearance

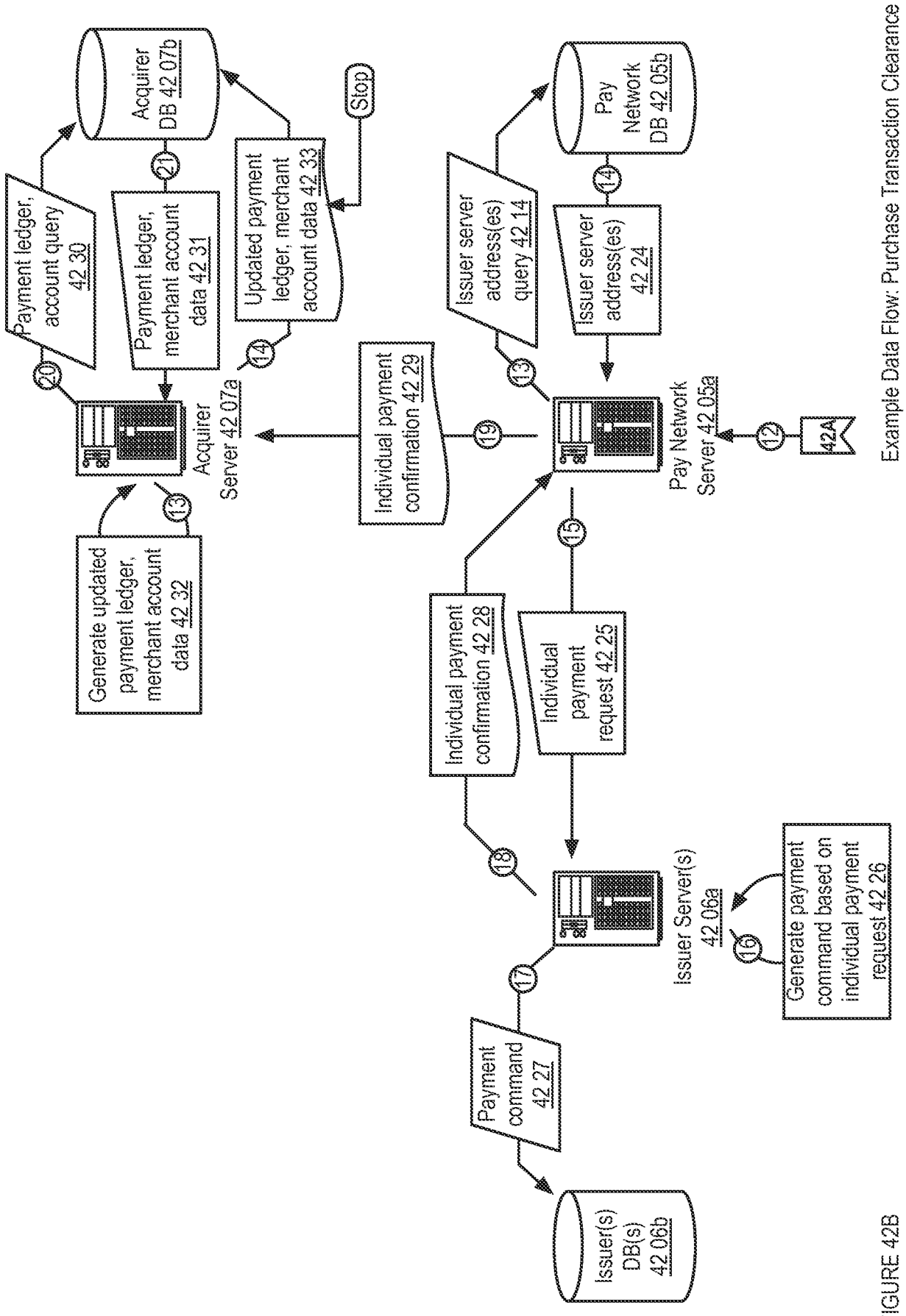
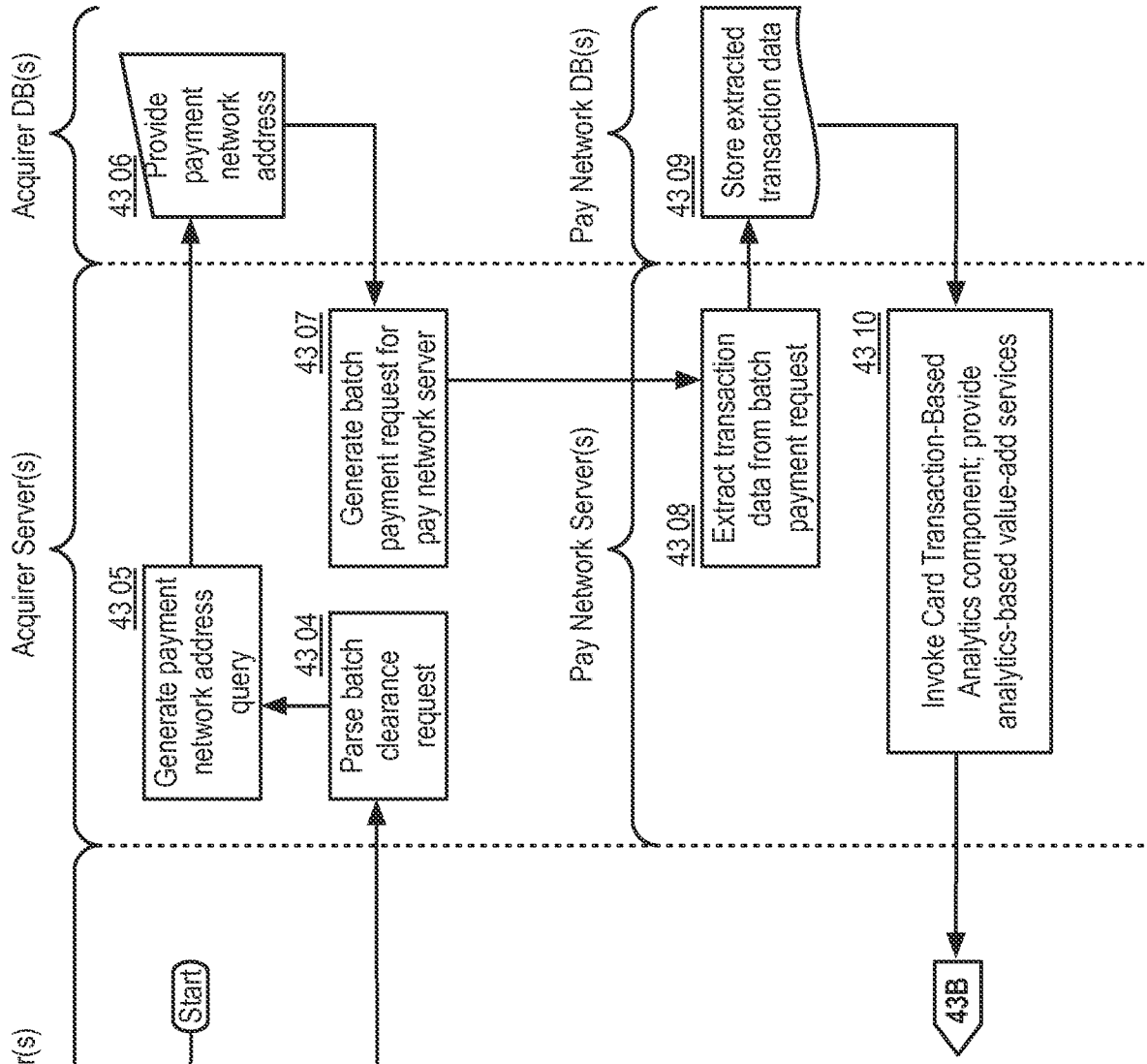


FIGURE 42B Example Data Flow: Purchase Transaction Clearance



Example Logic Flow: Purchase Transaction Clearance ("PTC") component 4300

FIGURE 43A

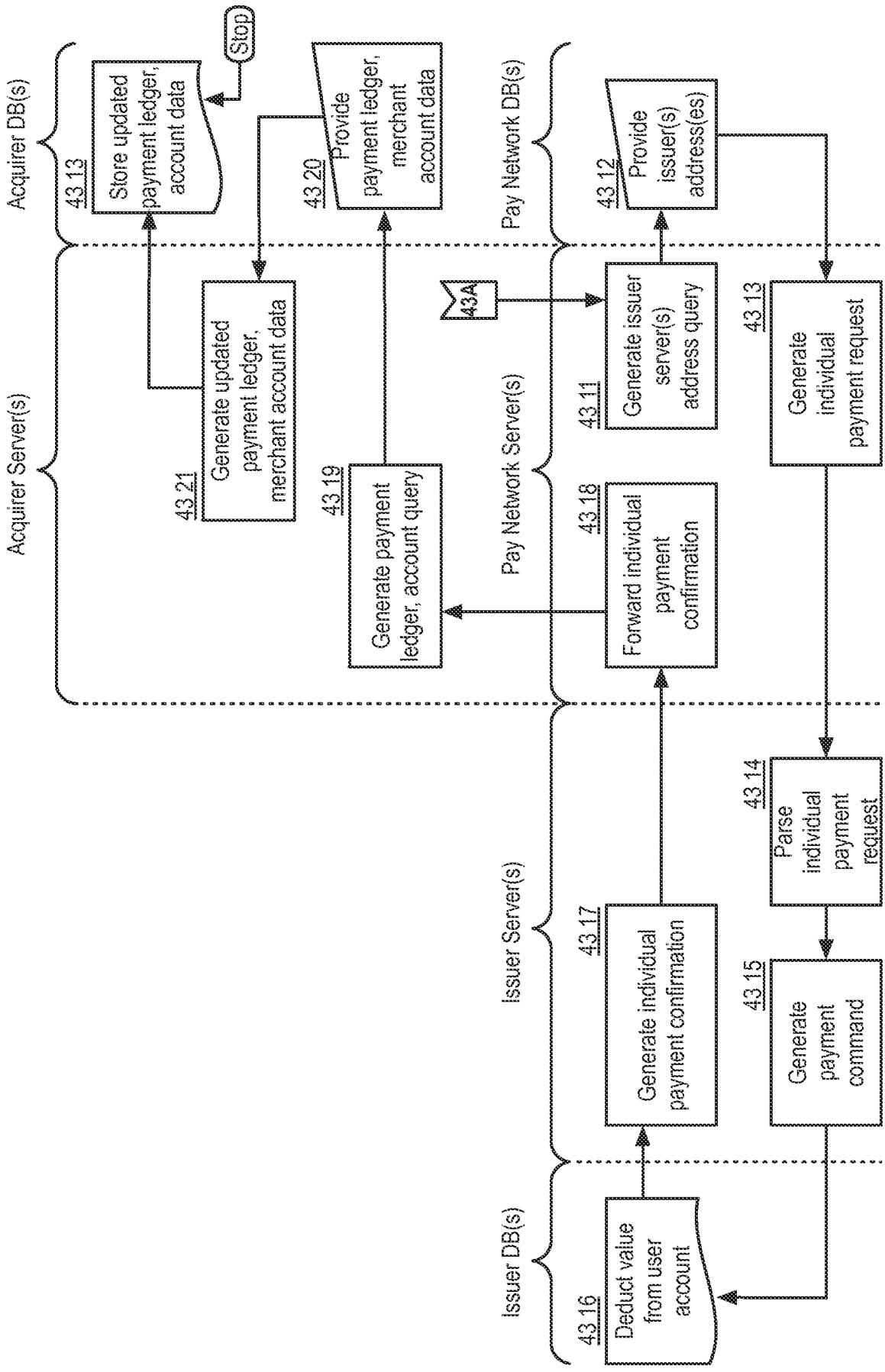


FIGURE 43B Example Logic Flow: Purchase Transaction Clearance ("PTC") component 4300

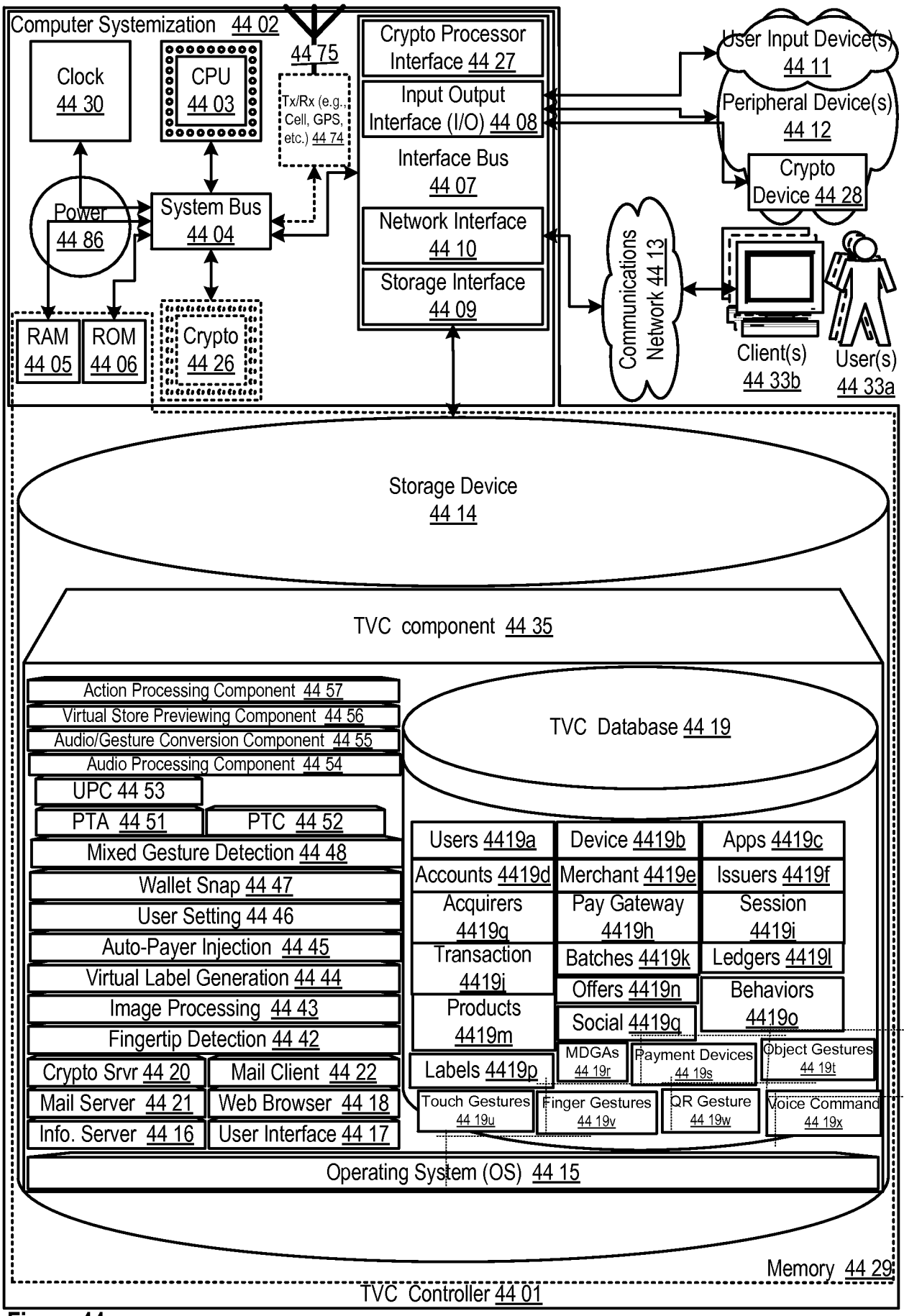

Computer Systemization 44 02
Clock 44 30
CPU 44 03
44 75
Tx/Rx (e.g., Cell, GPS, etc.) 44 74
Power 44 86
System Bus 44 04
RAM 44 05
ROM 44 06
Crypto 44 26
Crypto Processor Interface 44 27
Input Output Interface (I/O) 44 08
Interface Bus 44 07
Network Interface 44 10
Storage Interface 44 09
User Input Device(s) 44 11
Peripheral Device(s) 44 12
Crypto Device 44 28
Communications Network 44 13
Client(s) 44 33b
User(s) 44 33a
Storage Device 44 14
TVC component 44 35
Action Processing Component 44 57
Virtual Store Previewing Component 44 56
Audio/Gesture Conversion Component 44 55
Audio Processing Component 44 54
UPC 44 53
PTA 44 51
PTC 44 52
Mixed Gesture Detection 44 48
Wallet Snap 44 47
User Setting 44 46
Auto-Payer Injection 44 45
Virtual Label Generation 44 44
Image Processing 44 43
Fingertip Detection 44 42
Crypto Srvr 44 20
Mail Client 44 22
Mail Server 44 21
Web Browser 44 18
Info. Server 44 16
User Interface 44 17
TVC Database 44 19
Users 4419a
Device 4419b
Apps 4419c
Accounts 4419d
Merchant 4419e
Issuers 4419f
Acquirers 4419g
Pay Gateway 4419h
Session 4419i
Transaction 4419j
Batches 4419k
Ledgers 4419l
Offers 4419n
Behaviors 4419o
Products 4419m
Social 4419q
Labels 4419p
MDGAs 44 19r
Payment Devices 44 19s
Object Gestures 44 19t
Touch Gestures 44 19u
Finger Gestures 44 19v
QR Gesture 44 19w
Voice Command 44 19x
Operating System (OS) 44 15
Memory 44 29
TVC Controller 44 01

Figure 44

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/020411

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06Q 30/02 (2013.01)
USPC - 705/26.1
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - G06Q 10/00, 20/00, 30/02, 30/06 (2013.01)
USPC - 235/383; 705/26.1, 705/26.9, 705/27.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC - G06Q 30/016, 30/0205, 30/0269, 0282 (2013.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase, Google Patents, ProQuest

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/0138268 A1 (TUCHMAN) 21 June 2007 (21.07.2007) entire document	1-33, 75-161
Y	US 2010/0191582 A1 (DICKER et al) 29 July 2010 (29.07.2010) entire document	1-33, 75-161
Y	WO 01/61548 A2 (GOURGEY et al) 23 August 2001 (23.08.2001) entire document	1,22-26,75-77,97-101, 125-129,153-157
Y	US 2003/0132298 A1 (SWARTZ et al) 17 July 2003 (17.07.2003) entire document	28-30,103-105,131-133, 159-161
Y	US 2009/0055285 A1 (LAW et al) 26 February 2009 (26.02.2009) entire document	15,90,118,146
A	WO 2011/005072 A2 (NORLIZA et al) 13 January 2011 (13.01.2011) entire document	1-33, 75-161
A	US 2009/0271293 A1 (PARKHURST et al) 29 October 2009 (29.10.2009) entire document	1-33, 75-161
A	US 2011/0276385 A1 (KELLER) 10 November 2011 (10.11.2011) entire document	1-33, 75-161

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
03 May 2013	21 MAY 2013
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/020411

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see extra sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-33, 75-161

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/020411

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-33, 75-161, drawn to augmented retail shopping comprising user shopping assistance request using mobile phone including user identification and merchant store identification, retrieving user profile information and user real-time in-store behavior to generate a product purchase recommendation, adding a product to a shopping card, and initiating a purchase transaction for the product added to the cart through an encrypted, non-merchant, bandwidth and network latency reducing, and out-of-band network communication.

Group II, claims 34-60, 162-242, drawn to payment transaction visual capturing method comprising obtaining live visual capture of reality scene, performing image analysis of the scene, identifying an object within the captured reality scene and determining an account identifier through the image analysis, generating user interactive option labels for the identified object providing option labels for the user, and presenting the option labels overlaying the live visual capture of the reality scene, detecting user transaction command within the live visual capture of the reality scene.

Group III, claims 61-74,243-284, drawn to visual capturing method comprising obtaining a list of product items, determining a product category and product identifier for each product item on list, obtaining and querying inventory and stock keeping data, determining in-store location of each item, tagging an obtained visual layout of store with the location of each item and presenting the tagged visual layout to the user.

Group IV, claims 285-294, drawn to a method comprising receiving from a wallet user multiple gesture actions within specified temporal quantum, determining composite constituent gestures, gesture manipulated objects, from the received multiple gesture actions , determining a composite gesture action associated with the determined composite constituent gestures and gesture manipulated objects and executing the composite gesture action to perform a transaction.

The inventions listed as Groups I, II, III or IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: augmented retail shopping comprising user shopping assistance request using mobile phone including user identification and merchant store identification, retrieving user profile information and user real-time in-store behavior to generate a product purchase recommendation, adding a product to a shopping card, and initiating a purchase transaction for the product added to the cart through an encrypted, non-merchant, bandwidth and network latency reducing, and out-of-band network communication as claimed therein is not present in the invention of Groups II, III or IV. The special technical feature of the Group II invention: payment transaction visual capturing method comprising obtaining live visual capture of reality scene, performing image analysis of the scene, identifying an object within the captured reality scene and determining an account identifier through the image analysis, generating user interactive option labels for the identified object providing option labels for the user, and presenting the option labels overlaying the live visual capture of the reality scene, detecting user transaction command within the live visual capture of the reality scene as claimed therein is not present in the invention of Groups I, III or IV. The special technical feature of the Group III invention: visual capturing method comprising obtaining a list of product items, determining a product category and product identifier for each product item on list, obtaining and querying inventory and stock keeping data, determining in-store location of each item, tagging an obtained visual layout of store with the location of each item and presenting the tagged visual layout to the user as claimed therein is not present in the invention of Groups I, II or IV. The special technical feature of the Group IV invention: receiving from a wallet user multiple gesture actions within specified temporal quantum, determining composite constituent gestures, gesture manipulated objects, from the received multiple gesture actions , determining a composite gesture action associated with the determined composite constituent gestures and gesture manipulated objects and executing the composite gesture action to perform a transaction as claimed therein is not present in the invention of Groups I, II or III.

Groups I, II, III and IV lack unity of invention because even though the inventions of these groups require the technical feature of retail shopping and payment method comprising retrieving previously stored user activity, obtaining user interests indicators and obtaining user interests that user wants to purchase product, initiating purchase transaction with a user account, obtaining financial account information and providing electronic receipt to the mobile device of a user upon completion of transaction, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of US 2009/0271293 A1 (PARKHURST et al) 29 October 2009 (29.10.2009), Abstract, Fig. 5-6, paragraphs 8-9, 11, 55, 69 and US 2011/0276385 A1 (KELLER) 10 November 2011 (10.11.2011), Abstract, paragraphs 4-6, 31-32.

Since none of the special technical features of the Group I, II, III or IV inventions are found in more than one of the inventions, unity of invention is lacking.

摘要

交易视觉捕捉装置、方法和系统（“TVC”），经由 TVC 部件将移动设备位置坐标信息传输、实时现实视觉捕捉和混合姿势捕捉转换成实时行为灵敏产品购买相关信息、购物购买交易通知和电子发票。在一个实现方式中，TVC 在用户进入商店时从用户移动设备获得用户登记信息。TVC 基于用户登记信息提取用户标识符，并且访问用户简档的数据库。TVC 根据所访问的用户简档来确定用户先前行为模式，并且从用户移动设备获得用户在商店中的实时行为数据。