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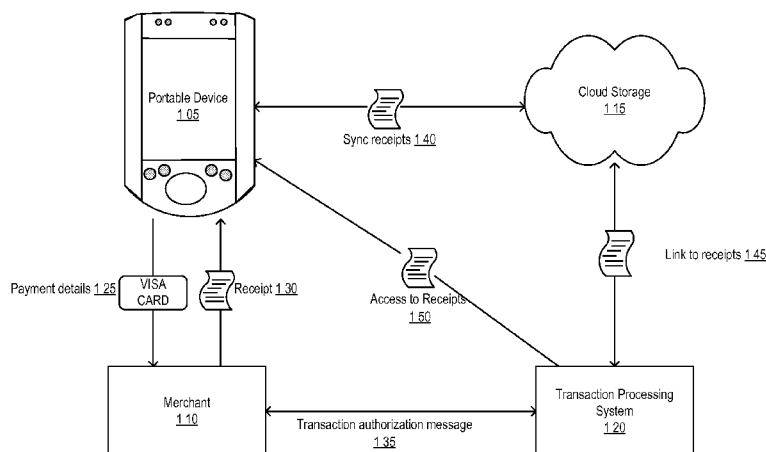


FIGURE 1A

Exemplary Receipt Storage and Access
Components

(57) **Abstract:** The ELECTRONIC RECEIPT MANAGER APPARATUSES, METHODS AND SYSTEMS ("ERM") transforms transaction initiation requests and receipt requests via ERM components into receipt formatting, organization, storage and linkage with transactions. The ERM may be configured to receive a receipt through an interface of a portable device and determine a set of fields for formatting data from the receipt. The ERM may format the data from the receipt to include the set of fields and store the formatted data in a memory element of the portable device.

ELECTRONIC RECEIPT MANAGER APPARATUSES, METHODS AND SYSTEMS

[0001] This application for letters patent discloses and describes various novel innovations and inventive aspects of ELECTRONIC RECEIPT MANAGER technology (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 CLAIM

[0002] This application is a non-provisional of and claims priority under 35 USC § 119(e) to United States provisional patent application serial no. 61/485,029 filed May 11, 2011, entitled “Electronic Receipt Management,” attorney docket no. P-42005PRV|20270-185PV. The entire contents of the aforementioned application is expressly incorporated by reference herein.

FIELD

[0003] The present innovations address apparatuses, methods, and systems for managing, organizing and viewing receipts, and more particularly, include ELECTRONIC RECEIPT MANAGER APPARATUSES, METHODS AND SYSTEMS (“ERM”).

BACKGROUND

1

2 **[0004]** When a transaction occurs at a merchant location, paper receipts are
3 provided to the consumer as a proof of purchase. Similarly, when a transaction occurs
4 online, an electronic receipt is displayed or e-mailed to the consumer. Some of these
5 receipts may be kept by the consumer, for example, for returning merchandise, while
6 other receipts may be discarded or lost.

BRIEF DESCRIPTION OF THE DRAWINGS

7

8 **[0005]** The accompanying appendices, drawings, figures, images, etc. illustrate
9 various example, non-limiting, inventive aspects, embodiments, and features (“e.g.,” or
10 “example(s)”) in accordance with the present disclosure:

11 **[0006]** FIGURE 1A shows a block diagram illustrating an exemplary receipt
12 storage and access component in some embodiments of the ERM;

13 **[0007]** FIGURE 1B shows a block diagram illustrating an exemplary portable
14 device in some embodiments of the ERM;

15 **[0008]** FIGURE 1C shows a block diagram illustrating an exemplary access device
16 in some embodiments of the ERM;

17 **[0009]** FIGURE 2A shows a data flow diagram illustrating exemplary receipt
18 storage in some embodiments of the ERM;

19 **[0010]** FIGURE 2B shows a data flow diagram illustrating exemplary receipt
20 access in some embodiments of the ERM;

1 **[0011]** FIGURE 3 shows a logic flow diagram illustrating an exemplary receipt
2 management (RM) component in some embodiments of the ERM;

3 **[0012]** FIGURE 4 shows a logic flow diagram illustrating an exemplary user-
4 initiated receipt storage (URS) component in some embodiments of the ERM;

5 **[0013]** FIGURE 5 shows a logic flow diagram illustrating an exemplary automatic
6 receipt storage (ARS) component in some embodiments of the ERM;

7 **[0014]** FIGURE 6A shows a logic flow diagram illustrating an exemplary receipt
8 access (RA) component in some embodiments of the ERM;

9 **[0015]** FIGURE 6B shows a logic flow diagram illustrating an exemplary receipt
10 query (RQ) component in some embodiments of the ERM;

11 **[0016]** FIGURES 7A-F show screenshot diagrams illustrating exemplary receipt
12 manager application user interfaces in some embodiments of the ERM;

13 **[0017]** FIGURE 8A shows a screenshot diagram illustrating an exemplary receipt
14 manager user interface in some embodiments of the ERM;

15 **[0018]** FIGURE 8B shows a screenshot diagram illustrating an exemplary original
16 receipt in some embodiments of the ERM;

17 **[0019]** FIGURE 8C shows a screenshot diagram illustrating an exemplary user
18 account statement in some embodiments of the ERM;

19 **[0020]** FIGURES 8D-E show screenshot diagrams illustrating exemplary user
20 account application user interfaces in some embodiments of the ERM; and

21 **[0021]** FIGURE 9 shows a block diagram illustrating example aspects of an ERM
22 controller.

¹ **[0022]** The leading number of each reference number within the drawings
² indicates the figure in which that reference number is introduced and/or detailed. As
³ such, a detailed discussion of reference number 101 would be found and/or introduced
⁴ in Figure 1. Reference number 201 is introduced in Figure 2, etc.

DETAILED DESCRIPTION

1
2 **[0023]** Various embodiments of the ERM facilitate storage, management,
3 organization, classification and retrieval of electronic receipts. Such receipts may be
4 obtained as paper receipts or electronic receipts from purchases by consumers at point
5 of sale (PoS) terminals or online. Consumers may utilize the facilities of the ERM for
6 various purposes. For example, some consumers may maintain these receipts in order to
7 return items for the price at which the item was originally purchased. Consumers may
8 also maintain a copy of the receipts for tax purposes and personal accounting. In the
9 case of employees, businesses may require all receipts to be collected for expense reports
10 and/or record keeping.

11 **[0024]** Printing these transaction receipts not only is cumbersome and generates
12 waste, which is harmful to the environment, but also adds additional cost to the
13 merchant to purchase both the paper and machines to print them. In addition, further
14 burden is placed on consumers to retain them. When receipts are lost, consumers can
15 lose money on returns as well as on disputes regarding a refund for a returned purchase.
16 Additionally, if a consumer is viewing an account statement from a bank for example,
17 the consumer must retain a paper receipt in order to identify and verify transaction
18 amounts. Various embodiments of the ERM facilitate management, storage, search, and
19 retrieval of receipts from transactions, whether such transactions are performed in-
20 person or online, and using electronic wallet or other forms of payment.

ELECTRONIC RECEIPT MANAGER (ERM)

1

2 **[0025]** FIGURE 1A shows a block diagram illustrating exemplary receipt storage
3 and access components in some embodiments of the ERM. A user (or a consumer) may
4 use his or her portable device 105 to conduct a transaction with a merchant 110. The
5 transaction may be conducted at a point of sale (PoS) terminal, online, between portable
6 devices, and/or the like. In one implementation, payment details 125 stored in or
7 provided via the portable device 105 may be wirelessly sent to the merchant 110. In
8 other implementations, payment details 125 may be communicated to the merchant 110
9 using non-wireless methods (e.g., payment card swipe or tap or manual input). The
10 merchant 110 may communicate with a transaction processing system (TPS) 120 to send
11 and receive transaction authorization messages 135. For example, the merchant 110 may
12 send a transaction authorization request message including the user provided payment
13 details 125 and transaction information (e.g., product information, merchant identifier,
14 SKU data, merchant name, transaction amount, and/or the like) to the TPS 120. The
15 TPS 120 may obtain authorization for the transaction, and respond to the merchant 110
16 with a transaction authorization response message, approving or declining the
17 transaction. If the transaction is authorized, the merchant may provide a receipt 130 for
18 the transaction to the user or directly to the portable device 105. In various
19 embodiments, the TPS 120 may include a transaction handler; an issuer processor (also
20 referred to as issuer or issuing bank); an acquirer processor (also referred to as a
21 acquirer or an acquiring bank); a third-party processor working on behalf of the
22 merchant, TPS, and/or the cloud storage system.

1 **[0026]** In one embodiment, the portable device 105 may communicate with a
2 cloud storage system 115 that is configured to store electronic receipts for transactions
3 on behalf of the user. The user may configure an account with the cloud storage system,
4 such as upon, prior to, or after installing the receipt manager (RM) application. In one
5 implementation, the cloud storage system may be operated by the TPS. In another
6 implementation, the cloud storage system may be independent of the TPS. The user may
7 use the portable device 105 to sync receipts 140 with his or her account at the cloud
8 storage system 115. Users may sync electronic receipts that are stored locally in their
9 portable device 105 or from email or other storage applications or servers using an ERM
10 application (e.g., RM application) installed in their portable device 105. Users may also
11 capture an image of a paper receipt, and sync the captured receipt with the cloud storage
12 system 115.

13 **[0027]** In one embodiment, the cloud storage system 115 may provide receipt
14 details (e.g., receipt, receipt identifier, transaction identifying information, and/or the
15 like) to the TPS 120 (e.g., an issuer bank). The TPS 120 may identify a transaction
16 corresponding to each receipt and may link the receipt 145 to the transaction, thereby
17 allowing users access to the receipts 150 directly from their online accounts with the TPS
18 120.

19 **[0028]** In some implementations, the ERM may also facilitate receipt
20 management for person-to-person transactions using portable devices. A person-to-
21 person transaction may include, for example, a payment made to a seller in a farmer's
22 market, sites like Craigslist, and/or the like. After the transfer of funds from the user's
23 payment account to the beneficiary, the issuer of the account, the TPS, and/or the like

1 may generate a receipt for the funds transfer transaction, which may be transmitted to
2 the cloud storage system for storage, management and retrieval. In one implementation,
3 the receipt may include information on the sender, the beneficiary, verification
4 identifiers (e.g., from sender bank, receiver bank, TPS, and/or the like), amount, date,
5 time, location, user provided transaction details (e.g., Frank from the pottery shop in a
6 market), and/or the like.

7 **[0029]** FIGURE 1B shows a block diagram illustrating an exemplary portable
8 device in some embodiments of the ERM. As shown in FIGURE 1B, a portable device
9 100 may be in the form of a cellular phone, smart phone, tablet, personal digital
10 assistant, and/or the like. The portable device 100 may have a display 170 and input
11 elements 178 (e.g., keyboard) to allow a user to input information into the device
12 memory 162. The portable device 100 may also include a processor 164 (e.g., a
13 microprocessor) for processing the instructions stored or received, at least one antenna
14 166 for wireless data transfer, a microphone 168 to allow the user to transmit his or her
15 voice through the device 100, and a speaker 172 to allow the user to hear voice
16 communication, music, etc. In addition, the portable device 100 may include one or
17 more interfaces in addition to the antenna 166, such as a contact or contactless interface
18 for transferring information through direct contact or through an integrated chip, which
19 may be coupled to the antenna. The interfaces 174 may provide a near field
20 communication interface (e.g., contactless interface, Bluetooth, optical interface, etc.)
21 and/or wireless communications interfaces capable of communicating through a cellular
22 network, such as Global System for Mobile Communication (GSM), or through WiFi,
23 such as with a wireless local area network (WLAN). Accordingly, the portable device
24 may be capable of transmitting and receiving information wirelessly through short

1 range and long range communication protocols. In the embodiment shown in FIGURE
2 1B, an antenna 166 may comprise a cellular antenna (e.g., for sending and receiving
3 cellular voice and data communication, such as through a wireless network), and
4 interfaces 174 may comprise more local communication, such as for use in conducting
5 transactions. In other embodiments contemplated herein, communication with the
6 portable device 100 may be conducted with a single antenna configured for multiple
7 purposes (e.g., cellular, transactions, and/or the like), or with further interfaces (e.g., 3,
8 4, or more separate interfaces).

9 **[0030]** The portable device 100 may also include a computer readable medium
10 180 coupled to the processor 164, which stores application programs and other
11 computer code instructions for operating the portable device 100, such as an operating
12 system (OS) 158. In one embodiment of the ERM, the computer readable medium 180
13 may include a receipt manager (RM) application 152. In some implementations, the RM
14 application 152 may automatically run each time that an electronic receipt is received,
15 such as during communication with an access device illustrated in FIGURE 1C. In some
16 embodiments, the RM application 152 may run continuously (e.g., in the background) or
17 when launched by a trigger (e.g., transaction occurrence, user input, application launch,
18 and/or the like). In addition, the application may include a customizable user interface
19 (UI), which may be configured by the user's preferences through application level
20 programming. The application may be used to display and manage the electronic
21 receipts for transactions.

22 **[0031]** Referring again to FIGURE 1B, the computer readable medium 180 may
23 also include a receipt identifier generation engine 154. The receipt identifier generation

1 engine 154 may assign an identifier to each receipt received on the portable device 100.
2 the identifier may be alphanumeric, such as a 3 string number, or include additional
3 identifying information, such as the merchant category code, a partial name of the
4 merchant, a URL, or any other combination of numbers, letters, and/or other symbols.
5 In one implementation, the identifier may be in the form of a barcode, a quick response
6 code, and/or the like. Both the generated identifier and an original or copy of the
7 electronic receipt, as provided by the merchant, may be communicated to and stored by
8 the memory 162 of the portable device 100. The electronic receipt may include
9 information such as transactions details (e.g., total cost, tax, SKU numbers, item
10 description and individual item costs, and/or the like). The receipt may also include
11 information such as a merchant name, merchant category code, merchant location,
12 store number, time/date stamp, and/or the like. In some implementations, the receipt
13 may also include coupons, offer, codes, and/or the like. Such coupons, offers, code,
14 and/or the like may be dynamic in nature in some implementations. Some of the
15 aforementioned information may only be desired for further processing of the
16 transaction and/or for the merchant's reference, and the user of the device may prefer
17 not to view all of the information associated with the electronic receipt. Accordingly, the
18 computer readable medium 180 on the portable device 100 may also include a receipt
19 formatting engine 156, which extracts and/or maintains only information preferred by
20 the user and formats that information into a list of receipts. The list of receipts is
21 displayed by the RM application 152 to the user. In one implementation, the RM
22 application 152 may include the facilities of the receipt identifier generation engine 154
23 and the receipt formatting engine 156. In one implementation, the computer readable
24 medium 180 may include a transaction application 160 which may be executed to

1 transfer account details to the access device, receive an authorization response and,
2 receive the electronic receipt for the transaction.

3 **[0032]** FIGURE 1C shows a block diagram illustrating an exemplary access device
4 in some embodiments of the ERM. The term access device may be utilized
5 interchangeably with a terminal or a point of sale (PoS) device. The access device 196
6 may comprise a processor 186 operatively coupled to a computer readable medium 188
7 (e.g., one or more memory chips, and/or the like), input elements 184 such as buttons,
8 key pad, mouse, and/or the like, an output device 190 (e.g., a display, a speaker, and/or
9 the like) and one or more interfaces 194. In one embodiment, the access device 196 may
10 include only a reader 182, processor 186, computer readable medium 188 and interface
11 194. A housing may house one or more of these components. The computer readable
12 medium 188 may comprise instructions or code, executable by a processor. The
13 computer readable medium may additionally store message passing interface (MPI)
14 software capable of communicating card information through the network to the
15 directory server and the merchant. The one or more interfaces 194 may be a wired or
16 wireless interfaces capable of communication with the reader. In another embodiment,
17 interface 194 may be a network interface for direct communication with an acquirer, the
18 directory server, the merchant, and/or the like an issuer.

19 **[0033]** FIGURE 2A shows a data flow diagram illustrating exemplary receipt
20 storage in some embodiments of the ERM. Since aspects of the ERM facilitate storage
21 and retrieval of electronic receipts, the data flow diagram illustrates messages that are
22 exchanged between a user 205a, client 215a, a merchant 225a, a cloud server 255a and a
23 TPS server 235a over a communication network 245a. The messages may facilitate

1 storage of electronic receipts in a manner that allows a user 205a to effectively search
2 and retrieve a desired receipt using an RM application installed in the client 215a or
3 access a desired receipt from an online account with the TPS server 235a (e.g., an issuer
4 bank account).

5 **[0034]** At 202a, the user 205a may provide payment information to a merchant
6 225a (e.g., merchant access device or merchant server) for a transaction. When the
7 transaction is conducted online using an electronic wallet account or payment cards, the
8 user may input wallet authentication details (e.g., wallet account username and
9 password) or payment card information (e.g., payment card number, name, expiration
10 date, security code, billing address, and/or the like) to his or her client 215a, which in
11 turn creates and sends a purchase request 202b to the merchant server 225a. When the
12 transaction is conducted in person, the user may provide payment information directly
13 to the merchant via an access device similar to one described in FIGURE 1C. In one
14 implementation, the purchase request 202b sent via the client 215a to the merchant
15 225a may be an HTTP(S) POST message including XML formatted data. An example
16 listing of the purchase request 202b, substantially in the form of a HTTP(S) POST
17 message including XML-formatted data, is provided below:

```
18 POST /purchaserequest.php HTTP/1.1
19 Host: www.merchant.com
20 Content-Type: Application/XML
21 Content-Length: 667
22 <?XML version = "1.0" encoding = "UTF-8"?>
23 <purchase_request>
24     <purchase_ID>6789879879</purchase_ID>
25     <timestamp>20XX-01-01 06:55:22</timestamp>
26     <payment_details>
27         <card_num>698797454654</card_num>
28         <card_type>visa</card_type>
```

```

1         <card_name>John Doe</card_name>
2         <billing_zipcode>10112</billing_zipcode>
3     </payment_details>
4     <product_details>
5         <product_id = 687987A</product_id>
6         <product_name>mixer</product_name>
7         <product_qty>4</product_qty>
8         <price>15</price>
9     </product_details>
10 <client_details>
11     <client_ID>7897129382</client_ID>
12     <client_type>smartphone</client_type>
13     <client_mode>HTC hero</client_mode>
14     <OS>Android 2.0</OS>
15 </client_details>
16 </purchase_request>
17

```

18 **[0035]** After receiving the purchase request 202b from the client 215a, the
19 merchant 225a may parse the request and extract payment information necessary to
20 create a transaction authorization request message. The transaction authorization
21 request message 204 may be sent to the TPS server 235a. In one implementation, the
22 authorization request message 204 from the merchant 225a to the TPS server 235a may
23 be an HTTP(S) POST message including XML formatted data. An example listing of the
24 authorization request message 204, substantially in the form of a HTTP(S) POST
25 message including XML-formatted data, is provided below:

```

26 POST /authorizationrequest.php HTTP/1.1
27 Host: www.acquirer.com
28 Content-Type: Application/XML
29 Content-Length: 1406
30 <?XML version = "1.0" encoding = "UTF-8"?>
31 <authorization_request>
32     <transaction_ID>6789879879</transaction_ID>
33     <timestamp>20XX-01-01 06:55:22</timestamp>
34     <payment_details>
35         <card_num>698797454654</card_num>
36         <card_type>visa</card_type>

```

```

1      <expiration_date>20XX-11-12</expiration_date>
2      <cardholder_name>John Doe</cardholder_name>
3      <billing_zipcode>10112</billing_zipcode>
4      <card_security_code>6566</card_security_code>
5      <cashier_ID>NY97899</cashier_ID>
6      <amount>60.00</amount?
7      <location_ID>10112</location_ID>
8      <industry_type>retail</industry_type>
9  </payment_details>
10 <product_details>
11     <product_id =M687987A</product_id>
12     <product_name>mixer</product_name>
13     <product_qty>4</product_qty>
14     <price>15</price>
15 </product_details>
16 <client_details>
17     <client_ID>7897129382</client_ID>
18     <client_type>smartphone</client_type>
19     <client_mode>HTC hero</client_mode>
20     <OS>Android 2.0</OS>
21 </client_details>
22 </authorization_request>

```

23 **[0036]** The TPS server 235a may obtain authorization for the transaction at 206.

24 In one implementation, the authorization request message may be received by an

25 acquiring bank (or processing bank). The acquiring bank may send the authorization

26 request message to respective credit card associations (CCA) (e.g., Visa, MasterCard,

27 American Express, Discover, and/or the like). The CCA may forward the authorization

28 request message to the card issuer, which in turn may approve or decline the

29 transaction. The response from the card issuer may then be sent back to the merchant

30 via the CCA and acquiring bank as the transaction authorization response message 208.

31 In one implementation, the authorization response message 208 from the TPS server

32 235a to the merchant 225a may include information such as client transaction ID, TPS

33 transaction ID, authorization code, transaction status message, and/or the like. If the

1 transaction is approved, the merchant 225a may provide a receipt 210 to the user 205a
2 or the client 215a. In some implementations, the receipt may be an electronic receipt
3 document or image file provided via email, a data package (e.g., XML) sent from the
4 merchant (e.g., access device) to the user's client, a web page confirmation, and/or the
5 like. At 212, the client 215a may optionally display the receipt to the user 205a upon
6 receiving the receipt 210 from the merchant 225a. In one implementation, the RM
7 application may obtain the data package and extract information in the data package to
8 create and display the receipt corresponding to the transaction. In another
9 implementation, a barcode (e.g., Quick Response code) including receipt data may be
10 displayed at the merchant terminal. The user may capture the image of the barcode,
11 which may be read by the RM application to generate and display the corresponding
12 receipt.

13 **[0037]** At 214, the user may add a receipt to the RM application on his or her
14 client 215a. The client 215a may generate a sync receipt request message 216 and send
15 the message to the cloud server 255a. In one implementation, the receipt sync request
16 216 may be sent to the cloud server 255a as an HTTP(S) POST message including XML
17 formatted data. An example listing of the receipt sync request message 216, substantially
18 in the form of a HTTP(S) POST message including XML-formatted data, is provided
19 below:

```
20 POST /syncrequest.php HTTP/1.1
21 Host: www.cloud.com
22 Content-Type: Application/XML
23 Content-Length: 667
24 <?XML version = "1.0" encoding = "UTF-8"?>
25 <sync_request>
26     <user_ID>Jdoe@gmail.com</user_ID>
27     <password>testtest2</password>
```

```

1      <timestamp>20XX-03-01 08:08:22</timestamp>
2      <receipt_details>
3          <receipt1>
4              <data_file>hdjwhdewf873894753rfowjefs</data_file>
5              <file_name>emailreceipt_20XX0505R0776337135</filename>
6              <format>pdf</format>
7              <category>electronics</category>
8          </receipt1>
9          <receipt2>
10             <data_file>qwdkjds798jloij6</data_file>
11             <file_name>receipt_data</file_name>
12             <format>txt</format>
13             <category>groceries</category>
14         </receipt2>
15         <receipt3>
16             <data_file>weodkwipodiwpoei85bkj6</data_file>
17             <file_name>gapreceipt20XX0501ny</file_name>
18             <format>jpg</format>
19             <category>groceries</category>
20         </receipt3>
21     <client_details>
22         <client_ID>7897129382</client_ID>
23         <client_type>smartphone</client_type>
24         <client_mode>HTC hero</client_mode>
25         <OS>Android 2.0</OS>
26     </client_details>
27 </sync_request>
28

```

29 **[0038]** After receiving the receipt sync request message 216 from the client 215a,
30 the cloud server 255a may generate a receipt identifier at 218. In one implementation,
31 the cloud server may parse the request message to obtain receipt data and use all or a
32 portion of the receipt data to generate the receipt identifier. The cloud server 255a may
33 further store the receipt received from the client in association with the receipt identifier
34 in a receipt database 265a. For example, the cloud server 255a may issue PHP/SQL
35 commands to store the receipt data to a database table (such as FIGURE 9, receipt table

1 919c). An example add receipt and receipt identifier command 220, substantially in the
 2 form of PHP/SQL commands, is provided below:

```

3  <?PHP
4  header('Content-Type: text/plain');
5  mysql_connect("254.92.185.103",$DBserver,$password); // access database server
6  mysql_select("ERM_DB.SQL"); // select database to append
7  mysql_query("INSERT INTO ReceiptsTable (receipt_ID, receipt_category, user_ID,
8      receipt_path)
9  VALUES ($receipt_ID, $receipt_category, $user_ID, $receipt_path)"); // add data
10     to table in database
11  mysql_close("ERM_DB.SQL"); // close connection to database
12  ?>

```

13 **[0039]** In one implementation, the cloud server 255a may send a receipt sync
 14 confirmation message 222 to the client 215a upon storing the receipt in the receipt
 15 database 265a. The confirmation message may also be displayed on the client 215a at
 16 224. In one implementation, the confirmation message 222 may include receipt
 17 identifier(s) for each receipt that was sent to the cloud server 255a for syncing. The
 18 cloud server 255a may also send the receipt identifier and transaction details 226 to the
 19 TPS server 235a. In one implementation, the message 226 may be sent to the TPS server
 20 235a as an HTTP(S) POST message including XML formatted data. An example listing
 21 of the message 226, substantially in the form of a HTTP(S) POST message including
 22 XML-formatted data, is provided below:

```

23  POST /receiptdata.php HTTP/1.1
24  Host: www.transactionprocessor.com
25  Content-Type: Application/XML
26  Content-Length: 667
27  <?XML version = "1.0" encoding = "UTF-8"?>
28  <receipt_data>
29      <user_info>
30          <user_ID>Jdoe@gmail.com</user_ID>
31          <payment_ID>517826312739</payment_ID>
32          <user_address>200 Summit Hill, New York, NY 10112</user_address>

```

```

1      </user_info>
2      <timestamp>20XX-03-01 08:08:22</timestamp>
3      <receipt_details>
4          <receipt1>
5              <data_file>hdjwhdewf873894753rfowjefs</data_file>//optional
6              <receipt_ID>JD20XX176</receipt_ID>
7              <client_transaction_ID>47668980</client_transaction_ID>
8              <category>electronics</category>//optional
9          </receipt1>
10         <receipt2>
11             <data_file>qwdkjds798jloij6</data_file>
12             <receipt_ID>JD20XX166</receipt_ID>
13             <client_transaction_ID>67898980</client_transaction_ID>
14             <category>electronics</category>//optional
15         </receipt2>
16         <receipt3>
17             <data_file>weodkwipodiwpoei85bkj6</data_file>
18             <receipt_ID>JD20XX678</receipt_ID>
19             <client_transaction_ID>47668456</client_transaction_ID>
20             <category>groceries</category>//optional
21         </receipt3>
22     </receipt_details>
23 </receipt_data>

```

24 **[0040]** The transaction details 226 may be parsed by the TPS server 235a and
 25 compared with transaction records to identify a transaction corresponding to the receipt
 26 identifier. The TPS server 235a may link the receipt identifier to one or more identified
 27 transactions at 228, thereby facilitating efficient and fast access to receipts for
 28 transactions.

29 **[0041]** FIGURE 2B shows a data flow diagram illustrating exemplary receipt
 30 access in some embodiments of the ERM. As shown, the ERM provides users access to
 31 stored receipts pertaining to a desired transaction directly from their client devices. The
 32 user 205b may input into a client 215b, an online account (e.g., issuer account) login
 33 credentials in a web or mobile interface of the online account at 250. The client 215b
 34 may receive the login credentials and may package the data in a user authentication

1 request message 252 that is sent over a communication network 245b to the TPS server
2 235b. In one implementation, the authentication request message 252 may be sent to
3 the TPS server 235b as an HTTP(S) POST message including XML formatted data. An
4 example listing of the authentication request message 252, substantially in the form of a
5 HTTP(S) POST message including XML-formatted data, is provided below:

```
6   POST /authenticationrequest.php HTTP/1.1
7   Host: www.transactionprocessor.com
8   Content-Type: Application/XML
9   Content-Length: 667
10  <?XML version = "1.0" encoding = "UTF-8"?>
11  <authentication_request>
12      <request_ID>JHJKKLJ68JK</request_ID>
13      <timestamp>20XX-03-01 08:08:22</timestamp>
14      <user_ID>Jdoe@gmail.com</user_ID>
15      <password>testtest2</password>
16      <client_details>
17          <client_IP>192.168.23.122</client_IP>
18          <client_type>smartphone</client_type>
19          <client_model>HTC Hero</client_model>
20          <OS>Android</OS>
21          <app_installed_flag>true</app_installed_flag>
22      </client_details>
23  </authentication_request>
```

24 **[0042]** After receiving the authentication request message 252, the TPS server
25 235b may parse the message and extract login details such as username, password,
26 and/or the like. The TPS server 235b may compare the extracted login details to
27 information in a database to authenticate the user at 254. When the user provided login
28 credentials match with the ones in the database (e.g., 919a, FIGURE 9), the TPS server
29 235b may generate and send a user authentication response message 256 accepting the
30 request. In one implementation, the authentication response message 256 may include
31 information such as authentication status (e.g., fail or success), login name, message

1 (e.g., reasons for authentication failure, account name), and/or the like. Once the user is
2 authenticated, the client may display the landing page for the online account (e.g.,
3 account summary page) at 258.

4 **[0043]** The user 205b may navigate through the online account site or application
5 to a transaction summary page (e.g., FIGURES 8C and 8D). At 260, the user may select
6 a link or an icon for receipt (e.g., 825f, FIGURE 8D) next to a desired transaction to
7 view the receipt corresponding to the transaction. The client 215b may receive the user's
8 selection and may generate and send to the TPS server 235b a receipt request message
9 262a. In one implementation, the receipt request message 262a may be sent to the TPS
10 server 235b as an HTTP(S) POST message including XML formatted data. An example
11 listing of the receipt request message 262a, substantially in the form of a HTTP(S) POST
12 message including XML-formatted data, is provided below:

```
13 POST /requestrequest.php HTTP/1.1
14 Host: www.transactionprocessor.com
15 Content-Type: Application/XML
16 Content-Length: 667
17 <?XML version = "1.0" encoding = "UTF-8"?>
18 <receipt_request>
19     <request_ID>LOYBKLJ68JK</request_ID>
20     <timestamp>20XX-03-01 08:08:22</timestamp>
21     <user_ID>Jdoe@gmail.com</user_ID>
22     <password>testtest2</password>
23     <receipt_ID>20XX5679</receipt_ID>
24     <client_details>
25         <client_IP>192.168.23.122</client_IP>
26         <client_type>smartphone</client_type>
27         <client_model>HTC Hero</client_model>
28         <OS>Android</OS>
29         <app_installed_flag>true</app_installed_flag>
30     </client_details>
31 </receipt_request>
```

1 **[0044]** The TPS server 235b, in turn, may forward the request to the cloud server
 2 255b as a receipt request message 264a. The cloud server 255b may receive the receipt
 3 request message 264a and may parse the request at 266. Using parameters (e.g., receipt
 4 identifier) from the parsing, the cloud server 255b may create and execute a receipt
 5 query 268 on a receipt database 265b. In one implementation, for example, the cloud
 6 server 255b may issue PHP/SQL commands to query the receipt database table 265b
 7 (e.g., 919c, FIGURE 9) for receipt data. An example receipt query 268, substantially in
 8 the form of PHP/SQL commands, is provided below:

```

9  <?PHP
10  header('Content-Type: text/plain');
11  mysql_connect("254.93.179.112",$DBserver,$password); // access database server
12  mysql_select_db("ERM_DB.SQL"); // select database table to search
13  //create query
14  $query = "SELECT receipt_path receipt_field1 receipt_field2 FROM ReceiptTable
15          WHERE receipt_ID LIKE '%" $receipt_ID"; //default or custom receipt fields
16          may be specified
17  $result = mysql_query($query); // perform the search query
18  mysql_close("ERM_DB.SQL"); // close database access
19  ?>
```

20 **[0045]** The receipt query may return a receipt 270 that matches the parameters in
 21 the query. The cloud server 255b may then send the matching receipt 272 to the TPS
 22 server 235b, which in turn may send the received receipt as the receipt message 274 to
 23 the client 215b. After receiving the receipt message 274, the client 215b may display the
 24 receipt to the user 205b at 276. In one implementation, the receipt request 264a may be
 25 made using an application programming interface (API) call to the cloud server 255b,
 26 the receipt 272 being returned in response to the API call. For example, the TPS server
 27 235b may call a getReceipt API method to obtain a receipt file and/or receipt data. An
 28 exemplary GET request method for making the call is provided below. The API key and

1 token for making such calls may be provided to the TPS server 235b before making the
2 call.

```
3 http://server1.cloud.com/receipt/api/getReceipt?callid=100008&callno=1&apikey=a  
4 K2Lejj89j2A1_1On4s2&token=u:c6a5941420cf67578986abe8e09a8299&receiptid=20XX6  
5 789
```

6 **[0046]** In another implementation, a receipt request message 262b may be
7 generated and sent to the cloud server 255b, instead of the receipt request message
8 262a. The receipt request message 262b may have a data structure similar to the receipt
9 request message 262a. The cloud server 255b may parse the request at 266, generate
10 and execute a query on the receipt database 265b at 268 and provide results of the query
11 270 to the client 215b in a receipt response message 262b. In one implementation, call
12 backs via APIs, inline widgets, and/or the like, may be used to pull receipt information
13 from the cloud server 255b and display the pulled information inline at the account
14 interface.

15 **[0047]** FIGURE 3 shows a logic flow diagram illustrating exemplary receipt
16 management (RM) component in some embodiments of the ERM. At 301, the user may
17 purchase an item at a merchant location and initiate a transaction at the merchant's PoS
18 terminal, such as the merchant register coupled to an access device. When a user
19 initiates a transaction, the merchant device calculates the costs and appends additional
20 transaction information. The transaction information may include merchant name,
21 location, and time, along with itemized product information, pricing, and/or the like.
22 The transaction information may include more or less information, dependent on both
23 the merchant and the transaction type (e.g., warranties offered, returns availability,
24 and/or the like). The transaction information may be sent to an access device, such as a
25 payment card reader or PoS terminal, which may have both contact and contactless

1 capabilities. The merchant register may communicate with an access device through a
2 hard wired or wireless connection. In some implementations, the merchant register may
3 comprise an access device, such as a one-piece PoS terminal and/or a portable device
4 equipped with a card reader. The merchant register may include a computing device or
5 similar module which has a display, keyboard interface, network connectivity and write
6 capabilities. The access device can include a reader/writer coupled to a contact or
7 contactless interface, which is capable of communicating with the user's portable device.
8 The particular components of the access device are described in detail, in one
9 implementation, with reference to FIGURE 1C.

10 **[0048]** At 302, the access device may transfer information from the merchant to
11 the portable device as well as transfer account information from the portable device to
12 the merchant, while conducting a contact or contactless transaction. At 303, an
13 electronic receipt may be received on the portable device. The receipt may be
14 transferred in an alphanumeric format, as an image and/or other file type (e.g., a text
15 file, a PDF file, an Excel file, and/or the like) and may depend on the vendor, access
16 device, portable device type, user preferences, and/or the like. For instance, a cellular
17 portable device may be capable of receiving an image of the receipt for viewing, while
18 other portable devices may only be capable of receiving alphanumeric data. In one
19 implementation, the portable device may include facilities for optical character
20 recognition (OCR), and as such, may OCR receipts upon receiving them.

21 **[0049]** During the transaction, a transaction application located in the computer
22 readable medium of the portable device (e.g., FIGURE 1B), may be executed to transfer
23 account details to the access device, receive an authorization response and, receive the

1 electronic receipt for the transaction. At 304, after the transaction application is
2 executed, the RM application may be executed to handle the incoming electronic receipt.
3 The RM application may be executed in response to the transaction processing
4 application executing, e.g., execution of the RM application may be initiated by an
5 instruction included in the transaction processing application.

6 **[0050]** At 305, the receipt identifier generation engine may be executed, such as
7 simultaneously with the RM application, in response to the transaction application
8 and/or the RM application. Once the receipt generation engine is executed, a unique
9 identifier is generated for the electronic receipt. The identifier, as previously noted, may
10 include an alphanumeric string which may be randomly generated by the receipt
11 generation engine, and/or generated based on information in the receipt, information
12 associated with an issuer, credit card association (CCA), and/or the like.

13 **[0051]** At 306, the identifier generated for the receipt may be stored in the
14 memory of the portable device in order for the user to be able to quickly call on the
15 receipt for later viewing. In some embodiments, a copy of the original receipt is also
16 stored in a memory of the portable device. At 307, the receipt formatting engine may
17 communicate with the RM application to determine which information is desired from
18 the receipt, based on the user's preferences. The receipt formatting engine may retrieve
19 the preferred information and format the information into a table associated with the
20 RM application. The table may include the selectable fields chosen by the user. In some
21 embodiments, the RM application may include default fields which are utilized to
22 format the receipt information. In other embodiments, the user may be prompted to

1 select preferred fields when the application is downloaded and installed on the portable
2 device.

3 **[0052]** At 308, the aforementioned selectable fields may be displayed to the user
4 in the receipt application in a personalized format, such as in the receipt listing
5 illustrated in FIGURE 8A. In one implementation, the formatted receipt used in the RM
6 application may also be stored in the memory of the portable device so that processing
7 the receipt and reformatting the receipt only occurs when the receipt is originally
8 received. However, if the user changes his or her preference for one or more fields for
9 the receipts list view, the portable device may perform an update and call each receipt to
10 reformat the information into the receipts listing.

11 **[0053]** The selection of the user preferred fields may be limited, dependent on the
12 display size and memory capabilities of the portable device. In other embodiments, the
13 table may include fields defined by rows in a table and display columns of a specified
14 number of receipts per page, dependent on the RM application set-up. In some
15 embodiments, the user may be able to predefine the display set-up of the RM
16 application.

17 **[0054]** In an additional embodiment, at 309, the user's portable device may
18 automatically forward a copy of the original receipt to an issuer of the user's account, the
19 CCA associated with the user's account, or both. The original receipt may be in the
20 format provided by the merchant, so that retrieval and use of the receipt to dispute
21 transactions with the merchant and/or account holder may be effectively processed.

22 **[0055]** FIGURE 4 shows a logic flow diagram illustrating an exemplary user-
23 initiated receipt storage (URS) component in some embodiments of the ERM. The

1 process may start at 402, when a user wishes to conduct a transaction with a merchant
2 415. At 404, the user may use his or her client 405 (e.g., portable device) to initiate a
3 transaction with a merchant 415 at a PoS terminal or online. In one implementation, the
4 transaction may be between two portable devices (e.g., peer to peer transaction), with
5 one portable device acting as the consumer, and the other portable device acting as the
6 merchant. Referring to FIGURE 4, the merchant 415 may receive the payment
7 information from the client 405 at 404. Using the user provided payment information,
8 and details of the transaction (e.g., transaction amount, merchant information, product
9 information, and/or the like), the merchant 415 may create an authorization request
10 message at 406. At 408, the merchant 415 may send the authorization request message
11 to a TPS server 435 for payment authorization. The TPS server 435 may receive the
12 authorization request message at 410, and as previously discussed, the TPS server 435
13 may obtain authorization from the user's payment account issuer and send an
14 authorization response message approving or declining the transaction to the merchant
15 415 at 412. The merchant 415 may receive the authorization response message at 414. At
16 416, if the transaction is not authorized, the process may end at 418. The merchant 415
17 may additionally inform the user that the transaction was not authorized and was
18 consequently canceled.

19 **[0056]** However, if the transaction is authorized at 416, the merchant 415 may
20 generate and provide a receipt for the transaction to the client 405 at 420. In one
21 implementation, the merchant may transmit a copy of the receipt/receipt data to the
22 TPS server 435 and/or the cloud server 425. In a further implementation, the merchant
23 may need to be enrolled with the cloud server and/or TPS server, before forwarding
24 receipts on behalf of the user to the cloud server and/or TPS server. At 422, the client

1 405 may receive the receipt provided by the merchant 415. In some implementations,
2 the receipt may be sent by the merchant 415 to the client 405 in an alphanumeric
3 format, image format, other file formats (e.g., a text file, a PDF file, an Excel file, and/or
4 the like) and/or other formats accepted by vendors, merchant access devices and/or the
5 user's client 405. In one implementation, when a receipt is sent in alphanumeric format,
6 the user may add the receipt data to the RM application installed in his or her client 405
7 at 424. The RM application in the client 405 may reformat the added receipt data
8 according to user preference settings. In other implementations, a paper receipt or a
9 confirmation page may be provided to the user's client 405. The user may utilize his or
10 her client 405 to capture an image of the paper receipt and add the image to the RM
11 application at 424. Receipts sent by the merchant 415 via communication channels such
12 as email may be added to the RM application directly from the email application. In
13 some embodiments, the receipts sent by the merchant 415 following a transaction may
14 automatically be added to the RM application without explicit user instructions. The
15 user may turn on such automatic addition of receipts to the RM application by
16 modifying the RM application settings.

17 **[0057]** At 426, the client 405 may send the receipt to the cloud server 425 for
18 syncing. In one implementation, syncing may automatically start after a receipt is added
19 to the RM application. The automatic or manual sync preference may be specified by the
20 user via the RM application settings. The cloud server 425 may receive the receipt for
21 syncing at 428. Upon receiving the receipt, the cloud server 425 may generate a receipt
22 identifier and store the receipt in association with the receipt identifier at 430. As
23 previously described, the receipt identifier may be a unique identifier, and may include
24 an alphanumeric string, such as may be randomly generated by the receipt generation

1 engine. In some implementations, the receipt identifier may be generated based on a
2 hash of the information in the receipt, user, issuer and/or CCA associated information.
3 At 432, after storing the receipt along with a receipt identifier, the cloud server 425 may
4 provide a confirmation message to the client 405. The client 405 may receive the
5 confirmation message at 434. In one implementation, the confirmation message may be
6 used by the RM application to manage receipts on the client 405. For example, the RM
7 application may mark a receipt entry on the application with a sync or location status
8 indicator (e.g., cloud or local) to indicate the location of the receipt, determine whether
9 a re-sync is needed (e.g., when the sync is not successful), create a receipt delete queue
10 (e.g., receipts in the cloud may be deleted first), and/or the like. The process may then
11 conclude at 418.

12 **[0058]** In one embodiment of the URS component, the cloud server 425 may
13 communicate directly with the TPS server 435 to link the receipts with corresponding
14 transactions. Referring to FIGURE 4, at 436, the cloud server 425 may parse the receipt
15 received from the client 405, and send the receipt identifier, along with the receipt data,
16 to the TPS server 435. The TPS server 435 may receive the receipt identifier and the
17 receipt data at 438. The TPS server 435 may examine the transaction records associated
18 with the user to identify a transaction having information that matches the receipt data.
19 At 440, the TPS server 435 may link the receipt identifier to the identified transaction.
20 As the linking associates the receipt identifier with the corresponding transaction, the
21 TPS server 435 may provide users direct access to stored receipts from their user
22 accounts with the TPS server 435. In some implementations, the receipt data may be
23 incomplete or inadequate to identify a transaction. In such a situation, multiple receipts
24 may be associated with a transaction, or a receipt may be associated with multiple

1 transactions. The TPS server 435 may then provide the user an opportunity to
2 definitively identify and associate receipts or receipt identifiers with a particular
3 transaction. Such definitive user-assisted link between a receipt and a transaction may
4 then be stored in the TPS server 435, and reflected in the transaction summary in the
5 user's account with the TPS server 435.

6 **[0059]** FIGURE 5 shows a logic flow diagram illustrating an exemplary automatic
7 receipt storage (ARS) component in some embodiments of the ERM. Starting at 502, a
8 user may initiate a transaction with a merchant 515 using a client device 505 (e.g., a
9 portable device) at 504. The user's client 505 may interact with an access device such as
10 a PoS terminal at the merchant 515. For example, the user may bring the client 505 in
11 the vicinity of the access device (e.g., waving a phone in front of the access device). Such
12 an interaction between a contactless element of the client 505 and the contactless
13 portable device reader of the access device at the merchant 515 may result in an
14 initiation of a transaction, such as a purchase. In one embodiment, the portable device
15 may always be in payment mode, such that when the device is in the vicinity of a
16 contactless PoS device, the payment application may automatically process the
17 transaction. In another embodiment, a transaction may be manually initiated by a user
18 when the client is brought to close proximity to an access device, and there may be no
19 need to enter a password. Accordingly, the user may manually activate a payment
20 application on the portable device, and if there is more than one instance of the payment
21 application, the user may select one of the payment applications to use for the
22 transaction. In yet another embodiment, a transaction may be manually initiated by a
23 user when the user's portable device is brought to proximity to an access device, and a
24 password may be required. The user may enter the password for the application

1 previously set by the user before manually activating the payment application. In one
2 implementation, transactions may be initiated via voice command, gestures, biometric
3 techniques such as thumb print recognition, retina scan, and/or the like.

4 **[0060]** At 506, the merchant 515 may receive the payment information from the
5 user via the access device. At 508, the merchant 515 may use the payment information
6 and details of the transaction to create an authorization request message. At 510, the
7 merchant may forward the authorization request message to the TPS server 535. The
8 TPS server 535 may receive the authorization request message at 512. At 514, the TPS
9 server 535 may obtain authorization and send an authorization response message to the
10 merchant. In one implementation, authorization for the transaction may be obtained by
11 sending an authorization request message to an acquiring bank, which in turn may
12 forward the message to the CCA or payment processing network. The CCA may then
13 forward the authorization request message to an issuing bank of an account associated
14 with the payment information provided by the user. The issuing bank may receive the
15 authorization request message and send an authorization response message back to the
16 CCA to indicate whether or not the transaction is authorized. The CCA may then forward
17 the authorization response message back to the acquiring bank, which in turn may send
18 the response message back to the merchant.

19 **[0061]** At 516, the merchant 515 may receive the authorization response message.
20 If the authorization response message at 518 indicates that the transaction is not
21 authorized, the process may end at 520. In one implementation, the merchant 515 may
22 forward the transaction decline message to the user and/or the user's client 505. If the
23 transaction is authorized, the merchant 515 may provide a receipt for the transaction to

1 the user or the user's client 505 at 522. In one implementation, the authorization
2 response message may also be sent directly from the issuing bank to the user's client
3 505. The client 505 may receive the receipt for the transaction at 524, concluding the
4 process at 520.

5 **[0062]** In one embodiment, after sending the authorization response message to
6 the merchant 515 at 514, the TPS server 535 may determine if the transaction is
7 authorized at 526. If the transaction is not authorized, the TPS server 535 may end the
8 process at 520. However, if the transaction is authorized at 526, the TPS server 535 may
9 further determine if the user is enrolled in receipt management and if the user has
10 authorized automatic storage of receipts at 528. In one implementation, user enrollment
11 data may be provided by the cloud server 525 to the TPS server 535 when a user account
12 at the cloud server 525 is provisioned. If the determination at 528 is negative, the
13 process may conclude at 520. On the other hand, if the determination at 528 is positive,
14 the TPS server 535 may send the transaction details to the cloud server 525 at 530. In
15 one implementation, the transaction details may be obtained from the authorization
16 request/response messages. In a further implementation, the authorization request
17 message may be a modified authorization request message including standard fields of
18 information such as transaction amount, card verification value, service code, expiration
19 date, merchant category code, an account number, merchant transaction ID, and/or the
20 like, as well as additional information relating to product identifiers (e.g., SKU data),
21 product cost, tax, discount, and any other information desired to generate a receipt for
22 the transaction. Similarly, the authorization response message may include, among
23 other fields of information, a TPS transaction ID. In some implementations, fields
24 available as part of a normal authorization request/response message may be utilized to

1 include the receipt data. For example, open characters available in the field or flags
2 available in the request/response message may be utilized, or existing fields may be
3 repurposed.

4 **[0063]** At 532, the cloud server 535 may receive the transaction details. At 534,
5 the cloud server 525 may generate a receipt for the transaction using the transaction
6 details, and an identifier for the receipt. In one implementation, each receipt may
7 include a transaction ID (e.g., merchant transaction ID, TPS transaction ID, and/or the
8 like). The same transaction ID may also be provided to the merchant 515 (e.g., in the
9 authorization response message) by the TPS server 535. The transaction ID may be used
10 to resolve any returns by the user, such as using the cloud server generated receipts. At
11 536, the cloud server 525 may store the receipt and the receipt identifier in a receipt
12 database. At 538, the cloud server 525 may send a confirmation of receipt storage to the
13 user's client 505. The confirmation message may be received by the user's client 505 at
14 540, concluding the receipt storage process at 520.

15 **[0064]** Referring to FIGURE 5, in one embodiment, the TPS server 535 may
16 assume the responsibility for receipt storage and management from the cloud server
17 525. At 542, the TPS server 535 may generate a receipt using the transaction details and
18 an identifier for the receipt. At 544, the TPS server 535 may store the receipt and the
19 associated receipt identifier in one or more databases and/or tables. At 546, the TPS
20 server 535 may send a receipt storage confirmation message, including a receipt
21 identifier, to the user's client 505.

22 **[0065]** FIGURE 6A shows a logic flow diagram illustrating an exemplary receipt
23 access (RA) component in some embodiments of the ERM. In one embodiment, at 602,

1 the user may start the process of receipt access by inputting to his or her client 605a, at
2 604, his or her online account login credentials. The online account may be associated
3 with the TPS server 615a (e.g., an issuing bank or CCA) and may provide access to
4 transactions conducted using payment devices (e.g., credit, debit or prepaid cards, bank
5 accounts, open and closed loop gift cards, smart cards, and/or the like) issued by or
6 associated with the TPS server 615a. The TPS server 615a may receive the account login
7 credentials at 606. The TPS server 615a may compare the user provided login details
8 with ones stored in the user accounts database (e.g., 919a, FIGURE 9) to authenticate
9 the user at 608. Other methods of authentication may be utilized by the TPS server
10 615a. If the authentication is determined to be unsuccessful at 610, the TPS server 615a
11 may notify the user via the user's client 605a at 612. After receiving notification of failed
12 authentication at 614, the process may end at 616. If the authentication is determined to
13 be successful at 610, the TPS server 615a may provide the user access to the online
14 account at 618. At 620, the user may receive access to the online account. The online
15 account's landing page may be displayed on the display interface of the client 605a. The
16 user may navigate through the online account web site or application to view a desired
17 transaction listed in an account summary or statement. In some implementations, each
18 transaction entry in the online account summary or statement may include a link or an
19 icon for a receipt for the transaction. At 622, the user may select a receipt link or icon
20 next to a transaction to view the receipt associated with the transaction. At 624, the TPS
21 server 615a may receive an identifier of a receipt corresponding to the selected receipt
22 link or icon from the user's client 605a. At 626, the TPS server 615a may request the
23 receipt corresponding to the receipt identifier from the cloud server 625a. The cloud
24 server 625a may receive the request at 628, and may in turn query a receipt database

1 (e.g., 919c, FIGURE 9) using the receipt identifier as a query parameter at 630. The
2 query may return a receipt having a receipt identifier matching the query parameter at
3 632. The receipt may be sent to the TPS server 615a at 634. After receiving the receipt at
4 636, the TPS server 615a may send the receipt to the user's client 605a at 638. The client
5 605a may receive the receipt and display it on a display interface at 640, concluding the
6 receipt access process at 616.

7 **[0066]** In an alternate embodiment, the selected receipt link or icon and
8 associated receipt identifier may be sent to the cloud server 625a, instead of the TPS
9 server 615a. The cloud server 625a may look up the receipt corresponding to the receipt
10 identifier and provide the receipt to the user's client 605a for display as, for example, an
11 iframe within the online account webpage or application.

12 **[0067]** FIGURE 6B shows a logic flow diagram illustrating an exemplary receipt
13 query (RQ) component in some embodiments of the ERM. In one embodiment, the RQ
14 component may include a client 605b (e.g., portable device) and a cloud server 625b.
15 Starting at 650, a user may input a report request via the client 605a at 652. The request
16 may specify one or more receipt query parameters such as transaction date, merchant
17 name or category code, purchase category, payment card account, receipt identifier,
18 transaction ID, other custom category (e.g., merchants within a zip code, purchases
19 exceeding a threshold amount, tax deductible purchase, and/or the like), and/or the like
20 (e.g., FIGURES 7C and 7F). In a further implementation, the request may also specify a
21 report type (e.g., list of results, custom or default). At 654, the cloud server 625b may
22 receive the request. At 656, the cloud server 625b may parse the request to extract the
23 one or more query parameters. At 658, the cloud server 625b may take the query

1 parameters and construct a query for execution. At 660, the cloud server 625b may
2 execute the query on one or more databases and/or tables (e.g., 919c, FIGURE 9). After
3 executing the query, at 668, the cloud server 625b may obtain query results that include
4 receipts having receipt parameters that match the query parameters. In one
5 embodiment, at 670, the cloud server 625b may determine the type of report requested
6 and send results to the client 605b accordingly. For example, if the user requested a list
7 of results, the cloud server 625b may send a list of matching receipt identifiers to the
8 client 605b at 672. The client 605b may receive the list at 674. In some
9 implementations, the client 605b may obtain the receipt location status (e.g., local,
10 cloud) at 676 by performing a search of the receipts stored in the client 605b. At 678, the
11 client 605b may display the results, along with the receipt location status, concluding
12 the process at 698.

13 **[0068]** In one implementation, the user may request a detailed report at 670. If
14 the user has provided custom report parameters at 680, the cloud server 625b may
15 obtain the custom report parameters at 686. The custom report parameters may be
16 included in the receipt request message and/or may be stored in a report database (e.g.,
17 919g, FIGURE 9). Using the custom report parameters, at 688, the cloud server 625b
18 may extract custom report parameter values from the receipts obtained as query results.
19 At 690, the cloud server 625b may send report data including custom report parameter
20 values along with receipt identifiers to the user's client 605b. At 692, the client 605b
21 may receive the report data. At 694, the user's client 605b may generate a report in the
22 format specified by the user's preference settings. In one implementation, the
23 formatting may be facilitated by the receipt formatting engine described with reference
24 to FIGURE 1B. At 696, the user's client 605b may display the formatted report to the

1 user. In one implementation, the formatted report may be displayed within the RM
2 application interface. In another implementation, the user may be provided an option to
3 open the formatted report in other applications such as iBooks, Pages, and/or the like
4 depending on the report format. The process may then conclude at 696.

5 **[0069]** In one implementation, if the user has not provided custom report
6 parameters, the cloud server 625b may select default report parameters at 680. In one
7 implementation, the selection of default report parameters may be based on target
8 and/or requesting client capabilities. At 682, the cloud server 625b may obtain the
9 default report parameters. As in the case when custom parameters are available, at 684,
10 the cloud server 625b may extract default report parameter values from the receipts in
11 the query result. Similarly, at 690, the cloud server 625b may send report data including
12 the matching receipt identifiers and extracted default parameter values to the user's
13 client 605b. The user's client 605b may then process the receipt data as described with
14 respect to 692, 694 and 696.

15 **[0070]** FIGURES 7A-F show schematic diagrams illustrating exemplary RM
16 application user interfaces in some embodiments of the ERM. As shown, various aspects
17 of the RM application features and functionalities in various implementations are
18 illustrated in these figures. Referring to FIGURE 7A, the user interface (UI) 706 may be
19 that of an email application (e.g., "Mail" in iOS, "Gmail" in Android, and/or the like)
20 showing the contents of an email. In one implementation, as indicated by the email data
21 706a, the email may be sent by or on behalf of a merchant (e.g., Zstore) to the email
22 owner (e.g., J. Doe) after conducting a transaction with the merchant. As shown, the
23 email may further comprise a receipt attachment 706b. When the receipt attachment

1 706b is selected, a menu similar to that shown in the UI 708 may be launched. The
2 menu may include several buttons such as a quick look button 708a that allows the user
3 to view the attachment 706b, an open in receipt manager button 708b that allows the
4 user to open the attachment in the RM application, an add to receipt manager button
5 708c that allows the user to add the attachment to the RM application and a cancel
6 button 708d that takes the user back to the UI 706. Other options may also be available,
7 such as may depend on the format of the attachment.

8 **[0071]** Referring to FIGURE 7B, the RM application UI is illustrated. As shown,
9 the UI may include several tab bar icons 705, 715, 725, 735 and 745 for various purposes.
10 The UI 710, as shown, illustrates the display panel and options available when the add
11 receipt tab bar icon 705 is selected by the user. The user may add a receipt to the RM
12 application by selecting any of the options provided. For example, the user may select
13 the option 710a to take a photo of a receipt using his or her portable device and add the
14 photo to the RM application. The user may also select option 710b to choose a file from a
15 saved location and add the chosen file to the RM application. For example, receipts in
16 text, PDF or other formats may be saved in the portable device file system or
17 applications such as iBooks. The user may use the option 710b to navigate to the
18 location or application and select the desired receipt to import it to the RM application.
19 In addition to the features described with respect to FIGURE 7A, the user may also
20 select choose from email option 710c to go to the application and select the desired
21 attachment.

22 **[0072]** Referring to FIGURE 7C, example UI 712 and 714 associated with the
23 receipt finder tab icon 715 are illustrated. As shown in UI 712, the receipt finder tab

1 provides several selection criteria that the user may utilize to find a desired receipt. For
2 example, the user may specify a transaction date or a range using option 712a, one or
3 more merchant names using option 712b, purchase category 712c (e.g., grocery, tax,
4 healthcare, miscellaneous, and/or the like), payment card or account 712d, custom
5 search criteria 712e (e.g., merchants within a zip code, purchases exceeding a threshold
6 amount, and/or the like), and/or the like. In one implementation, the user may also
7 enter a receipt identifier, a list of receipt identifiers (e.g., separated by space, comma or
8 semicolon), a range of receipt identifiers at 712f as a search criteria. The user may then
9 select the search button 712g to find receipts and/or receipt identifiers matching the
10 provided search criteria. In some implementations, receipts may include coupons,
11 codes, offers, and/or the like. The value of these coupons, codes, offers, and/or the like
12 may be dynamic and may vary depending on the purchase amount, date and/or time of
13 redemption, purchase item, purchase location, and/or the like. In one implementation,
14 the RM application may extract details relating to such information and mark and/or
15 categorize receipts including such information under a separate category (e.g., offers).
16 In a further implementation, when the offer is no longer valid, the receipts may be de-
17 categorized, such that the offers category includes receipts with valid offers. The
18 categorization of receipts with offers may assist the user in looking up any offers relating
19 to, for example a merchant, prior to making a purchase with the merchant.

20 **[0073]** The UI 714 illustrates an example display panel showing the search results.
21 In one implementation, the search results may be provided as a listing arranged by, for
22 example, transaction date 714a corresponding to the search parameters 712a. The listing
23 may include a receipt identifier 714b, date of transaction 714c, merchant information
24 714d, transaction amount 714e, return eligibility status indicator 714f, receipt location

1 indicator 714g, and/or the like. In one implementation, the return eligibility status
2 indicator 714f may indicate whether the items purchased are eligible for return. For
3 example, for the receipt with identifier 123, the return eligibility status indicator 714f, as
4 shown, may indicate that a return is no longer possible (e.g., purchase occurred more
5 than 90 days before), while the receipt with return eligibility status indicators 714f for
6 receipts with identifiers 789 and 567 may indicate that the purchases are eligible for
7 return. In one implementation, the return eligibility determination may be based on the
8 examination of the merchant's rules and conditions for returns. In one implementation,
9 the receipt location indicator 714c may indicate whether a copy of the receipt is available
10 locally (e.g., "L" indicator) or in the cloud (e.g., "C" indicator).

11 **[0074]** In one implementation, in addition to the search results displayed in UI
12 714, the RM application may also display receipts that are related to the receipts in the
13 search results. For example, a user may return one or more items associated with a
14 receipt for refund. The RM application may associate the original purchase receipt with
15 the receipt for refund, such that the user has a complete overview of the purchase and
16 refund. The association between receipts may also assist the RM application in
17 providing an actual spend amount, taking into account the refund amount. In one
18 implementation, the relatedness may be established based on receipt data, and/or user
19 input.

20 **[0075]** When one of the search results (e.g., receipt 789) is selected from the UI
21 714, the UI 716 of FIGURE 7D may be displayed. The UI 716 may show the copy of the
22 original (or cloud or TPS generated) receipt 716b for the transaction. The UI may also
23 include an option to view the return policy for the merchant via the navigation bar icon

1 716a. In one implementation, the UI may include tab bar icons 716c, 716d and 716e for
2 processing the receipt. For example, when the tab bar icon 716c is selected, the UI 718
3 may be displayed. As shown, UI 718 may include a menu including several options may
4 be displayed. For example, the menu may include an option 718a to email the receipt
5 being viewed, an option 718b to print the receipt, option 718c to sync the receipt, an
6 option 718d to cancel and return to UI 716. In one implementation, the sync receipt
7 option 718c may be displayed only when the receipt location indicator 714c (see UI 714,
8 FIGURE 7C) indicates that the receipt is stored locally. If the receipt is stored in the
9 cloud, the option 718c may be modified to an option to download receipt, such that the
10 receipt is accessible to the user even when the portable device is offline. Referring to UI
11 716, the user may use the left and right arrow tab bar icons 716d to view other receipts in
12 the listing of search results (see UI 714, FIGURE 7C), and the tab bar icon 716e to delete
13 the receipt currently displayed in the display panel. In one implementation, icons for
14 viewing the back of the receipt, rotating the receipt, zooming in or out and/or the like
15 may be available in the RM application.

16 **[0076]** Referring to FIGURE 7E, UI 720 and 722 associated with the settings tab
17 icon 725 illustrate various options for setting up the preferences for receipt management
18 in the RM application. Referring to UI 720, in one implementation, the user may use
19 option 720a to select payment card accounts or issuers with which the user wishes to
20 link receipts. For example, when the payment cards "VISA *6789" and "Visa Signature"
21 are selected as shown, the RM application establishes a link between the issuers of the
22 selected payment cards and receipts associated with the selected payment cards. In one
23 implementation, establishing the link may include contacting the issuer on behalf of the
24 user, providing user authorized information to the user, providing API keys and tokens,

1 and/or the like. In one implementation, the user may be provided an option 720b for
2 automatic sync, which when turned on, may cause the RM application to automatically
3 sync receipts received by the portable device to the cloud. In another implementation,
4 an option 720c may be provided, which when turned on, may cause the RM application
5 to automatically categorize any receipts added to the RM application in one or more
6 user-defined or default categories (e.g., healthcare, grocery, tax, school, and/or the like).
7 In a further implementation, the user may select one or more categories listed under
8 option 720d in which the receipts may be categorized. In one implementation, the RM
9 application may prompt the user to enter a category for a receipt whenever a receipt for
10 a transaction is received by the cloud server. In one implementation, such prompting
11 may be in the form of an alert to the user. The alert may indicate an occurrence of a
12 transaction. The alert may immediately inform the user of the transaction, and if the
13 transaction is unauthorized, the user may take steps to address the fraud. In one
14 implementation, a copy of the receipt may be provided with the alert. The user may save
15 his or her setting preferences by selecting the save icon 720e in the navigation bar.

16 **[0077]** Referring to UI 722, the RM application may also include an option 722a
17 for customizing receipt display. For example, the user may select one or more fields
18 722b-i for display in any receipt listing (such as the listing shown in UI 714, FIGURE 7C,
19 FIGURE 8A). In one implementation, the user may have the option to select a receipt ID
20 field 722b, date 722c, amount 722d, merchant 722e, returns 722f, purchase category
21 722g, receipt location 722h, optimized for portable device 722i, and/or the like. In a
22 further implementation, the optimized for portable device 722i option may include a list
23 of pre-configured fields suitable for display in the portable device (e.g., an iPhone with a
24 certain display area, an iPad with a certain display area, display orientation, and/or the

1 like). These customizations may be saved by selecting the save icon 722j on the
2 navigation bar. In one implementation, selection of the sync tab bar icon 735 may cause
3 the RM application to identify all receipts stored locally that have not been synced and
4 sync them with the cloud server. In a further implementation, a listing of local receipts
5 may be displayed for the user to review, select or deselect, and confirm sync.

6 **[0078]** Referring to FIGURE 7F, UI 724 and 725 associated with the report tab
7 icon 745 illustrate various options for report generation in the RM application. In one
8 implementation, UI 724 may provide an option 724a to choose report criteria. These
9 options may include, for example, groceries 724b, tax 724c, miscellaneous 724d,
10 healthcare 724e, merchant 724f, and/or the like, as well as an option to add a new
11 category 724g. The UI may also provide an option 724h to choose a report format.
12 Examples of report format may include, a listing 724i, a summary format 724j, a
13 spreadsheet format 724k, and/or the like. In a further implementation, default report
14 templates may be provided for selection by the user. The user may modify a default
15 report template and save the modified template as a new template. In one
16 implementation, the user may also add custom templates (e.g., custom expense report
17 template) to the report format. In a further implementation, copies of the templates may
18 be maintained at the cloud server such that the user does not need to save them in the
19 memory of his or her portable device. In one implementation, the listing 724i may be a
20 listing of receipts by receipt identifier with a link or an icon that directs the user to the
21 receipt. The summary format 724j may be a summary listing such as the one shown in
22 UI 714 (FIGURE 7C) and item 800 (FIGURE 8A). The spreadsheet format 724k may be
23 a table format such as UI 726. The UI may also include a get report button 724l that
24 causes the RM application to obtain or generate a report in the user-specified format

1 including receipt data matching the user-specified reporting criteria. The report settings
2 thus configured may be saved by selecting the save button 724m on the navigation bar.

3 **[0079]** When the get report button 724l is selected from UI 724, the RM
4 application may display UI 726. UI 726, as shown, may include a tab for each reporting
5 criteria selected. For example, as groceries criterion 724b is selected in UI 724, a
6 groceries tab 726b may be displayed. The user may also add additional reporting criteria
7 directly from UI 726 by selecting the tab 726d. As shown, a tax tab 726c has been added
8 from UI 726. Each tab, may include a table 726g including fields customized by the user
9 (e.g., using UI 722, FIGURE 7E). The table may include options to add a column or row
10 by selecting an add column icon 726e or an add row icon 726f. In one implementation,
11 the user may select a data field for the new column or row and select refresh button
12 726k to obtain data pertaining to the just added data field. The table may also include
13 options to select a cell or a group of cells as shown by a selection box 726h. In one
14 implementation, when a selection box is drawn, a menu option 726i may be displayed.
15 The menu option 726i may include options to copy, cut, paste, delete, merge, fill, format,
16 create chart, and/or the like. When the create chart option is selected, a chart option
17 menu (not shown) may be displayed. The user may select a suitable chart type (e.g., bar,
18 column, pie, and/or the like) and a chart such as chart 726j may be displayed. The
19 underlying data for the chart may be derived from the data in the selection area 726h. In
20 one implementation, the user may select a save button 726l to save the table and chart,
21 an export button 726m to export the table and/or chart to another application or as a
22 file (e.g., PDF, Excel, text, and/or the like), a print button 726n to print the table and/or
23 chart, an email button 726o to email the report to one or more recipients, and/or the
24 like.

1 **[0080]** As discussed previously, users may use the reporting facilities of the RM
2 application to request various reports generated in a selected format or using a
3 template. Such reports may be useful for various purposes, including management,
4 tracking, and record keeping of personal finances, business expenses, budgeting, and/or
5 the like. For example, in one implementation, a user may desire to obtain a report for all
6 education related transactions conducted in the previous year. In situations where
7 education related expenses may have tax benefits or be tax deductible, the report may be
8 used to ascertain applicable tax credits, and the receipts for such transactions may be
9 available for any tax audits. In another implementation, the reporting facilities of the
10 ERM may assist in the preparation of expense reports for reimbursement, insurance
11 claim reports, and/or the like. For example, in one implementation, a user may retrieve
12 receipts that are categorized under work expenses and generate an expense report (e.g.,
13 using a default template or custom template accepted and/or approved by an employer).
14 In some implementations, the user may retrieve receipts for all transactions conducted
15 during a business trip (e.g., using search parameters such as date range, geographic
16 location, and/or the like). They user may then deselect any receipts that the user may
17 not wish to be reimbursed for, generate a report in a desired format and/or template,
18 add notes or comments and send the report to desired recipients. In one
19 implementation, the RM application may be integrated with applications such as tax
20 preparation software, human resources software, and/or the like to allow effective
21 importing/exporting of receipt and/or transaction data and reports.

22 **[0081]** FIGURE 8A shows a screenshot diagram illustrating an exemplary RM
23 application user interface in some embodiments of the ERM. As shown, the RM
24 application UI 800 provides columns including fields reflecting the user's selectable

1 preferences for receipt information along with a receipt identifier column. For example,
2 these selectable fields may include the date of the purchase, the amount of the purchase,
3 the merchant where the purchase was made and return period. The aforementioned
4 fields are shown only as an example and any information included on the receipt may be
5 utilized to form a field. If information relating to a field is not provided within a
6 particular electronic receipt, the field may be left blank or may include an indication
7 (e.g., N/A) that the information was not provided in the receipt.

8 **[0082]** In addition to receipt information, the RM application may include
9 additional functionality, such as actions which may be performed on the receipt. For
10 example, the user may print the listing of receipts and/or an individual receipt through
11 selection of a printer icon 804. The user may interface the portable device with a
12 computer (not shown) in communication with a printer or wirelessly, such as through a
13 WLAN to a printer. In one embodiment, when the user selects the printer icon 804 to
14 print the listing of receipts, the user may be prompted to re-select the formatting of the
15 receipts. For example, it may be that due to the size of the display on the portable
16 device, the user may only include four fields of information for the receipts displayed
17 thereon. However, when printing, the user may wish to include additional fields of
18 receipt information.

19 **[0083]** As shown in FIGURE 8A, the user may also select to transmit, such as by
20 text message or email 806 the receipt and/or listing of receipts to a recipient or delete
21 810 the receipt(s). In one embodiment, the user may select (e.g., highlight) 802
22 individual receipts or multiple receipts to perform any of the functions 804, 806 and
23 808. In another embodiment, with no selection of receipts by the user, the application

1 may print, email or delete the displayed listing (e.g. all or at least more than one) of the
2 receipts. The RM application UI 800 may also include an exit 810 function, which
3 allows a user to exit the application. In another embodiment, as discussed with
4 reference to FIGURE 7C, the RM may include a search function (not shown), which
5 allows a user to enter a portion of information found in a selectable field to locate a
6 receipt. For example, the search function may automatically provide the user with a text
7 field to enter the receipt identifier number, a merchant name, date, and/or the like. The
8 RM may return a listing of receipts meeting that criteria.

9 **[0084]** When a user is viewing the listing of receipts in the RM application UI
10 800, the user may select a particular receipt for viewing. As shown in FIGURE 8A, only
11 preferred fields may be shown. However, a user may also wish to view the original
12 receipt in order to review particular item costs, and/or the like. Accordingly, the user
13 may select a listed receipt 802, and the identifier (i.e., the identifier associated with the
14 receipt 802) is utilized to retrieve the original receipt from the portable device memory
15 (or from the cloud server) and display the original receipt to the user.

16 **[0085]** FIGURE 8B shows a screenshot diagram illustrating an exemplary original
17 receipt in some embodiments of the ERM. The original receipt 805 may be in any
18 format which was provided by the merchant and may include information such as the
19 merchant name, address, store number, date/time, product details in the transaction,
20 and/or the like. In one implementation, the receipt may be converted to a standard
21 format (e.g., images may be converted to PDF for text recognition). In one
22 implementation, receipts may be processed using optical character recognition (OCR) in
23 order to extract data from the receipts. The receipt may include an identifier 812, which

1 may be generated by the receipt identifier generation engine 154 discussed in reference
2 to FIGURE 1B. While viewing the original receipt 805, the user may still have the
3 options of printing 816, emailing 818 and deleting 820 the receipt 805. Additionally, the
4 user may have the option to return 814 to the previous display 800 (e.g., menu),
5 including the listing of receipts.

6 **[0086]** FIGURE 8C shows a screenshot diagram illustrating an exemplary account
7 statement in some embodiments of the ERM. In addition to being able to view the
8 receipt in the RM, the user may decide to delete receipts frequently and/or rely on the
9 issuer and/or CCA of an account to additionally maintain receipt data. In such a case,
10 the RM application may be programmed with instructions to forward receipt related
11 data and/or a copy of the original receipt to the account issuer and/or CCA when an
12 electronic receipt is received on the portable device. In some implementations, as
13 discussed with respect to FIGURES 2A and 4, receipt and/or receipt data may be synced
14 to the cloud server and the cloud server may share the receipt data (e.g., receipt
15 identifier) with the issuer and/or CCA. The receipt data can include a hyperlink of the
16 identifier 822 generated on the portable device. In one implementation, as previously
17 discussed, the identifier may be generated by the cloud server or the TPS server.
18 Accordingly, when a user views an account statement 815 the hyperlink may be utilized
19 to retrieve a copy of the original receipt (e.g., from local memory or database associated
20 with the cloud server) and to display that copy to the user.

21 **[0087]** In another embodiment, if the user is viewing the account statement 815
22 on the portable device, the identifier 822 hyperlink may be used to call the original
23 receipt from the memory of the portable device for viewing or to run the receipt

1 application and display a listing of receipts, highlighting the selected receipt. In an
2 alternative embodiment, the identifier 822 on the account statement 815 may be
3 generated by the CCA or issuer of the account and may differ from the identifier created
4 on the user's portable device. In some embodiments, an icon may be provided in place of
5 an identifier.

6 **[0088]** As previously described, the receipt identifier generated on the receipt
7 identifier generation engine 154 by the user's portable device 100 may be appended to
8 the original receipt and utilized in the user's account statement for cross-referencing
9 with the receipts in the RM application illustrated in FIGURE 8A. The identifier may be
10 used in the statement to call a local copy of the receipt for viewing, such as in the case
11 where the user accesses his or her account statement (e.g., VISA) via his or her portable
12 device. In another embodiment, the identifier may be used to view the receipt in another
13 browser window, such as when the copy is stored by the issuer and/or CCA or in a cloud.

14 **[0089]** In one embodiment, the account issuer or CCA may also include a receipt
15 identifier generation engine, which may assign a new receipt identifier to the receipt for
16 accessing the receipt from the user's statement. In some embodiments, the user's RM
17 application may automatically insert the identifier generated on the portable device into
18 the copy of the original receipt forwarded to the issuer and/or CCA, or synced with the
19 cloud server. This may aid the user in finding the receipt more easily on his or her
20 portable device through the RM application.

21 **[0090]** FIGURES 8D-E show screenshot diagram illustrating exemplary user
22 account application in some embodiments of the ERM. As shown, UI 825 and 835
23 illustrate example user interfaces of a user account with a TPS server (e.g., an issuer, a

1 CCA, merchants that issue payment cards, and/or the like) that is synced to the user's
2 portable device and/or cloud server as discussed previously. In one implementation, UI
3 825 may display payment and user information 825a, fields of transaction information
4 825b (e.g., date, amount, description), a sorting option 825c, and/or the like. For
5 example, recent transaction details may be listed in the display area of the UI. Each
6 transaction may be identified by a transaction date 825d, merchant information (e.g.,
7 name, city, state, phone number, and/or the like) 825e, an icon or link 825f for a receipt
8 for the transaction, a transaction amount 825g, and/or the like. When the receipt icon
9 825f is selected, UI 835 may be displayed. As shown, the UI may include an overlay
10 835a in which the receipt 835b associated with the selected icon may be displayed. The
11 overlay may also include options to print 835c, save 835d, email 835e, and/or the like.
12 The user may simply close the overlay 835a to return back to UI 825.

13 **[0091]** Referring to FIGURE 8E, in one implementation, a UI 845 may be
14 displayed when the user accesses his or her account. As shown, a number of receipt
15 icons 845a may be displayed next to a transaction. Such a situation may occur when
16 there is incomplete data to definitively associate a receipt to a transaction. These icons
17 may include receipts that are most likely related to the transaction. When any one of the
18 icons 845a is selected, UI 855 may be displayed to the user. As shown, the UI may
19 include an overlay 855a that may display all three receipts 855b, 855c and 855d that are
20 most likely associated with the transaction. In one implementation, the user may review
21 the receipts and select a receipt to link it to the transaction. As shown, when the user
22 selects receipt 855b, a link option 855e may pop up. The user may select the link option
23 to link the receipt to the transaction. In one implementation, the user may be requested
24 to confirm the linking, at which time, the user may either confirm or cancel the linking.

1 **[0092]** In light of the aforementioned detailed description, it should be noted that
2 various aspects of the ERM may allow a user to view, maintain, organize and manage
3 receipts. Additionally, facilities of the ERM allow users to effectively manage their
4 financing of accounts used in a transaction through effective and quick viewing of
5 receipts associated with those transactions. As discussed, various aspects of the ERM
6 include a centralized cloud storage server where receipts are stored, and receipt
7 identifiers that are shared among users, issuers, other TPS server entities, and/or the
8 like. Such facilities of the ERM may reduce redundancy of data stored at such entities.
9 Additionally, as receipts are synced to the cloud server, and may be efficiently retrieved
10 using receipt identifiers or queries, receipts need not be stored locally in the portable
11 device and memory in the portable device may be made available for other purposes.

12 **[0093]** Furthermore, in some embodiments, ERM may act as a receipt aggregator,
13 aggregating receipts from all transactions (e.g., at PoS terminal, online, device to device,
14 and/or the like), regardless of the payment form (e.g., credit, debit, prepaid, cash, check,
15 and/or the like), and providing users access to aggregate transaction data. Such
16 aggregate transaction data may be used to generate various reports and perform
17 analyses on spending. For example, users may configure the RM application to track
18 spending on one or more desired criteria (e.g., clothing merchandize, healthcare,
19 month, and/or the like) and alert the user upon or prior to reaching a user-specified
20 threshold (e.g., \$500 dollars per month, \$5000 deductible). Such aggregation facilities
21 reduce the number of actions required to generate reports and perform analyses on
22 aggregate transaction data.

ERM Controller

1
2 **[0094]** FIGURE 9 shows a block diagram illustrating example aspects of a ERM
3 controller 901. In this embodiment, the ERM controller 901 may serve to aggregate,
4 process, store, search, serve, identify, instruct, generate, match, and/or facilitate
5 interactions with a computer through various technologies, and/or other related data.

6 **[0095]** Users, e.g., 933a, which may be people and/or other systems, may engage
7 information technology systems (e.g., computers) to facilitate information processing.
8 In turn, computers employ processors to process information; such processors 903 may
9 be referred to as central processing units (CPU). One form of processor is referred to as
10 a microprocessor. CPUs use communicative circuits to pass binary encoded signals
11 acting as instructions to enable various operations. These instructions may be
12 operational and/or data instructions containing and/or referencing other instructions
13 and data in various processor accessible and operable areas of memory 929 (e.g.,
14 registers, cache memory, random access memory, etc.). Such communicative
15 instructions may be stored and/or transmitted in batches (e.g., batches of instructions)
16 as programs and/or data components to facilitate desired operations. These stored
17 instruction codes, e.g., programs, may engage the CPU circuit components and other
18 motherboard and/or system components to perform desired operations. One type of
19 program is a computer operating system, which, may be executed by CPU on a
20 computer; the operating system enables and facilitates users to access and operate
21 computer information technology and resources. Some resources that may be employed
22 in information technology systems include: input and output mechanisms through
23 which data may pass into and out of a computer; memory storage into which data may

1 be saved; and processors by which information may be processed. These information
2 technology systems may be used to collect data for later retrieval, analysis, and
3 manipulation, which may be facilitated through a database program. These information
4 technology systems provide interfaces that allow users to access and operate various
5 system components.

6 **[0096]** In one embodiment, the ERM controller 901 may be connected to and/or
7 communicate with entities such as, but not limited to: one or more users from user
8 input devices 911; peripheral devices 912; an optional cryptographic processor device
9 928; and/or a communications network 913. For example, the ERM controller 901 may
10 be connected to and/or communicate with users, e.g., 933a, operating client device(s),
11 e.g., 933b, including, but not limited to, personal computer(s), server(s) and/or various
12 mobile device(s) including, but not limited to, cellular telephone(s), smartphone(s) (e.g.,
13 iPhone®, Blackberry®, Android OS-based phones etc.), tablet computer(s) (e.g., Apple
14 iPad™, HP Slate™, Motorola Xoom™, etc.), eBook reader(s) (e.g., Amazon Kindle™,
15 Barnes and Noble's Nook™ eReader, etc.), laptop computer(s), notebook(s), netbook(s),
16 gaming console(s) (e.g., XBOX Live™, Nintendo® DS, Sony PlayStation® Portable,
17 etc.), portable scanner(s), and/or the like.

18 **[0097]** Networks are commonly thought to comprise the interconnection and
19 interoperation of clients, servers, and intermediary nodes in a graph topology. It should
20 be noted that the term “server” as used throughout this application refers generally to a
21 computer, other device, program, or combination thereof that processes and responds to
22 the requests of remote users across a communications network. Servers serve their
23 information to requesting “clients.” The term “client” as used herein refers generally to a

1 computer, program, other device, user and/or combination thereof that is capable of
2 processing and making requests and obtaining and processing any responses from
3 servers across a communications network. A computer, other device, program, or
4 combination thereof that facilitates, processes information and requests, and/or
5 furthers the passage of information from a source user to a destination user is
6 commonly referred to as a “node.” Networks are generally thought to facilitate the
7 transfer of information from source points to destinations. A node specifically tasked
8 with furthering the passage of information from a source to a destination is commonly
9 called a “router.” There are many forms of networks such as Local Area Networks
10 (LANs), Pico networks, Wide Area Networks (WANs), Wireless Networks (WLANs), etc.
11 For example, the Internet is generally accepted as being an interconnection of a
12 multitude of networks whereby remote clients and servers may access and interoperate
13 with one another.

14 **[0098]** The ERM controller 901 may be based on computer systems that may
15 comprise, but are not limited to, components such as: a computer systemization 902
16 connected to memory 929.

17 **Computer Systemization**

18 **[0099]** A computer systemization 902 may comprise a clock 930, central
19 processing unit (“CPU(s)” and/or “processor(s)” (these terms are used interchangeably
20 throughout the disclosure unless noted to the contrary)) 903, a memory 929 (e.g., a read
21 only memory (ROM) 906, a random access memory (RAM) 905, etc.), and/or an
22 interface bus 907, and most frequently, although not necessarily, are all interconnected
23 and/or communicating through a system bus 904 on one or more (mother)board(s) 902

1 having conductive and/or otherwise transportive circuit pathways through which
2 instructions (e.g., binary encoded signals) may travel to effectuate communications,
3 operations, storage, etc. The computer systemization may be connected to a power
4 source 986; e.g., optionally the power source may be internal. Optionally, a
5 cryptographic processor 926 and/or transceivers (e.g., ICs) 974 may be connected to the
6 system bus. In another embodiment, the cryptographic processor and/or transceivers
7 may be connected as either internal and/or external peripheral devices 912 via the
8 interface bus I/O. In turn, the transceivers may be connected to antenna(s) 975, thereby
9 effectuating wireless transmission and reception of various communication and/or
10 sensor protocols; for example the antenna(s) may connect to: a Texas Instruments
11 WiLink WL1283 transceiver chip (e.g., providing 802.11n, Bluetooth 3.0, FM, global
12 positioning system (GPS) (thereby allowing ERM controller to determine its location));
13 Broadcom BCM4329FKUBG transceiver chip (e.g., providing 802.11n, Bluetooth 2.1 +
14 EDR, FM, etc.), BCM28150 (HSPA+) and BCM2076 (Bluetooth 4.0, GPS, etc.); a
15 Broadcom BCM4750IUB8 receiver chip (e.g., GPS); an Infineon Technologies X-Gold
16 618-PMB9800 (e.g., providing 2G/3G HSDPA/HSUPA communications); Intel's XMM
17 7160 (LTE & DC-HSPA), Qualcomm's CDMA(2000), Mobile Data/Station Modem,
18 Snapdragon; and/or the like. The system clock may have a crystal oscillator and
19 generates a base signal through the computer systemization's circuit pathways. The
20 clock may be coupled to the system bus and various clock multipliers that will increase
21 or decrease the base operating frequency for other components interconnected in the
22 computer systemization. The clock and various components in a computer
23 systemization drive signals embodying information throughout the system. Such
24 transmission and reception of instructions embodying information throughout a

1 computer systemization may be referred to as communications. These communicative
2 instructions may further be transmitted, received, and the cause of return and/or reply
3 communications beyond the instant computer systemization to: communications
4 networks, input devices, other computer systemizations, peripheral devices, and/or the
5 like. It should be understood that in alternative embodiments, any of the above
6 components may be connected directly to one another, connected to the CPU, and/or
7 organized in numerous variations employed as exemplified by various computer
8 systems.

9 **[00100]** The CPU comprises at least one high-speed data processor adequate to
10 execute program components for executing user and/or system-generated requests.
11 Often, the processors themselves will incorporate various specialized processing units,
12 such as, but not limited to: floating point units, integer processing units, integrated
13 system (bus) controllers, logic operating units, memory management control units, etc.,
14 and even specialized processing sub-units like graphics processing units, digital signal
15 processing units, and/or the like. Additionally, processors may include internal fast
16 access addressable memory, and be capable of mapping and addressing memory 929
17 beyond the processor itself; internal memory may include, but is not limited to: fast
18 registers, various levels of cache memory (e.g., level 1, 2, 3, etc.), RAM, etc. The
19 processor may access this memory through the use of a memory address space that is
20 accessible via instruction address, which the processor can construct and decode
21 allowing it to access a circuit path to a specific memory address space having a memory
22 state/value. The CPU may be a microprocessor such as: AMD's Athlon, Duron and/or
23 Opteron; ARM's classic (e.g., ARM7/9/11), embedded (Cortex-M/R), application
24 (Cortex-A), embedded and secure processors; IBM and/or Motorola's DragonBall and

1 PowerPC; IBM's and Sony's Cell processor; Intel's Atom, Celeron (Mobile), Core
2 (2/Duo/i3/i5/i7), Itanium, Pentium, Xeon, and/or XScale; and/or the like processor(s).
3 The CPU interacts with memory through instruction passing through conductive and/or
4 transportive conduits (e.g., (printed) electronic and/or optic circuits) to execute stored
5 instructions (i.e., program code). Such instruction passing facilitates communication
6 within the ERM controller and beyond through various interfaces. Should processing
7 requirements dictate a greater amount speed and/or capacity, distributed processors
8 (e.g., Distributed ERM), mainframe, multi-core, parallel, and/or super-computer
9 architectures may similarly be employed. Alternatively, should deployment
10 requirements dictate greater portability, smaller mobile devices (e.g., smartphones,
11 Personal Digital Assistants (PDAs), etc.) may be employed.

12 **[00101]** Depending on the particular implementation, features of the ERM may be
13 achieved by implementing a microcontroller such as CAST's R8051XC2 microcontroller;
14 Intel's MCS 51 (i.e., 8051 microcontroller); and/or the like. Also, to implement certain
15 features of the ERM, some feature implementations may rely on embedded
16 components, such as: Application-Specific Integrated Circuit ("ASIC"), Digital Signal
17 Processing ("DSP"), Field Programmable Gate Array ("FPGA"), and/or the like
18 embedded technology. For example, any of the ERM component collection (distributed
19 or otherwise) and/or features may be implemented via the microprocessor and/or via
20 embedded components; e.g., via ASIC, coprocessor, DSP, FPGA, and/or the like.
21 Alternately, some implementations of the ERM may be implemented with embedded
22 components that are configured and used to achieve a variety of features or signal
23 processing.

1 **[00102]** Depending on the particular implementation, the embedded components
2 may include software solutions, hardware solutions, and/or some combination of both
3 hardware/software solutions. For example, ERM features discussed herein may be
4 achieved through implementing FPGAs, which are a semiconductor devices containing
5 programmable logic components called "logic blocks", and programmable
6 interconnects, such as the high performance FPGA Virtex series and/or the low cost
7 Spartan series manufactured by Xilinx. Logic blocks and interconnects can be
8 programmed by the customer or designer, after the FPGA is manufactured, to
9 implement any of the ERM features. A hierarchy of programmable interconnects allow
10 logic blocks to be interconnected as needed by the ERM system designer/administrator,
11 somewhat like a one-chip programmable breadboard. An FPGA's logic blocks can be
12 programmed to perform the operation of basic logic gates such as AND, and XOR, or
13 more complex combinational operators such as decoders or simple mathematical
14 operations. In most FPGAs, the logic blocks also include memory elements, which may
15 be circuit flip-flops or more complete blocks of memory. In some circumstances, the
16 ERM may be developed on regular FPGAs and then migrated into a fixed version that
17 more resembles ASIC implementations. Alternate or coordinating implementations may
18 migrate ERM controller features to a final ASIC instead of or in addition to FPGAs.
19 Depending on the implementation all of the aforementioned embedded components and
20 microprocessors may be considered the "CPU" and/or "processor" for the ERM.

21

Power Source

22 **[00103]** The power source 986 may be of any standard form for powering small
23 electronic circuit board devices such as the following power cells: alkaline, lithium

1 hydride, lithium ion, lithium polymer, nickel cadmium, solar cells, and/or the like.
2 Other types of AC or DC power sources may be used as well. In the case of solar cells, in
3 one embodiment, the case provides an aperture through which the solar cell may
4 capture photonic energy. The power cell 986 is connected to at least one of the
5 interconnected subsequent components of the ERM thereby providing an electric
6 current to all the interconnected components. In one example, the power source 986 is
7 connected to the system bus component 904. In an alternative embodiment, an outside
8 power source 986 is provided through a connection across the I/O 908 interface. For
9 example, a USB and/or IEEE 1394 connection carries both data and power across the
10 connection and is therefore a suitable source of power.

Interface Adapters

11
12 **[00104]** Interface bus(es) 907 may accept, connect, and/or communicate to a
13 number of interface adapters, frequently, although not necessarily in the form of
14 adapter cards, such as but not limited to: input output interfaces (I/O) 908, storage
15 interfaces 909, network interfaces 910, and/or the like. Optionally, cryptographic
16 processor interfaces 927 similarly may be connected to the interface bus. The interface
17 bus provides for the communications of interface adapters with one another as well as
18 with other components of the computer systemization. Interface adapters are adapted
19 for a compatible interface bus. Interface adapters may connect to the interface bus via
20 expansion and/or slot architecture. Various expansion and/or slot architectures may be
21 employed, such as, but not limited to: Accelerated Graphics Port (AGP), Card Bus,
22 ExpressCard, (Extended) Industry Standard Architecture ((E)ISA), Micro Channel
23 Architecture (MCA), NuBus, Peripheral Component Interconnect (Extended) (PCI(X)),

1 PCI Express, Personal Computer Memory Card International Association (PCMCIA),
2 Thunderbolt, and/or the like.

3 **[00105]** Storage interfaces 909 may accept, communicate, and/or connect to a
4 number of storage devices such as, but not limited to: storage devices 914, removable
5 disc devices, and/or the like. Storage interfaces may employ connection protocols such
6 as, but not limited to: (Ultra) (Serial) Advanced Technology Attachment (Packet
7 Interface) ((Ultra) (Serial) ATA(PI)), (Enhanced) Integrated Drive Electronics ((E)IDE),
8 Institute of Electrical and Electronics Engineers (IEEE) 1394, Ethernet, fiber channel,
9 Small Computer Systems Interface (SCSI), Thunderbolt, Universal Serial Bus (USB),
10 and/or the like.

11 **[00106]** Network interfaces 910 may accept, communicate, and/or connect to a
12 communications network 913. Through a communications network 913, the ERM
13 controller is accessible through remote clients 933b (e.g., computers with web browsers)
14 by users 933a. Network interfaces may employ connection protocols such as, but not
15 limited to: direct connect, Ethernet (thick, thin, twisted pair 10/100/1000 Base T,
16 and/or the like), Token Ring, wireless connection such as IEEE 802.11a-x, and/or the
17 like. Should processing requirements dictate a greater amount speed and/or capacity,
18 distributed network controllers (e.g., Distributed ERM), architectures may similarly be
19 employed to pool, load balance, and/or otherwise increase the communicative
20 bandwidth required by the ERM controller. A communications network may be any one
21 and/or the combination of the following: a direct interconnection; the Internet; a Local
22 Area Network (LAN); a Metropolitan Area Network (MAN); an Operating Missions as
23 Nodes on the Internet (OMNI); a secured custom connection; a Wide Area Network

1 (WAN); a wireless network (e.g., employing protocols such as, but not limited to a
2 Wireless Application Protocol (WAP), I-mode, and/or the like); and/or the like. A
3 network interface may be regarded as a specialized form of an input output interface.
4 Further, multiple network interfaces 910 may be used to engage with various
5 communications network types 913. For example, multiple network interfaces may be
6 employed to allow for the communication over broadcast, multicast, and/or unicast
7 networks.

8 **[00107]** Input Output interfaces (I/O) 908 may accept, communicate, and/or
9 connect to user input devices 911, peripheral devices 912, cryptographic processor
10 devices 928, and/or the like. I/O may employ connection protocols such as, but not
11 limited to: audio: analog, digital, monaural, RCA, stereo, and/or the like; data: Apple
12 Desktop Bus (ADB), Bluetooth, IEEE 1394a-b, serial, universal serial bus (USB);
13 infrared; joystick; keyboard; midi; optical; PC AT; PS/2; parallel; radio; video interface:
14 Apple Desktop Connector (ADC), BNC, coaxial, component, composite, digital,
15 DisplayPort, Digital Visual Interface (DVI), high-definition multimedia interface
16 (HDMI), RCA, RF antennae, S-Video, VGA, and/or the like; wireless transceivers:
17 802.11a/b/g/n/x; Bluetooth; cellular (e.g., code division multiple access (CDMA), high
18 speed packet access (HSPA(+)), high-speed downlink packet access (HSDPA), global
19 system for mobile communications (GSM), long term evolution (LTE), WiMax, etc.);
20 and/or the like. One output device may be a video display, which may take the form of a
21 Cathode Ray Tube (CRT), Liquid Crystal Display (LCD), Light Emitting Diode (LED),
22 Organic Light Emitting Diode (OLED), Plasma, and/or the like based monitor with an
23 interface (e.g., VGA, DVI circuitry and cable) that accepts signals from a video interface.
24 The video interface composites information generated by a computer systemization and

1 generates video signals based on the composited information in a video memory frame.
2 Another output device is a television set, which accepts signals from a video interface.
3 Often, the video interface provides the composited video information through a video
4 connection interface that accepts a video display interface (e.g., an RCA composite video
5 connector accepting an RCA composite video cable; a DVI connector accepting a DVI
6 display cable, HDMI, etc.).

7 **[00108]** User input devices 911 often are a type of peripheral device 912 (see below)
8 and may include: card readers, dongles, finger print readers, gloves, graphics tablets,
9 joysticks, keyboards, microphones, mouse (mice), remote controls, retina readers, touch
10 screens (e.g., capacitive, resistive, etc.), trackballs, trackpads, sensors (e.g.,
11 accelerometers, ambient light, GPS, gyroscopes, proximity, etc.), styluses, and/or the
12 like.

13 **[00109]** Peripheral devices 912 may be connected and/or communicate to I/O
14 and/or other facilities of the like such as network interfaces, storage interfaces, directly
15 to the interface bus, system bus, the CPU, and/or the like. Peripheral devices may be
16 external, internal and/or part of the ERM controller. Peripheral devices may include:
17 antenna, audio devices (e.g., line-in, line-out, microphone input, speakers, etc.),
18 cameras (e.g., still, video, webcam, etc.), dongles (e.g., for copy protection, ensuring
19 secure transactions with a digital signature, and/or the like), external processors (for
20 added capabilities; e.g., crypto devices 928), force-feedback devices (e.g., vibrating
21 motors), near field communication (NFC) devices, network interfaces, printers, radio
22 frequency identifiers (RFIDs), scanners, storage devices, transceivers (e.g., cellular,
23 GPS, etc.), video devices (e.g., goggles, monitors, etc.), video sources, visors, and/or the

1 like. Peripheral devices often include types of input devices (e.g., microphones, cameras,
2 etc.).

3 **[00110]** It should be noted that although user input devices and peripheral devices
4 may be employed, the ERM controller may be embodied as an embedded, dedicated,
5 and/or monitor-less (i.e., headless) device, wherein access would be provided over a
6 network interface connection.

7 **[00111]** Cryptographic units such as, but not limited to, microcontrollers,
8 processors 926, interfaces 927, and/or devices 928 may be attached, and/or
9 communicate with the ERM controller. A MC68HC16 microcontroller, manufactured by
10 Motorola Inc., may be used for and/or within cryptographic units. The MC68HC16
11 microcontroller utilizes a 16-bit multiply-and-accumulate instruction in the 16 MHz
12 configuration and requires less than one second to perform a 512-bit RSA private key
13 operation. Cryptographic units support the authentication of communications from
14 interacting agents, as well as allowing for anonymous transactions. Cryptographic units
15 may also be configured as part of the CPU. Equivalent microcontrollers and/or
16 processors may also be used. Other commercially available specialized cryptographic
17 processors include: the Broadcom's CryptoNetX and other Security Processors;
18 nCipher's nShield (e.g., Solo, Connect, etc.), SafeNet's Luna PCI (e.g., 7100) series;
19 Semaphore Communications' 40 MHz Roadrunner 184; sMIP's (e.g., 208956); Sun's
20 Cryptographic Accelerators (e.g., Accelerator 6000 PCIe Board, Accelerator 500
21 Daughtercard); Via Nano Processor (e.g., L2100, L2200, U2400) line, which is capable
22 of performing 500+ MB/s of cryptographic instructions; VLSI Technology's 33 MHz
23 6868; and/or the like.

Memory

1
2 **[00112]** Generally, any mechanization and/or embodiment allowing a processor to
3 affect the storage and/or retrieval of information is regarded as memory 929. However,
4 memory is a fungible technology and resource, thus, any number of memory
5 embodiments may be employed in lieu of or in concert with one another. It is to be
6 understood that the ERM controller and/or a computer systemization may employ
7 various forms of memory 929. For example, a computer systemization may be
8 configured wherein the operation of on-chip CPU memory (e.g., registers), RAM, ROM,
9 and any other storage devices are provided by a paper punch tape or paper punch card
10 mechanism; however, such an embodiment would result in an extremely slow rate of
11 operation. In one configuration, memory 929 may include ROM 906, RAM 905, and a
12 storage device 914. A storage device 914 may employ any number of computer storage
13 devices/systems. Storage devices may include a drum; a (fixed and/or removable)
14 magnetic disk drive; a magneto-optical drive; an optical drive (i.e., Blu-ray, CD
15 ROM/RAM/Recordable (R)/ReWritable (RW), DVD R/RW, HD DVD R/RW etc.); an
16 array of devices (e.g., Redundant Array of Independent Disks (RAID)); solid state
17 memory devices (USB memory, solid state drives (SSD), etc.); other processor-readable
18 storage mediums; and/or other devices of the like. Thus, a computer systemization
19 generally requires and makes use of memory.

Component Collection

20
21 **[00113]** The memory 929 may contain a collection of program and/or database
22 components and/or data such as, but not limited to: operating system component(s) 915
23 (operating system); information server component(s) 916 (information server); user

1 interface component(s) 917 (user interface); Web browser component(s) 918 (Web
2 browser); database(s) 919; mail server component(s) 921; mail client component(s) 922;
3 cryptographic server component(s) 920 (cryptographic server); the ERM component(s)
4 935; and/or the like (i.e., collectively a component collection). These components may
5 be stored and accessed from the storage devices and/or from storage devices accessible
6 through an interface bus. Although non-conventional program components such as
7 those in the component collection may be stored in a local storage device 914, they may
8 also be loaded and/or stored in memory such as: peripheral devices, RAM, remote
9 storage facilities through a communications network, ROM, various forms of memory,
10 and/or the like.

Operating System

12 **[00114]** The operating system component 915 is an executable program
13 component facilitating the operation of the ERM controller. The operating system may
14 facilitate access of I/O, network interfaces, peripheral devices, storage devices, and/or
15 the like. The operating system may be a highly fault tolerant, scalable, and secure system
16 such as: Apple Macintosh OS X (Server); AT&T Plan 9; Be OS; Unix and Unix-like
17 system distributions (such as AT&T's UNIX; Berkley Software Distribution (BSD)
18 variations such as FreeBSD, NetBSD, OpenBSD, and/or the like; Linux distributions
19 such as Red Hat, Ubuntu, and/or the like); and/or the like operating systems. However,
20 more limited and/or less secure operating systems also may be employed such as Apple
21 Macintosh OS, IBM OS/2, Microsoft DOS, Microsoft Windows
22 2000/2003/3.1/95/98/CE/Millennium/NT/Vista/XP (Server), Palm OS, and/or the like.
23 In addition, emobile operating systems such as Apple's iOS, Google's Android, Hewlett

1 Packard's WebOS, Microsofts Windows Mobile, and/or the like may be employed. Any
2 of these operating systems may be embedded within the hardware of the NICK
3 controller, and/or stored/loaded into memory/storage. An operating system may
4 communicate to and/or with other components in a component collection, including
5 itself, and/or the like. Most frequently, the operating system communicates with other
6 program components, user interfaces, and/or the like. For example, the operating
7 system may contain, communicate, generate, obtain, and/or provide program
8 component, system, user, and/or data communications, requests, and/or responses. The
9 operating system, once executed by the CPU, may enable the interaction with
10 communications networks, data, I/O, peripheral devices, program components,
11 memory, user input devices, and/or the like. The operating system may provide
12 communications protocols that allow the ERM controller to communicate with other
13 entities through a communications network 913. Various communication protocols may
14 be used by the ERM controller as a subcarrier transport mechanism for interaction, such
15 as, but not limited to: multicast, TCP/IP, UDP, unicast, and/or the like.

16 Information Server

17 **[00115]** An information server component 916 is a stored program component that
18 is executed by a CPU. The information server may be an Internet information server
19 such as, but not limited to Apache Software Foundation's Apache, Microsoft's Internet
20 Information Server, and/or the like. The information server may allow for the execution
21 of program components through facilities such as Active Server Page (ASP), ActiveX,
22 (ANSI) (Objective-) C (++), C# and/or .NET, Common Gateway Interface (CGI) scripts,
23 dynamic (D) hypertext markup language (HTML), FLASH, Java, JavaScript, Practical

1 Extraction Report Language (PERL), Hypertext Pre-Processor (PHP), pipes, Python,
2 wireless application protocol (WAP), WebObjects, and/or the like. The information
3 server may support secure communications protocols such as, but not limited to, File
4 Transfer Protocol (FTP); HyperText Transfer Protocol (HTTP); Secure Hypertext
5 Transfer Protocol (HTTPS), Secure Socket Layer (SSL), messaging protocols (e.g.,
6 America Online (AOL) Instant Messenger (AIM), Apple's iMessage, Application
7 Exchange (APEX), ICQ, Internet Relay Chat (IRC), Microsoft Network (MSN)
8 Messenger Service, Presence and Instant Messaging Protocol (PRIM), Internet
9 Engineering Task Force's (IETF's) Session Initiation Protocol (SIP), SIP for Instant
10 Messaging and Presence Leveraging Extensions (SIMPLE), open XML-based Extensible
11 Messaging and Presence Protocol (XMPP) (i.e., Jabber or Open Mobile Alliance's
12 (OMA's) Instant Messaging and Presence Service (IMPS)), Yahoo! Instant Messenger
13 Service, and/or the like. The information server provides results in the form of Web
14 pages to Web browsers, and allows for the manipulated generation of the Web pages
15 through interaction with other program components. After a Domain Name System
16 (DNS) resolution portion of an HTTP request is resolved to a particular information
17 server, the information server resolves requests for information at specified locations on
18 the ERM controller based on the remainder of the HTTP request. For example, a request
19 such as `http://123.124.125.126/myInformation.html` might have the IP portion of the
20 request "123.124.125.126" resolved by a DNS server to an information server at that IP
21 address; that information server might in turn further parse the http request for the
22 `"/myInformation.html"` portion of the request and resolve it to a location in memory
23 containing the information "myInformation.html." Additionally, other information
24 serving protocols may be employed across various ports, e.g., FTP communications

1 across port 21, and/or the like. An information server may communicate to and/or with
2 other components in a component collection, including itself, and/or facilities of the
3 like. Most frequently, the information server communicates with the ERM database 919,
4 operating systems, other program components, user interfaces, Web browsers, and/or
5 the like.

6 **[00116]** Access to the ERM database may be achieved through a number of
7 database bridge mechanisms such as through scripting languages as enumerated below
8 (e.g., CGI) and through inter-application communication channels as enumerated below
9 (e.g., CORBA, WebObjects, etc.). Any data requests through a Web browser are parsed
10 through the bridge mechanism into appropriate grammars as required by the ERM. In
11 one embodiment, the information server would provide a Web form accessible by a Web
12 browser. Entries made into supplied fields in the Web form are tagged as having been
13 entered into the particular fields, and parsed as such. The entered terms are then passed
14 along with the field tags, which act to instruct the parser to generate queries directed to
15 appropriate tables and/or fields. In one embodiment, the parser may generate queries in
16 standard SQL by instantiating a search string with the proper join/select commands
17 based on the tagged text entries, wherein the resulting command is provided over the
18 bridge mechanism to the ERM as a query. Upon generating query results from the
19 query, the results are passed over the bridge mechanism, and may be parsed for
20 formatting and generation of a new results Web page by the bridge mechanism. Such a
21 new results Web page is then provided to the information server, which may supply it to
22 the requesting Web browser.

1 **[00117]** Also, an information server may contain, communicate, generate, obtain,
2 and/or provide program component, system, user, and/or data communications,
3 requests, and/or responses.

4 **User Interface**

5 **[00118]** Computer interfaces in some respects are similar to automobile operation
6 interfaces. Automobile operation interface elements such as steering wheels, gearshifts,
7 and speedometers facilitate the access, operation, and display of automobile resources,
8 and status. Computer interaction interface elements such as check boxes, cursors,
9 menus, scrollers, and windows (collectively and commonly referred to as widgets)
10 similarly facilitate the access, capabilities, operation, and display of data and computer
11 hardware and operating system resources, and status. Operation interfaces are
12 commonly called user interfaces. Graphical user interfaces (GUIs) such as the Apple
13 Macintosh Operating System's Aqua and iOS's Cocoa Touch, IBM's OS/2, Google's
14 Android Mobile UI, Microsoft's Windows 2000/2003/3.1/95/98/CE/Millennium/
15 Mobile/NT/XP/Vista/7/8 (i.e., Aero, Metro), Unix's X-Windows (e.g., which may
16 include additional Unix graphic interface libraries and layers such as K Desktop
17 Environment (KDE), mythTV and GNU Network Object Model Environment
18 (GNOME)), web interface libraries (e.g., ActiveX, AJAX, (D)HTML, FLASH, Java,
19 JavaScript, etc. interface libraries such as, but not limited to, Dojo, jQuery(UI),
20 MooTools, Prototype, script.aculo.us, SWFObject, Yahoo! User Interface, any of which
21 may be used and) provide a baseline and means of accessing and displaying information
22 graphically to users.

1 **[00119]** A user interface component 917 is a stored program component that is
2 executed by a CPU. The user interface may be a graphic user interface as provided by,
3 with, and/or atop operating systems and/or operating environments such as already
4 discussed. The user interface may allow for the display, execution, interaction,
5 manipulation, and/or operation of program components and/or system facilities
6 through textual and/or graphical facilities. The user interface provides a facility through
7 which users may affect, interact, and/or operate a computer system. A user interface
8 may communicate to and/or with other components in a component collection,
9 including itself, and/or facilities of the like. Most frequently, the user interface
10 communicates with operating systems, other program components, and/or the like. The
11 user interface may contain, communicate, generate, obtain, and/or provide program
12 component, system, user, and/or data communications, requests, and/or responses.

13 **Web Browser**

14 **[00120]** A Web browser component 918 is a stored program component that is
15 executed by a CPU. The Web browser may be a hypertext viewing application such as
16 Goofle's (Mobile) Chrome, Microsoft Internet Explorer, Netscape Navigator, Apple's
17 (Mobile) Safari, embedded web browser objects such as through Apple's Cocoa (Touch)
18 object class, and/or the like. Secure Web browsing may be supplied with 128bit (or
19 greater) encryption by way of HTTPS, SSL, and/or the like. Web browsers allowing for
20 the execution of program components through facilities such as ActiveX, AJAX,
21 (D)HTML, FLASH, Java, JavaScript, web browser plug-in APIs (e.g., Chrome, FireFox,
22 Internet Explorer, Safari Plug-in, and/or the like APIs), and/or the like. Web browsers
23 and like information access tools may be integrated into PDAs, cellular telephones,

1 smartphones, and/or other mobile devices. A Web browser may communicate to and/or
2 with other components in a component collection, including itself, and/or facilities of
3 the like. Most frequently, the Web browser communicates with information servers,
4 operating systems, integrated program components (e.g., plug-ins), and/or the like; e.g.,
5 it may contain, communicate, generate, obtain, and/or provide program component,
6 system, user, and/or data communications, requests, and/or responses. Also, in place of
7 a Web browser and information server, a combined application may be developed to
8 perform similar operations of both. The combined application would similarly effect the
9 obtaining and the provision of information to users, user agents, and/or the like from
10 the ERM equipped nodes. The combined application may be nugatory on systems
11 employing standard Web browsers.

12 Mail Server

13 **[00121]** A mail server component 921 is a stored program component that is
14 executed by a CPU 903. The mail server may be an Internet mail server such as, but not
15 limited to Apple's Mail Server (3), dovecot, sendmail, Microsoft Exchange, and/or the
16 like. The mail server may allow for the execution of program components through
17 facilities such as ASP, ActiveX, (ANSI) (Objective-) C (++), C# and/or .NET, CGI scripts,
18 Java, JavaScript, PERL, PHP, pipes, Python, WebObjects, and/or the like. The mail
19 server may support communications protocols such as, but not limited to: Internet
20 message access protocol (IMAP), Messaging Application Programming Interface
21 (MAPI)/Microsoft Exchange, post office protocol (POP3), simple mail transfer protocol
22 (SMTP), and/or the like. The mail server can route, forward, and process incoming and

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

3 **[00122]** Access to the ERM mail may be achieved through a number of APIs
4 offered by the individual Web server components and/or the operating system.

5 **[00123]** Also, a mail server may contain, communicate, generate, obtain, and/or
6 provide program component, system, user, and/or data communications, requests,
7 information, and/or responses.

8 **Mail Client**

9 **[00124]** A mail client component 922 is a stored program component that is
10 executed by a CPU 903. The mail client may be a mail viewing application such as Apple
11 (Mobile) Mail, Microsoft Entourage, Microsoft Outlook, Microsoft Outlook Express,
12 Mozilla, Thunderbird, and/or the like. Mail clients may support a number of transfer
13 protocols, such as: IMAP, Microsoft Exchange, POP3, SMTP, and/or the like. A mail
14 client may communicate to and/or with other components in a component collection,
15 including itself, and/or facilities of the like. Most frequently, the mail client
16 communicates with mail servers, operating systems, other mail clients, and/or the like;
17 e.g., it may contain, communicate, generate, obtain, and/or provide program
18 component, system, user, and/or data communications, requests, information, and/or
19 responses. Generally, the mail client provides a facility to compose and transmit
20 electronic mail messages.

Cryptographic Server

1
2 **[00125]** A cryptographic server component 920 is a stored program component
3 that is executed by a CPU 903, cryptographic processor 926, cryptographic processor
4 interface 927, cryptographic processor device 928, and/or the like. Cryptographic
5 processor interfaces will allow for expedition of encryption and/or decryption requests
6 by the cryptographic component; however, the cryptographic component, alternatively,
7 may run on a CPU. The cryptographic component allows for the encryption and/or
8 decryption of provided data. The cryptographic component allows for both symmetric
9 and asymmetric (e.g., Pretty Good Protection (PGP)) encryption and/or decryption. The
10 cryptographic component may employ cryptographic techniques such as, but not limited
11 to: digital certificates (e.g., X.509 authentication framework), digital signatures, dual
12 signatures, enveloping, password access protection, public key management, and/or the
13 like. The cryptographic component will facilitate numerous (encryption and/or
14 decryption) security protocols such as, but not limited to: checksum, Data Encryption
15 Standard (DES), Elliptical Curve Encryption (ECC), International Data Encryption
16 Algorithm (IDEA), Message Digest 5 (MD5, which is a one way hash operation),
17 passwords, Rivest Cipher (RC5), Rijndael, RSA (which is an Internet encryption and
18 authentication system that uses an algorithm developed in 1977 by Ron Rivest, Adi
19 Shamir, and Leonard Adleman), Secure Hash Algorithm (SHA), Secure Socket Layer
20 (SSL), Secure Hypertext Transfer Protocol (HTTPS), and/or the like. Employing such
21 encryption security protocols, the ERM may encrypt all incoming and/or outgoing
22 communications and may serve as node within a virtual private network (VPN) with a
23 wider communications network. The cryptographic component facilitates the process of
24 “security authorization” whereby access to a resource is inhibited by a security protocol

1 wherein the cryptographic component effects authorized access to the secured resource.
2 In addition, the cryptographic component may provide unique identifiers of content,
3 e.g., employing an MD5 hash to obtain a unique signature for a digital audio file. A
4 cryptographic component may communicate to and/or with other components in a
5 component collection, including itself, and/or facilities of the like. The cryptographic
6 component supports encryption schemes allowing for the secure transmission of
7 information across a communications network to enable the ERM component to engage
8 in secure transactions if so desired. The cryptographic component facilitates the secure
9 accessing of resources on the ERM and facilitates the access of secured resources on
10 remote systems; i.e., it may act as a client and/or server of secured resources. Most
11 frequently, the cryptographic component communicates with information servers,
12 operating systems, other program components, and/or the like. The cryptographic
13 component may contain, communicate, generate, obtain, and/or provide program
14 component, system, user, and/or data communications, requests, and/or responses.

15 **The ERM Database**

16 **[00126]** The ERM database component 919 may be embodied in a database and its
17 stored data. The database is a stored program component, which is executed by the
18 CPU; the stored program component portion configuring the CPU to process the stored
19 data. The database may be any of a number of fault tolerant, relational, scalable, secure
20 databases, such as DB2, MySQL, Oracle, Sybase, and/or the like. Relational databases
21 are an extension of a flat file. Relational databases consist of a series of related tables.
22 The tables are interconnected via a key field. Use of the key field allows the combination
23 of the tables by indexing against the key field; i.e., the key fields act as dimensional pivot

1 points for combining information from various tables. Relationships generally identify
2 links maintained between tables by matching primary keys. Primary keys represent
3 fields that uniquely identify the rows of a table in a relational database. More precisely,
4 they uniquely identify rows of a table on the “one” side of a one-to-many relationship.

5 **[00127]** Alternatively, the ERM database may be implemented using various
6 standard data-structures, such as an array, hash, (linked) list, struct, structured text file
7 (e.g., XML), table, and/or the like. Such data-structures may be stored in memory
8 and/or in (structured) files. In another alternative, an object-oriented database may be
9 used, such as Frontier, ObjectStore, Poet, Zope, and/or the like. Object databases can
10 include a number of object collections that are grouped and/or linked together by
11 common attributes; they may be related to other object collections by some common
12 attributes. Object-oriented databases perform similarly to relational databases with the
13 exception that objects are not just pieces of data but may have other types of capabilities
14 encapsulated within a given object. If the ERM database is implemented as a data-
15 structure, the use of the ERM database 919 may be integrated into another component
16 such as the ERM component 935. Also, the database may be implemented as a mix of
17 data structures, objects, and relational structures. Databases may be consolidated
18 and/or distributed in countless variations through standard data processing techniques.
19 Portions of databases, e.g., tables, may be exported and/or imported and thus
20 decentralized and/or integrated.

21 **[00128]** In one embodiment, the database component 919 includes several tables
22 919a-h. A Users table 919a may include fields such as, but not limited to: user_id, ssn,
23 dob, first_name, last_name, age, state, address_firstline, address_secondline, zipcode,

1 devices_list, contact_info, contact_type, alt_contact_info, alt_contact_type, email
2 address, password, enrollment status, report_ID, report preference, preference and/or
3 the like. The Users table may support and/or track multiple entity accounts on a ERM.
4 A Clients table 919b may include fields such as, but not limited to: client_ID, user_ID,
5 client_name, client_IP, client_GPS, client_MAC, client_serial, client_ECID,
6 client_UDID, client_browser, client_type, client_model, client_version, client_OS,
7 client_apps_list, client_securekey, and/or the like. A Receipt table 919c may include
8 fields such as, but not limited to: receipt_ID, user_receipt_ID, receipt_path,
9 merchant_transaction_ID, processor_transaction_ID, transaction date, merchant_ID,
10 purchase category, payment card, receipt amount, return eligibility expiry date, return
11 eligibility status date, and/or the like. A Transaction table 919d may include fields such
12 as, but not limited to: merchant_transaction_ID, TPS_transaction_ID,
13 transaction_date, transaction amount, product ID, receipt_ID, and/or the like. An
14 Issuer table 919e may include fields such as, but not limited to: issuer_ID, issuer name,
15 issuer address, user_ID, username, password, and/or the like. A Merchant table 919f
16 may include fields such as, but not limited to: merchant_ID, merchant name, merchant
17 address, merchant category code, merchant receipt delivery method, and/or the like. A
18 Report table 919g may include fields such as, but not limited to: report_ID, report
19 format, report type, report criteria, and/or the like. A Product table 919h may include
20 fields such as, but not limited to: product_ID, product SKU, product name, product
21 mode, price, and/or the like. In one embodiment, the ERM database may interact with
22 other database systems. For example, employing a distributed database system, queries
23 and data access by search ERM component may treat the combination of the ERM
24 database, an integrated data security layer database as a single database entity.

1 **[00129]** In one embodiment, user programs may contain various user interface
2 primitives, which may serve to update the ERM. Also, various accounts may require
3 custom database tables depending upon the environments and the types of clients the
4 ERM may need to serve. It should be noted that any unique fields may be designated as
5 a key field throughout. In an alternative embodiment, these tables have been
6 decentralized into their own databases and their respective database controllers (i.e.,
7 individual database controllers for each of the above tables). Employing standard data
8 processing techniques, one may further distribute the databases over several computer
9 systemizations and/or storage devices. Similarly, configurations of the decentralized
10 database controllers may be varied by consolidating and/or distributing the various
11 database components 919a-h. The ERM may be configured to keep track of various
12 settings, inputs, and parameters via database controllers.

13 **[00130]** The ERM database may communicate to and/or with other components in
14 a component collection, including itself, and/or facilities of the like. Most frequently, the
15 ERM database communicates with the ERM component, other program components,
16 and/or the like. The database may contain, retain, and provide information regarding
17 other nodes and data.

18 The ERMs

19 **[00131]** The ERM component 935 is a stored program component that is executed
20 by a CPU. In one embodiment, the ERM component incorporates any and/or all
21 combinations of the aspects of the ERM discussed in the previous figures. As such, the
22 ERM affects accessing, obtaining and the provision of information, services,
23 transactions, and/or the like across various communications networks. The features and

1 embodiments of the ERM discussed herein increase network efficiency by reducing data
2 transfer requirements the use of more efficient data structures and mechanisms for their
3 transfer and storage. As a consequence, more data may be transferred in less time, and
4 latencies with regard to transactions, are also reduced. In many cases, such reduction in
5 storage, transfer time, bandwidth requirements, latencies, etc., will reduce the capacity
6 and structural infrastructure requirements to support the ERM's features and facilities,
7 and in many cases reduce the costs, energy consumption/requirements, and extend the
8 life of ERM's underlying infrastructure; this has the added benefit of making the ERM
9 more reliable. Similarly, many of the features and mechanisms are designed to be easier
10 for users to use and access, thereby broadening the audience that may enjoy/employ
11 and exploit the feature sets of the ERM; such ease of use also helps to increase the
12 reliability of the ERM. In addition, the feature sets include heightened security as noted
13 via the Cryptographic components 920, 926, 928 and throughout, making access to the
14 features and data more reliable and secure.

15 **[00132]** The ERM component may transform transaction initiation requests and
16 receipt requests via ERM components into receipt formatting, organization, storage and
17 linkage with transactions, and/or like use of the ERM. In one embodiment, the ERM
18 component 935 takes inputs (e.g., payment input 202a, add receipt to RM application
19 input 214, account login detail input 250, select view receipt input 260; and/or the like)
20 etc., and transforms the inputs via various components (e.g., RM component 941,, URS
21 component 942, ARS component 943, RC component 944, RQ component 945; and/or
22 the like), into outputs (e.g., purchase request 202b, transaction authorization request
23 message 204, transaction authorization response message 208, receipt 210, receipt sync
24 request 216, receipt sync confirmation message 222, receipt identifier and transaction

1 details message 226, user authentication request message 252, user authentication
2 response message 256, receipt request message 262a, 264a, 262b, receipt response
3 message 264a, 264b, receipt query 268, receipt 272, receipt data 274; and/or the like).

4 **[00133]** The ERM component enabling access of information between nodes may
5 be developed by employing standard development tools and languages such as, but not
6 limited to: Apache components, Assembly, ActiveX, binary executables, (ANSI)
7 (Objective-) C (++), C# and/or .NET, database adapters, CGI scripts, Java, JavaScript,
8 mapping tools, procedural and object oriented development tools, PERL, PHP, Python,
9 shell scripts, SQL commands, web application server extensions, web development
10 environments and libraries (e.g., Microsoft's ActiveX; Adobe AIR, FLEX & FLASH;
11 AJAX; (D)HTML; Dojo, Java; JavaScript; jQuery(UI); MooTools; Prototype;
12 script.aculo.us; Simple Object Access Protocol (SOAP); SWFObject; Yahoo! User
13 Interface; and/or the like), WebObjects, and/or the like. In one embodiment, the ERM
14 server employs a cryptographic server to encrypt and decrypt communications. The
15 ERM component may communicate to and/or with other components in a component
16 collection, including itself, and/or facilities of the like. Most frequently, the ERM
17 component communicates with the ERM database, operating systems, other program
18 components, and/or the like. The ERM may contain, communicate, generate, obtain,
19 and/or provide program component, system, user, and/or data communications,
20 requests, and/or responses.

21 Distributed ERMs

22 **[00134]** The structure and/or operation of any of the ERM node controller
23 components may be combined, consolidated, and/or distributed in any number of ways

1 to facilitate development and/or deployment. Similarly, the component collection may
2 be combined in any number of ways to facilitate deployment and/or development. To
3 accomplish this, one may integrate the components into a common code base or in a
4 facility that can dynamically load the components on demand in an integrated fashion.

5 **[00135]** The component collection may be consolidated and/or distributed in
6 countless variations through standard data processing and/or development techniques.
7 Multiple instances of any one of the program components in the program component
8 collection may be instantiated on a single node, and/or across numerous nodes to
9 improve performance through load-balancing and/or data-processing techniques.
10 Furthermore, single instances may also be distributed across multiple controllers
11 and/or storage devices; e.g., databases. All program component instances and
12 controllers working in concert may do so through standard data processing
13 communication techniques.

14 **[00136]** The configuration of the ERM controller will depend on the context of
15 system deployment. Factors such as, but not limited to, the budget, capacity, location,
16 and/or use of the underlying hardware resources may affect deployment requirements
17 and configuration. Regardless of if the configuration results in more consolidated
18 and/or integrated program components, results in a more distributed series of program
19 components, and/or results in some combination between a consolidated and
20 distributed configuration, data may be communicated, obtained, and/or provided.
21 Instances of components consolidated into a common code base from the program
22 component collection may communicate, obtain, and/or provide data. This may be
23 accomplished through intra-application data processing communication techniques

1 such as, but not limited to: data referencing (e.g., pointers), internal messaging, object
2 instance variable communication, shared memory space, variable passing, and/or the
3 like.

4 **[00137]** If component collection components are discrete, separate, and/or
5 external to one another, then communicating, obtaining, and/or providing data with
6 and/or to other components may be accomplished through inter-application data
7 processing communication techniques such as, but not limited to: Application Program
8 Interfaces (API) information passage; (distributed) Component Object Model
9 ((D)COM), (Distributed) Object Linking and Embedding ((D)OLE), and/or the like),
10 Common Object Request Broker Architecture (CORBA), Jini local and remote
11 application program interfaces, JavaScript Object Notation (JSON), Remote Method
12 Invocation (RMI), SOAP, process pipes, shared files, and/or the like. Messages sent
13 between discrete component components for inter-application communication or within
14 memory spaces of a singular component for intra-application communication may be
15 facilitated through the creation and parsing of a grammar. A grammar may be
16 developed by using development tools such as lex, yacc, XML, and/or the like, which
17 allow for grammar generation and parsing capabilities, which in turn may form the basis
18 of communication messages within and between components.

19 **[00138]** For example, a grammar may be arranged to recognize the tokens of an
20 HTTP post command, e.g.:

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

22
23 **[00139]** where Value1 is discerned as being a parameter because “http://” is part of
24 the grammar syntax, and what follows is considered part of the post value. Similarly,

1 with such a grammar, a variable “Value1” may be inserted into an “http://” post
2 command and then sent. The grammar syntax itself may be presented as structured data
3 that is interpreted and/or otherwise used to generate the parsing mechanism (e.g., a
4 syntax description text file as processed by lex, yacc, etc.). Also, once the parsing
5 mechanism is generated and/or instantiated, it itself may process and/or parse
6 structured data such as, but not limited to: character (e.g., tab) delineated text, HTML,
7 structured text streams, XML, and/or the like structured data. In another embodiment,
8 inter-application data processing protocols themselves may have integrated and/or
9 readily available parsers (e.g., JSON, SOAP, and/or like parsers) that may be employed
10 to parse (e.g., communications) data. Further, the parsing grammar may be used
11 beyond message parsing, but may also be used to parse: databases, data collections, data
12 stores, structured data, and/or the like. Again, the desired configuration will depend
13 upon the context, environment, and requirements of system deployment.

14 **[00140]** For example, in some implementations, the ERM controller may be
15 executing a PHP script implementing a Secure Sockets Layer (“SSL”) socket server via
16 the information server, which listens to incoming communications on a server port to
17 which a client may send data, e.g., data encoded in JSON format. Upon identifying an
18 incoming communication, the PHP script may read the incoming message from the
19 client device, parse the received JSON-encoded text data to extract information from the
20 JSON-encoded text data into PHP script variables, and store the data (e.g., client
21 identifying information, etc.) and/or extracted information in a relational database
22 accessible using the Structured Query Language (“SQL”). An exemplary listing, written
23 substantially in the form of PHP/SQL commands, to accept JSON-encoded input data

1 from a client device via a SSL connection, parse the data to extract variables, and store
 2 the data to a database, is provided below:

```

3  <?PHP
4  header('Content-Type: text/plain');
5
6  // set ip address and port to listen to for incoming data
7  $address = '192.168.0.100';
8  $port = 255;
9
10 // create a server-side SSL socket, listen for/accept incoming communication
11 $sock = socket_create(AF_INET, SOCK_STREAM, 0);
12 socket_bind($sock, $address, $port) or die('Could not bind to address');
13 socket_listen($sock);
14 $client = socket_accept($sock);
15
16 // read input data from client device in 1024 byte blocks until end of message
17 do {
18     $input = "";
19     $input = socket_read($client, 1024);
20     $data .= $input;
21 } while($input != "");
22
23 // parse data to extract variables
24 $obj = json_decode($data, true);
25
26 // store input data in a database
27 mysql_connect("201.408.185.132",$DBserver,$password); // access database server
28 mysql_select("CLIENT_DB.SQL"); // select database to append
29 mysql_query("INSERT INTO UserTable (transmission)
30 VALUES ($data)"); // add data to UserTable table in a CLIENT database
31 mysql_close("CLIENT_DB.SQL"); // close connection to database
32 ?>
33

```

34 **[00141]** Also, the following resources may be used to provide example
 35 embodiments regarding SOAP parser implementation:

```

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

```

1

2 **[00142]** and other parser implementations:

3 <http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm>
4 [.IBMDI.doc/referenceguide259.htm](http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm)

5

6 **[00143]** all of which are hereby expressly incorporated by reference herein.

7 **[00144]** In order to address various issues and advance the art, the entirety of this
8 application for ELECTRONIC RECEIPT MANAGER APPARATUSES, METHODS AND
9 SYSTEMS (including the Cover Page, Title, Headings, Field, Background, Summary,
10 Brief Description of the Drawings, Detailed Description, Claims, Abstract, Figures,
11 Appendices and/or otherwise) shows by way of illustration various example
12 embodiments in which the claimed innovations may be practiced. The advantages and
13 features of the application are of a representative sample of embodiments only, and are
14 not exhaustive and/or exclusive. They are presented only to assist in understanding and
15 teach the claimed principles. It should be understood that they are not representative of
16 all claimed innovations. As such, certain aspects of the disclosure have not been
17 discussed herein. That alternate embodiments may not have been presented for a
18 specific portion of the innovations or that further undescribed alternate embodiments
19 may be available for a portion is not to be considered a disclaimer of those alternate
20 embodiments. It will be appreciated that many of those undescribed embodiments
21 incorporate the same principles of the innovations and others are equivalent. Thus, it is
22 to be understood that other embodiments may be utilized and functional, logical,
23 operational, organizational, structural and/or topological modifications may be made
24 without departing from the scope and/or spirit of the disclosure. As such, all examples
25 and/or embodiments are deemed to be non-limiting throughout this disclosure. Also, no

1 inference should be drawn regarding those embodiments discussed herein relative to
2 those not discussed herein other than it is as such for purposes of reducing space and
3 repetition. For instance, it is to be understood that the logical and/or topological
4 structure of any combination of any data flow sequence(s), program components (a
5 component collection), other components and/or any present feature sets as described
6 in the figures and/or throughout are not limited to a fixed operating order and/or
7 arrangement, but rather, any disclosed order is exemplary and all equivalents,
8 regardless of order, are contemplated by the disclosure. Furthermore, it is to be
9 understood that such features are not limited to serial execution, but rather, any
10 number of threads, processes, processors, services, servers, and/or the like that may
11 execute asynchronously, concurrently, in parallel, simultaneously, synchronously,
12 and/or the like are also contemplated by the disclosure. As such, some of these features
13 may be mutually contradictory, in that they cannot be simultaneously present in a single
14 embodiment. Similarly, some features are applicable to one aspect of the innovations,
15 and inapplicable to others. In addition, the disclosure includes other innovations not
16 presently claimed. Applicant reserves all rights in those presently unclaimed
17 innovations, including the right to claim such innovations, file additional applications,
18 continuations, continuations-in-part, divisions, and/or the like thereof. As such, it
19 should be understood that advantages, embodiments, examples, functional, features,
20 logical, operational, organizational, structural, topological, and/or other aspects of the
21 disclosure are not to be considered limitations on the disclosure as defined by the claims
22 or limitations on equivalents to the claims. It is to be understood that, depending on the
23 particular needs and/or characteristics of a ERM individual and/or enterprise user,
24 database configuration and/or relational model, data type, data transmission and/or

1 network framework, syntax structure, and/or the like, various embodiments of the ERM
2 may be implemented that allow a great deal of flexibility and customization. For
3 example, aspects of the ERM may be adapted for finance management. While various
4 embodiments and discussions of the ERM have been directed to managing, organizing
5 and viewing receipts, however, it is to be understood that the embodiments described
6 herein may be readily configured and/or customized for a wide variety of other
7 applications and/or implementations.

CLAIMS

What is claimed is:

1. A processor-implemented method for managing a receipt on a portable device, comprising:

receiving a receipt through an interface of a portable device;

determining, via a processor, a set of fields for formatting receipt data from the receipt;

formatting the receipt data to include the set of fields yielding formatted receipt data; and

storing the formatted receipt data in a memory element of the portable device.

2. The method of claim 1, wherein the set of fields are determined based on at least one of display size and capacity of the memory element of the portable device.

3. The method of claim 1, wherein the set of fields are determined based on user preferences.

4. The method of claim 1, wherein the interface of the portable device for receiving the receipt includes an e-mail interface and an image capture interface.

5. The method of claim 1, wherein the set of fields includes a return eligibility indicator that indicates whether one or more products associated with the receipt is eligible for return.

6. The method of claim 1, further comprising:

generating a unique receipt identifier; and

1 storing the unique receipt identifier in the memory element of the
2 portable device.

3 7. The method of claim 6, wherein the receipt is for a transaction conducted
4 on an account issued by an issuer, the method further comprising:

5 sending a copy of the receipt along with the receipt identifier to the
6 issuer of the account.

7 8. The method of claim 6, further comprising:

8 obtaining the formatted receipt data stored in the memory element
9 of the portable device; and

10 displaying the formatted receipt data in a display interface of the
11 portable device, wherein the formatted receipt data includes a field for an icon or a link
12 through which the receipt is accessible.

13 9. The method of claim 1, further comprising:

14 transmitting a copy of the receipt via a communication network to a
15 cloud storage system, wherein the cloud storage system generates a unique receipt
16 identifier and transmits the unique receipt identifier to the portable device.

17 10. The method of claim 9, wherein the receipt is for a transaction conducted
18 on an account issued by an issuer, and wherein the cloud storage system sends the
19 unique receipt identifier and at least a portion of the receipt data to the issuer of the
20 account.

21 11. The method of claim 10, wherein the unique receipt identifier is linked to a
22 corresponding transaction on the account at the issuer such that the receipt for the
23 transaction is accessible to a user from a user interface for management of the account
24 maintained by the issuer.

1 12. The method of claim 9, further comprising:

2 receiving a selection of at least one search parameter from a user;

3 and

4 creating a receipt search request including the selection of at least

5 one search parameter.

6 13. The method of claim 12, further comprising:

7 transmitting the receipt search request to the cloud storage system.

8 14. The method of claim 13, further comprising:

9 receiving results of the receipt search request from the cloud

10 storage system; and

11 formatting the results to display receipt data fields selected

12 according to user preference selection.

13 15. The method of claim 14, further comprising:

14 receiving a request from the user to display a new receipt data field

15 that is available from receipt data but is not selected according to the user preference
16 selection;

17 obtaining the new receipt data field values in response to the

18 request; and

19 reformatting the results to display the new receipt data field.

20 16. The method of claim 12, further comprising:

21 determining that the portable device is offline; and

22 executing a query on the memory element of the portable device,

23 said query being based on the selection of at least one search parameter, to identify a

24 matching receipt; and

1 displaying the matching receipt to the user.

2 17. The method of claim 12, wherein the at least one search parameter is
3 selected from a group consisting of transaction date, merchant, purchase category,
4 payment card and receipt identifier.

5 18. A portable device comprising:

6 an interface for receiving an electronic receipt;

7 a processor; and

8 a memory element coupled to the processor, the memory element
9 including code, executable by the processor, to:

10 determine a set of fields for formatting receipt data from the
11 receipt;

12 format the receipt data from the receipt to include the set of fields
13 to obtain formatted receipt data; and

14 store the formatted receipt data in a memory element of the
15 portable device.

16 19. A portable device, comprising:

17 an antenna;

18 an interface coupled to the antenna for receiving an electronic receipt;

19 a processor; and

20 a memory element coupled to the processor, the memory element
21 including code, executable by the processor, to:

22 extract receipt data from the electronic receipt; and

23 obtain an electronic receipt display setting stored in the memory;

24 a receipt formatting engine configured to:

1 format the receipt data from the electronic receipt in accordance
2 with the electronic receipt display setting to obtain formatted receipt data;
3 a receipt identifier generation engine configured to:
4 generate a unique receipt identifier for the electronic receipt; and
5 a display interface configured to:
6 display the receipt identifier along with the formatted receipt data
7 from the electronic receipt.

8 20. A processor-readable tangible medium storing processor-issuable
9 instructions to:

10 receive a receipt through an interface of a portable device;
11 determine a set of fields for formatting receipt data from the
12 receipt;
13 format the receipt data from the receipt to include the set of fields
14 to obtain formatted receipt data; and
15 store the formatted receipt data in a memory element of the
16 portable device.

17 21. An electronic receipt manager system, comprising:

18 a portable device having an input interface configured to receive an
19 electronic receipt corresponding to a transaction;
20 a cloud storage system coupled to a receipt database; and
21 an issuer of an account on which the transaction is conducted;
22 wherein said portable device is configured to transmit the electronic
23 receipt to the cloud storage system;
24 wherein the cloud storage system is configured to:

1 receive the electronic receipt from the portable device;
2 generate a receipt identifier for the received electronic
3 receipt;
4 store the electronic receipt in association with the receipt
5 identifier in the receipt database;
6 transmit the receipt identifier to the portable device; and
7 transmit the receipt identifier along with at least one
8 transaction identifying information to the issuer; and
9 wherein the issuer is configured to:
10 receive the receipt identifier and the at least one transaction
11 identifying information from the cloud storage system;
12 identify at least one transaction corresponding to the at least
13 one transaction identifying information;
14 link the receipt identifier to the at least one transaction; and
15 provide a user of the account access to the electronic receipt
16 stored in the receipt database in the cloud storage system via the receipt identifier.

17 22. A processor-implemented electronic receipt management method
18 implemented at a cloud storage system, comprising:

19 receiving an electronic receipt from a portable device;
20 generating, via a processor, a receipt identifier for the electronic
21 receipt;
22 storing the electronic receipt in association with the receipt
23 identifier in a receipt database;
24 transmitting the receipt identifier to the portable device; and

1 transmitting the receipt identifier along with at least one
2 transaction identifying information to an issuer associated with a transaction
3 corresponding to the electronic receipt.

4 23. A processor-implemented electronic receipt management method
5 implemented at an issuer that issued an account on which a transaction corresponding
6 to an electronic receipt is conducted, comprising:

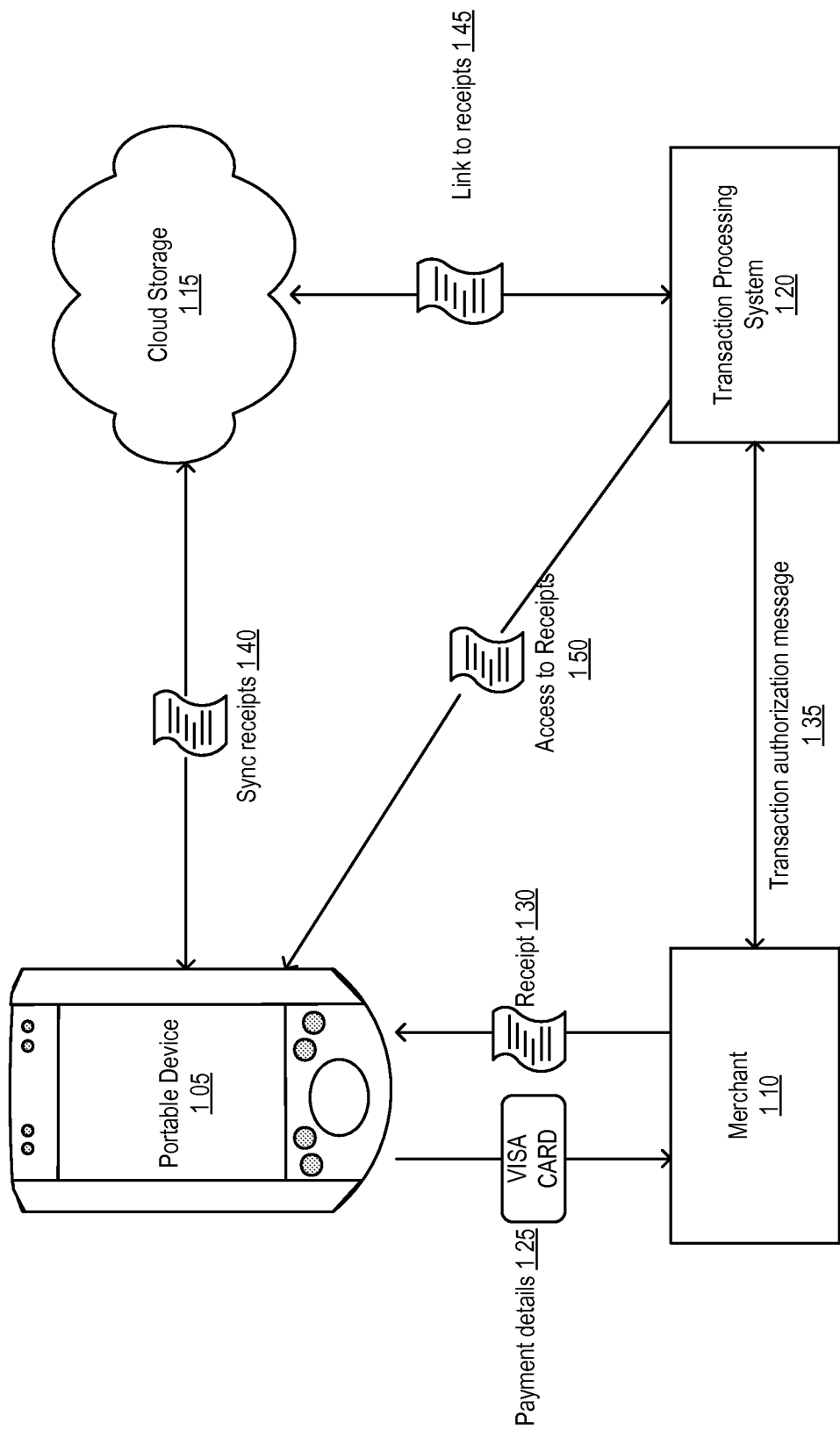
7 receiving a receipt identifier and at least one transaction identifying
8 information;

9 identifying, via a processor, at least one transaction corresponding
10 to the at least one transaction identifying information;

11 linking the receipt identifier to the at least one transaction; and

12 providing a user of the account access to the electronic receipt
13 stored in a receipt database via the receipt identifier.

14



Exemplary Receipt Storage and Access Components

FIGURE 1A

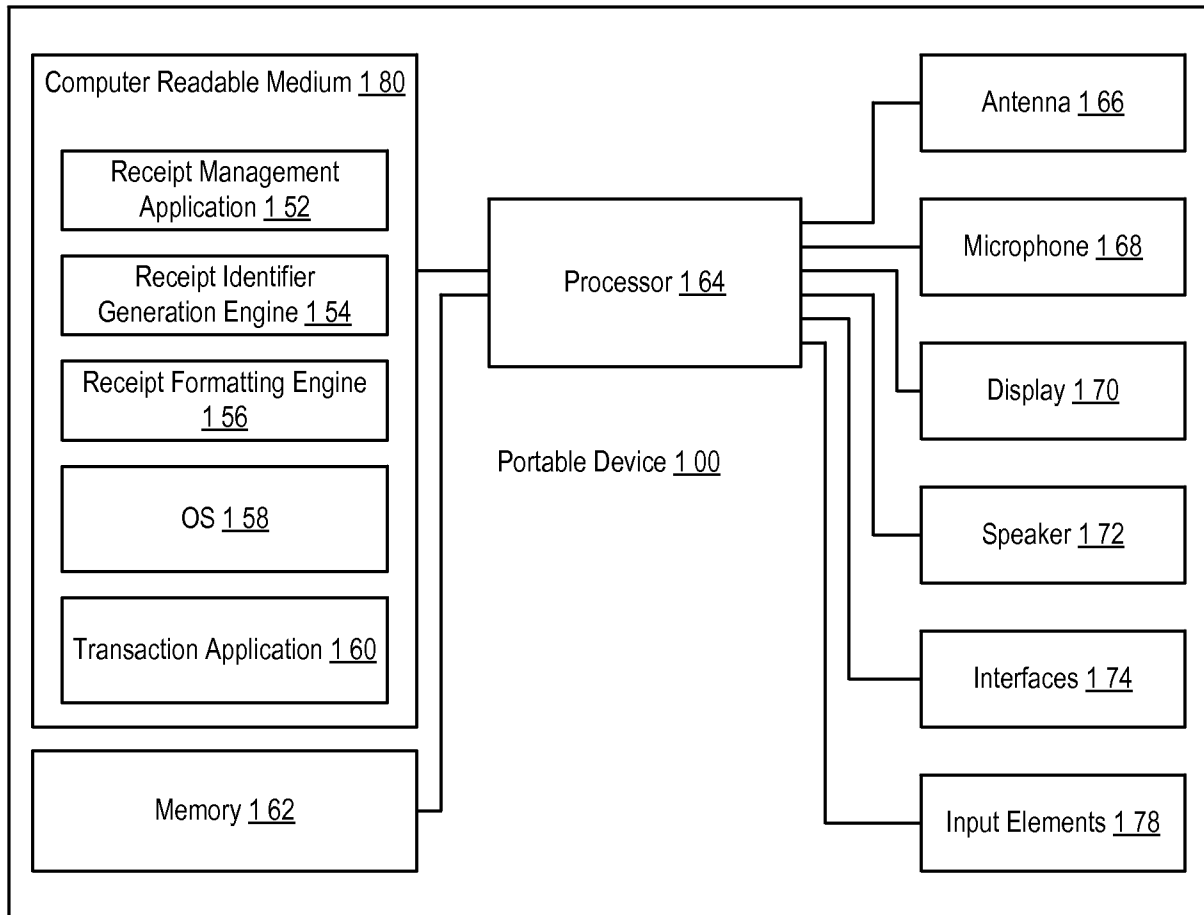


FIGURE 1B

Exemplary Portable Device

3/22

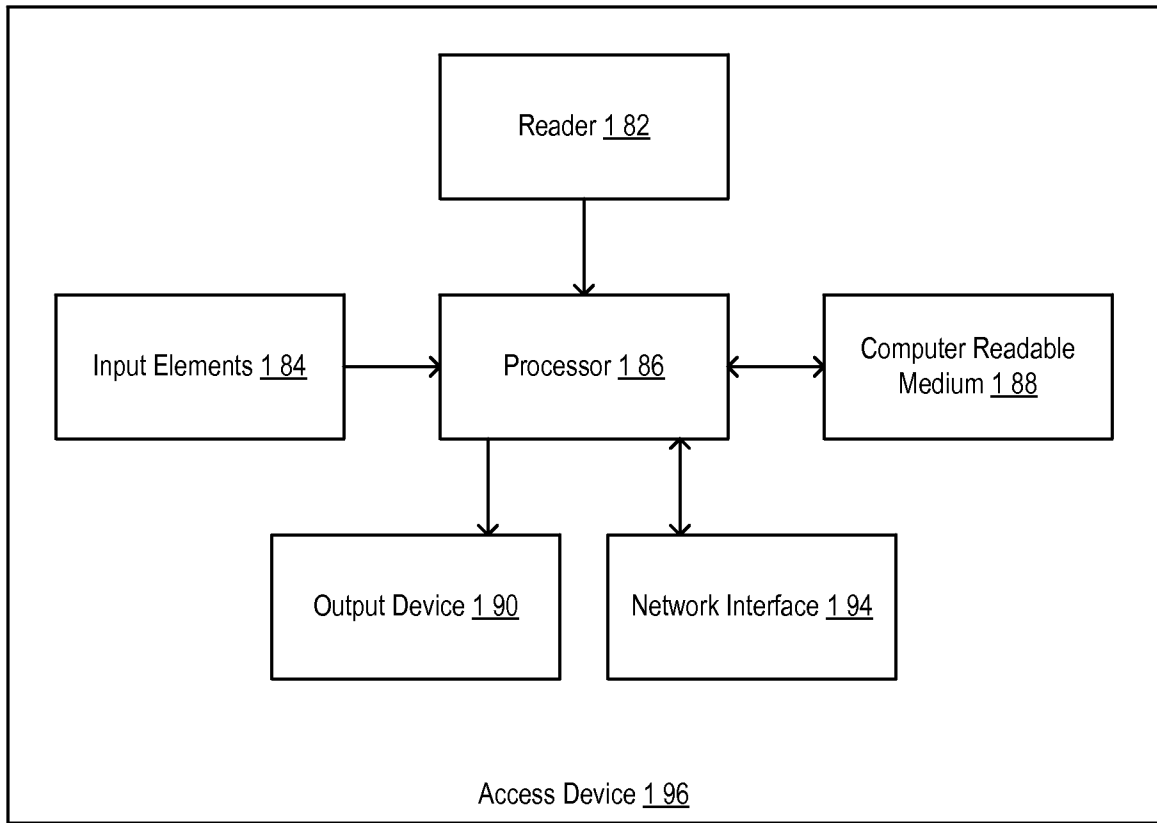


FIGURE 1C

Exemplary Access Device

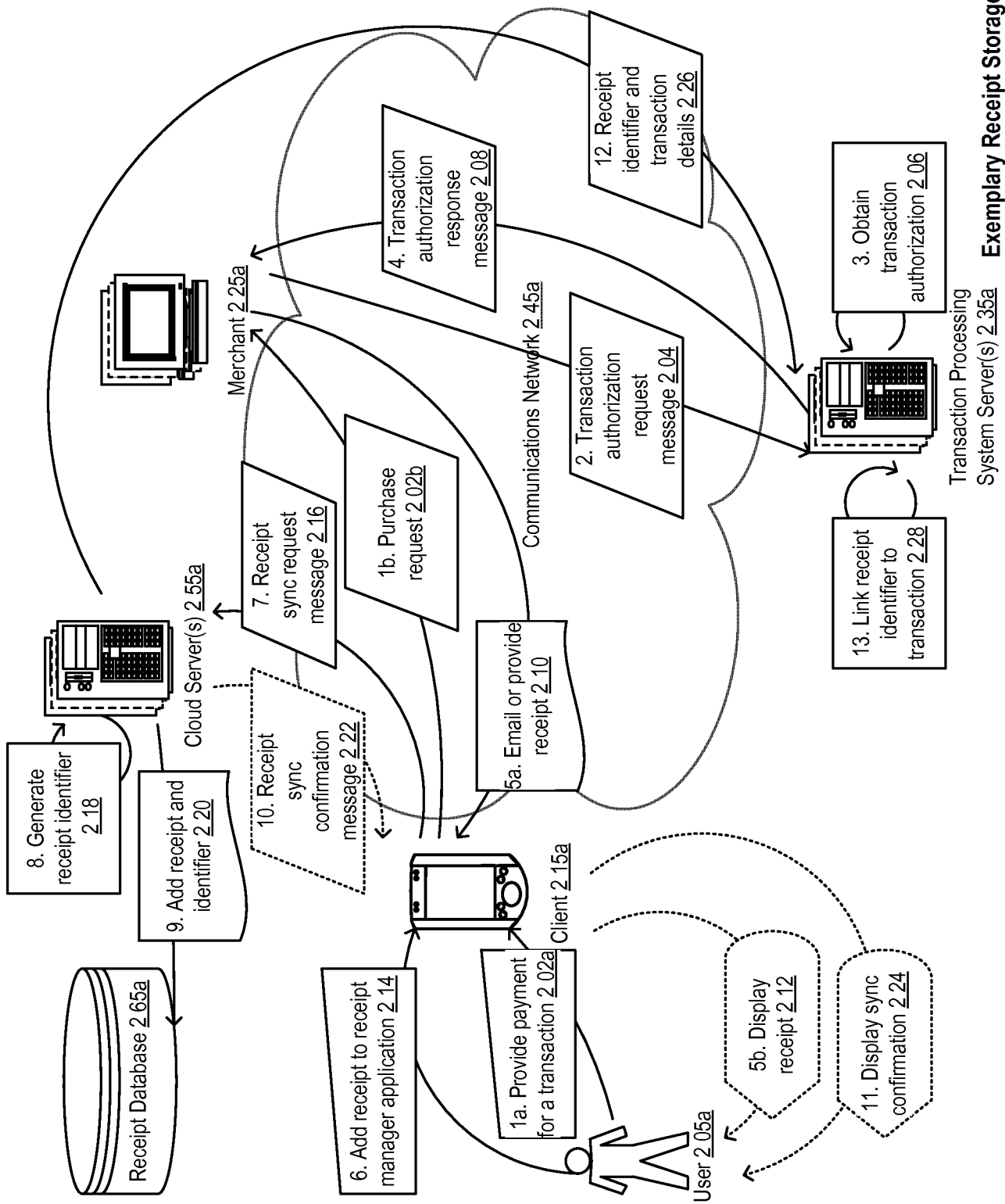


FIGURE 2A

5/22

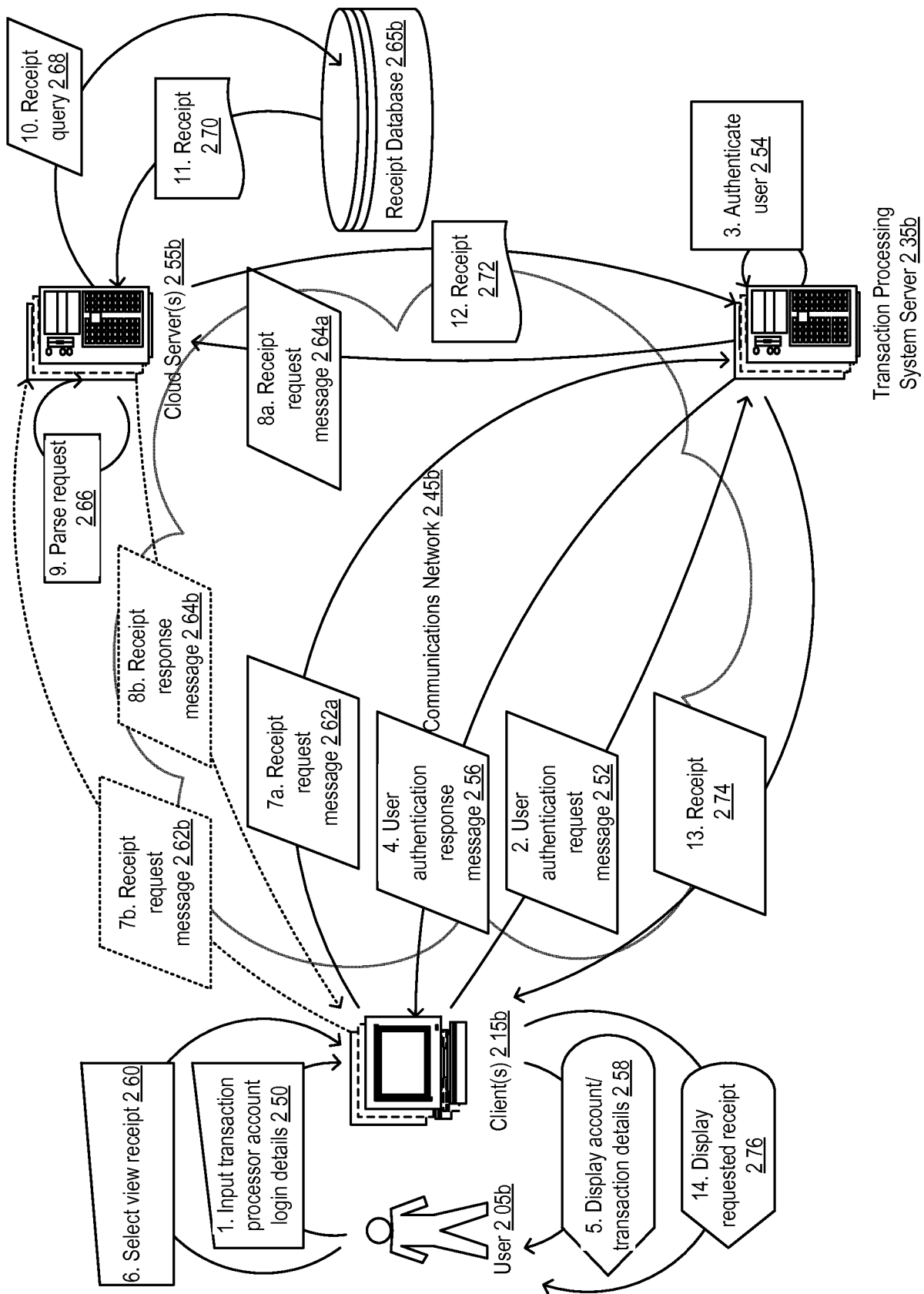


FIGURE 2B

Exemplary Receipt Access (RA) Data Flow

6/22

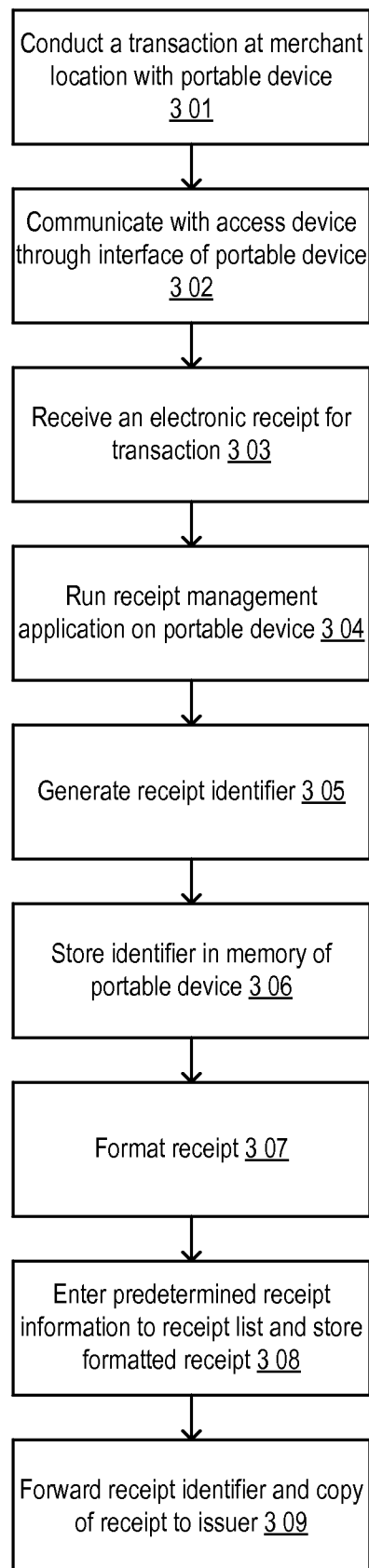


FIGURE 3

Exemplary Receipt Management (RM) Component Logic Flow

7/22

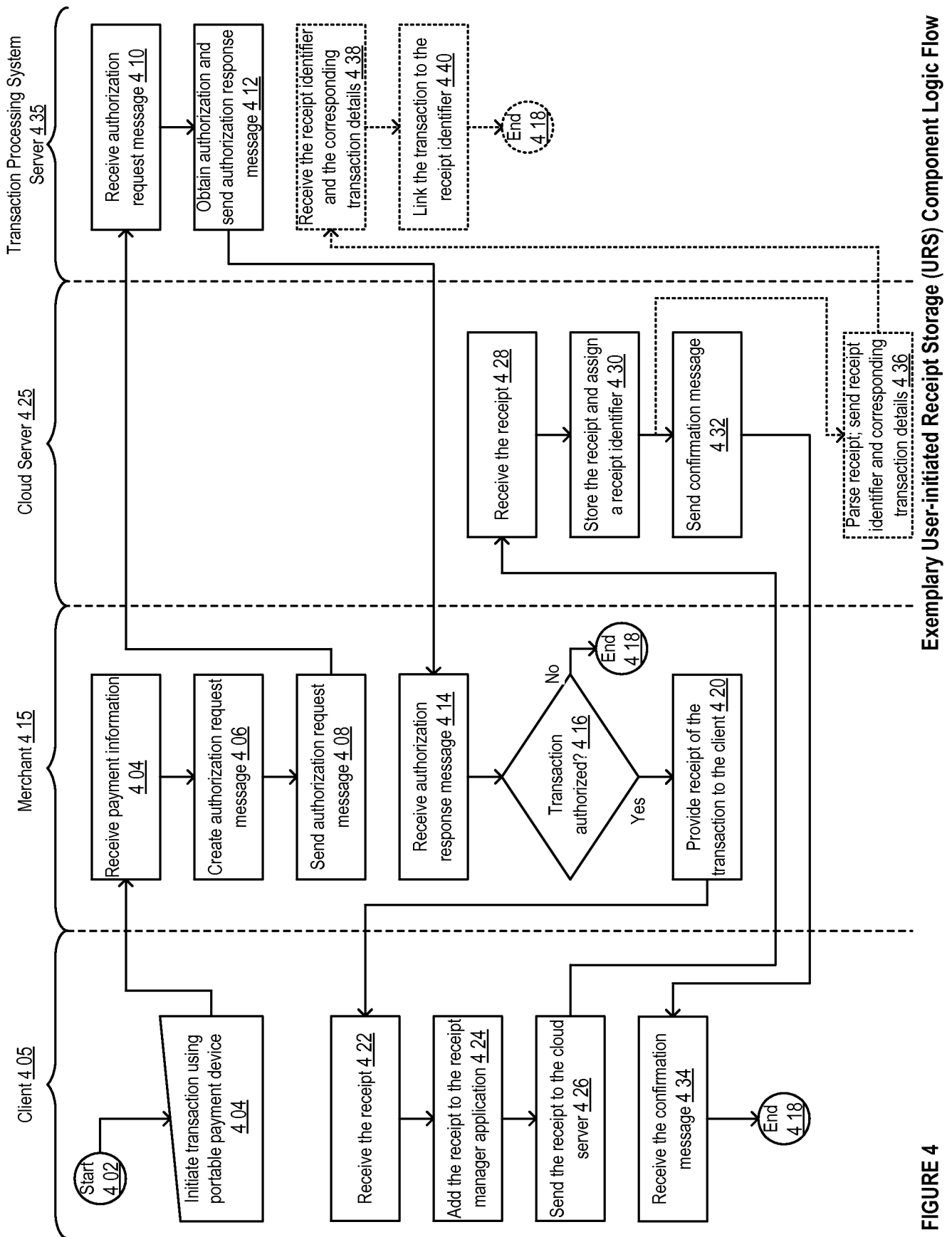


FIGURE 4

8/22

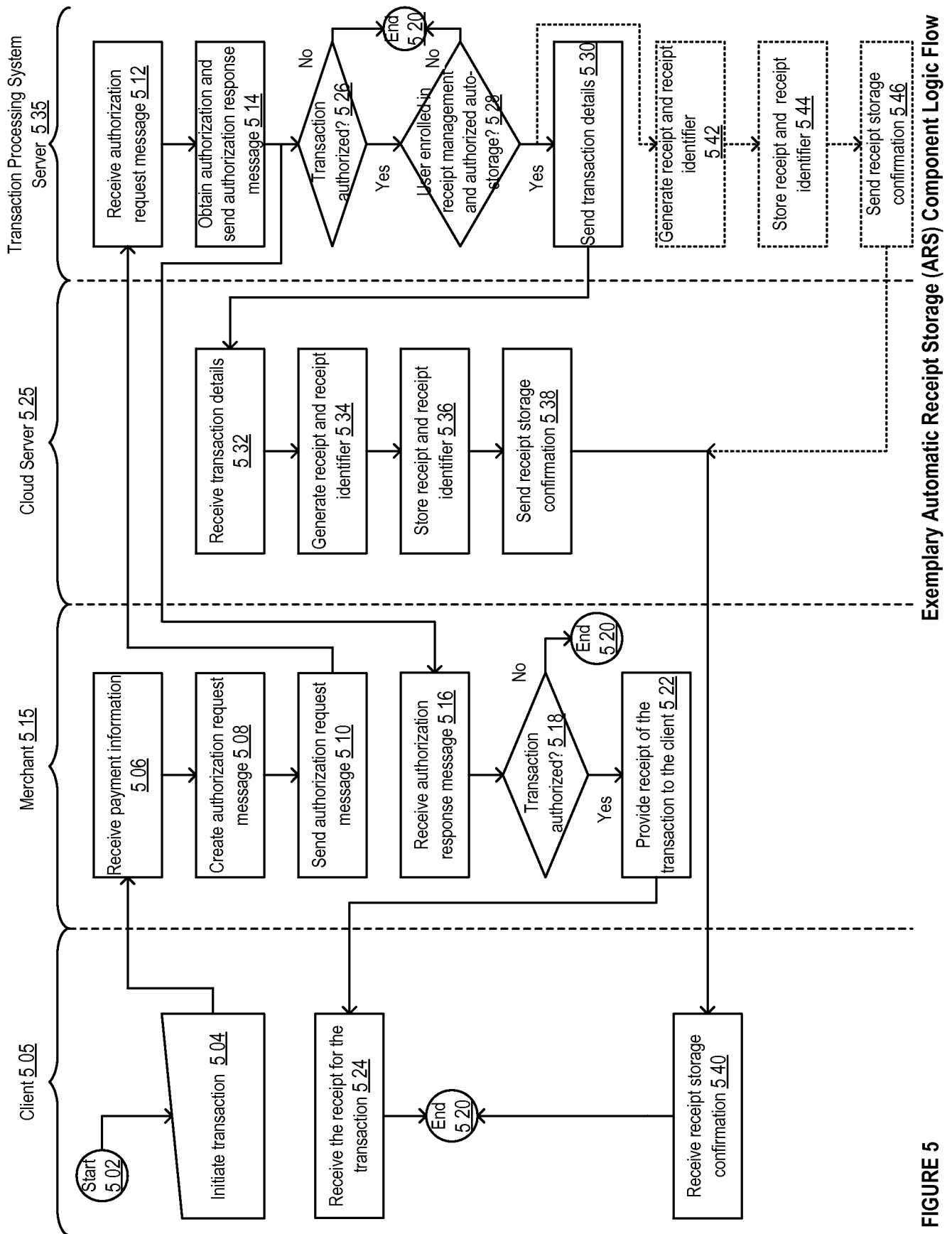


FIGURE 5

9/22

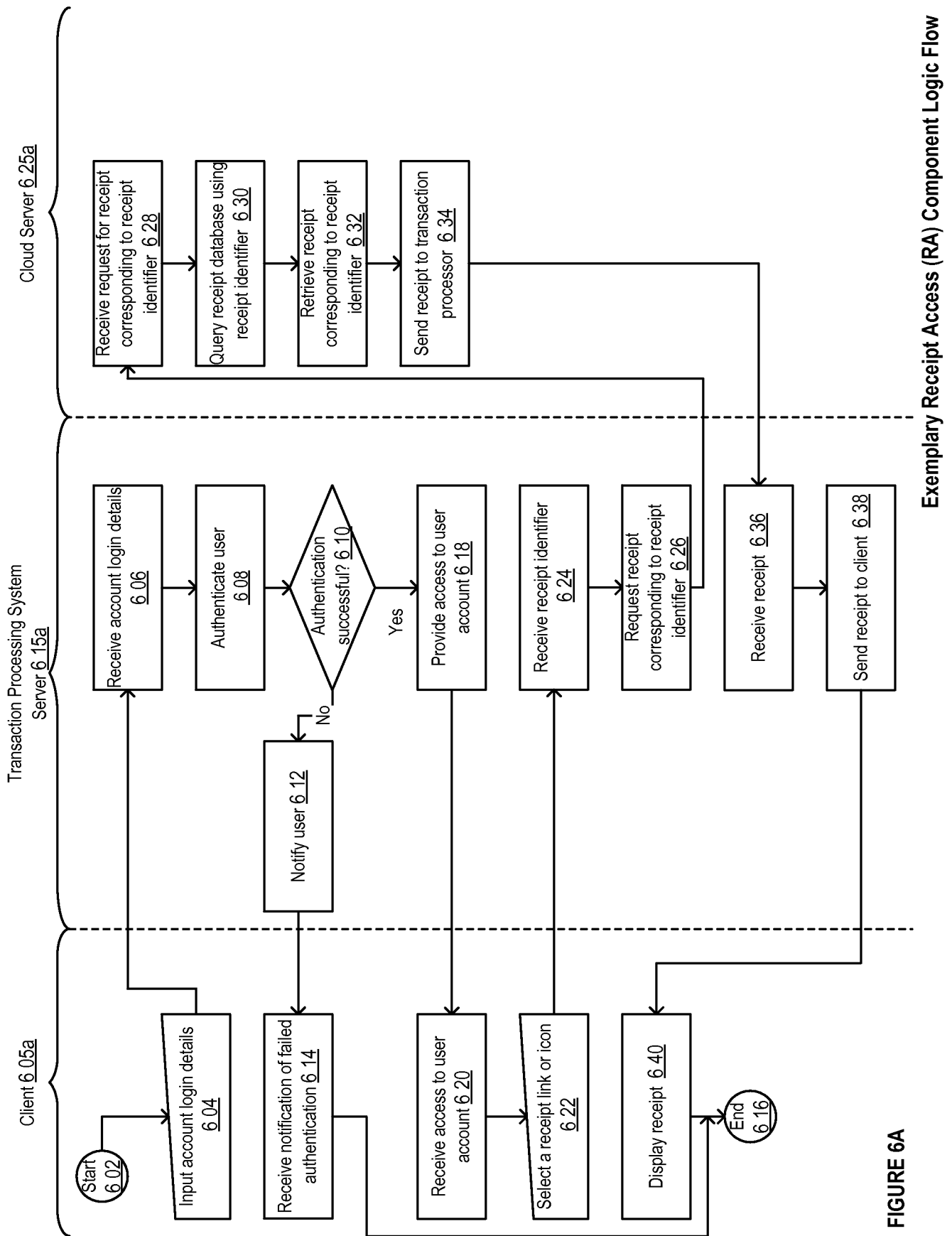


FIGURE 6A

10/22

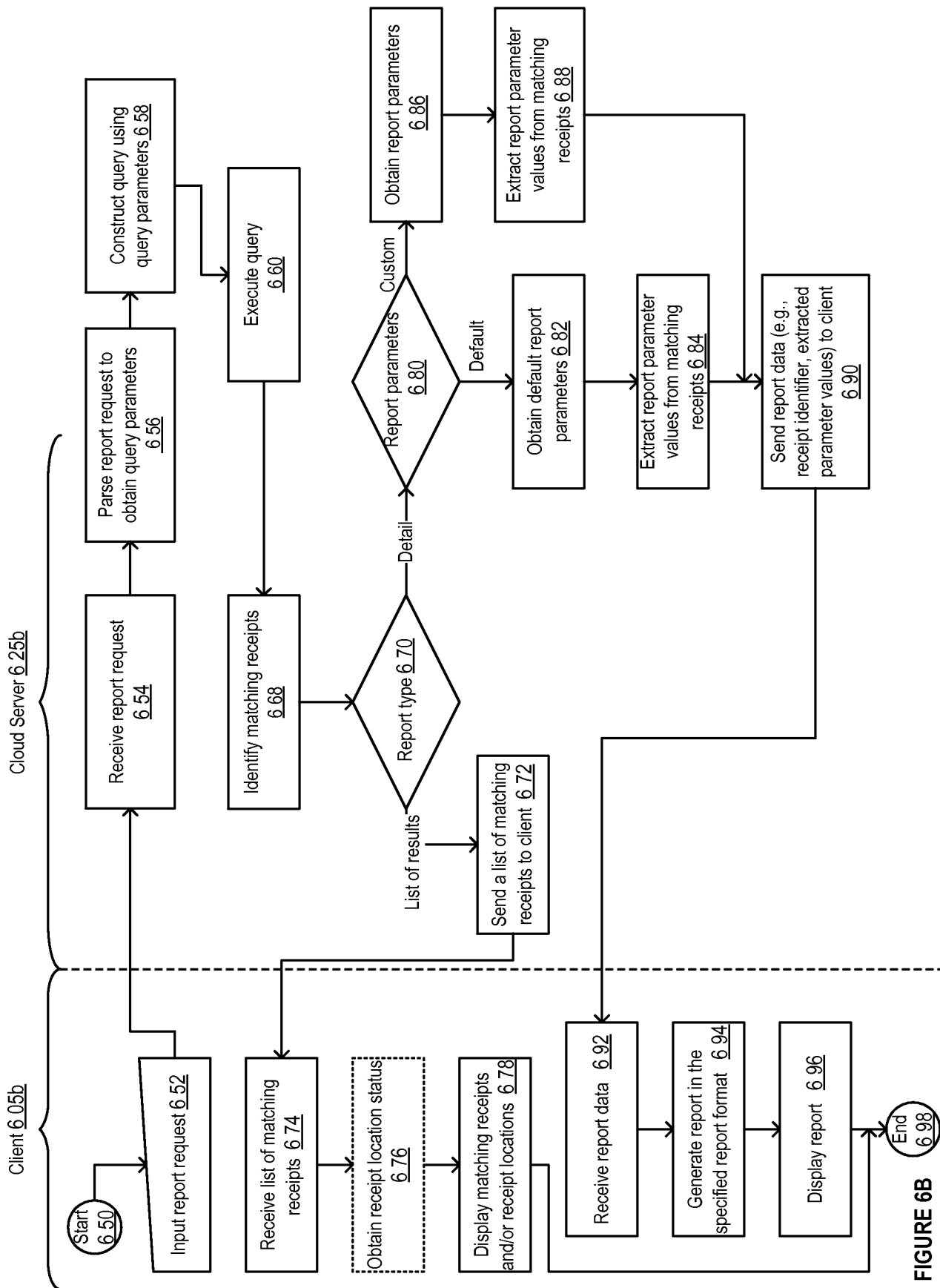


FIGURE 6B

Exemplary Receipt Query (RQ) Component Logic Flow

11/22

7.08

All Inboxes (571) 1 of 3110 ▲ ▼	Subject: Your receipt from ZStore, San Francisco Date: August 18, 20XX 4:34:17 PM EDT To: Jdoe@gmail.com Cc: sanfrancisco@zstore.com Reply-To: Do_not_reply@zstore.com Thank you for shopping at the Zstore.	Quick Look <u>7.08a</u> Open in “Receipt Manager” <u>7.08b</u> Add to “Receipt Manager” <u>7.08c</u> Cancel <u>7.08d</u>
---	---	--

7.06

All Inboxes (571) 1 of 3110 ▲ ▼	Subject: Your receipt from ZStore, San Francisco Date: August 18, 20XX 4:34:17 PM EDT To: Jdoe@gmail.com Cc: sanfrancisco@zstore.com Reply-To: Do_not_reply@zstore.com Thank you for shopping at the Zstore. To tell us about your experience, click here. Emailreceipt_20XX0818R ... 38.8 KB >	Email Application Icons
---	---	-------------------------

Exemplary Electronic Receipt Manager User Interfaces

FIGURE 7A

710

Cancel

Add Receipt

Take photo of a receipt

710a

Choose from saved location

710b

Choose from email

710c

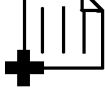
705

715

725

735

745

Add Receipt

Receipt Finder

Settings

Sync

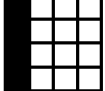
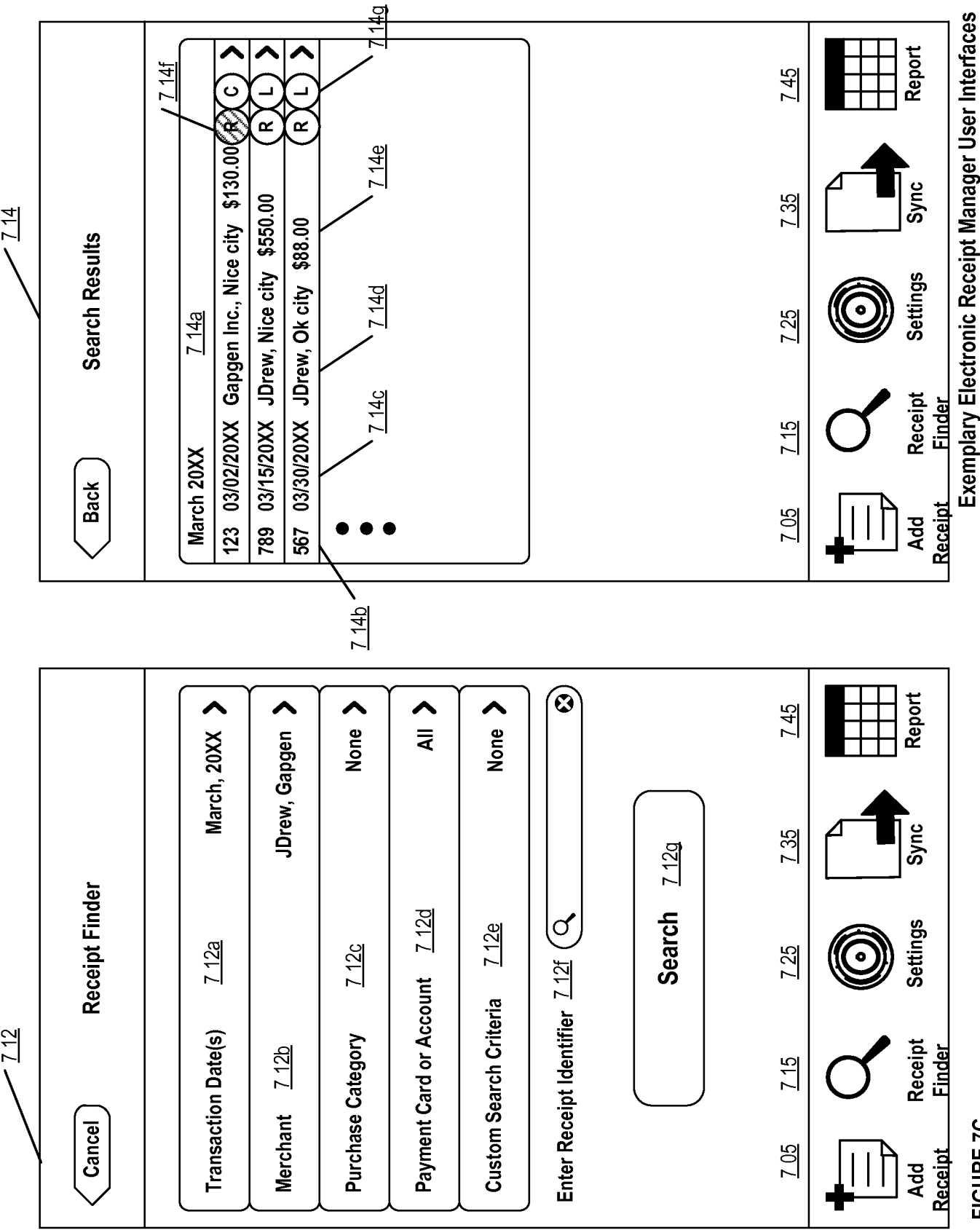
Report

FIGURE 7B

Exemplary Electronic Receipt Manager User Interfaces



Exemplary Electronic Receipt Manager User Interfaces

FIGURE 7C

14/22

Back

Receipt 789
JDrew

Return Policy

JDREW

700 SW Fifty Ave.
Nice city, OR 97120

STORE: 00506 CASHIER: McKenzie
ASSOCIATE: 0000000999 REGISTER: 003
1: 20 PM 3/15/20XX

Rex dress in silk charmeuse 1 @ \$550.00
Item No. 57093
Color: Blue Size: 2

Email Receipt

Print Receipt

Sync Receipt

Cancel

Back

Receipt 789
JDrew

Return Policy

JDREW

700 SW Fifty Ave.
Nice city, OR 97120

STORE: 00506 CASHIER: McKenzie
ASSOCIATE: 0000000999 REGISTER: 003
1: 20 PM 3/15/20XX

Rex dress in silk charmeuse 1 @ \$550.00
Item No. 57093
Color: Blue Size: 2

Merchandise Total: \$550.00
Sales Tax: \$0.00
Total: \$550.00

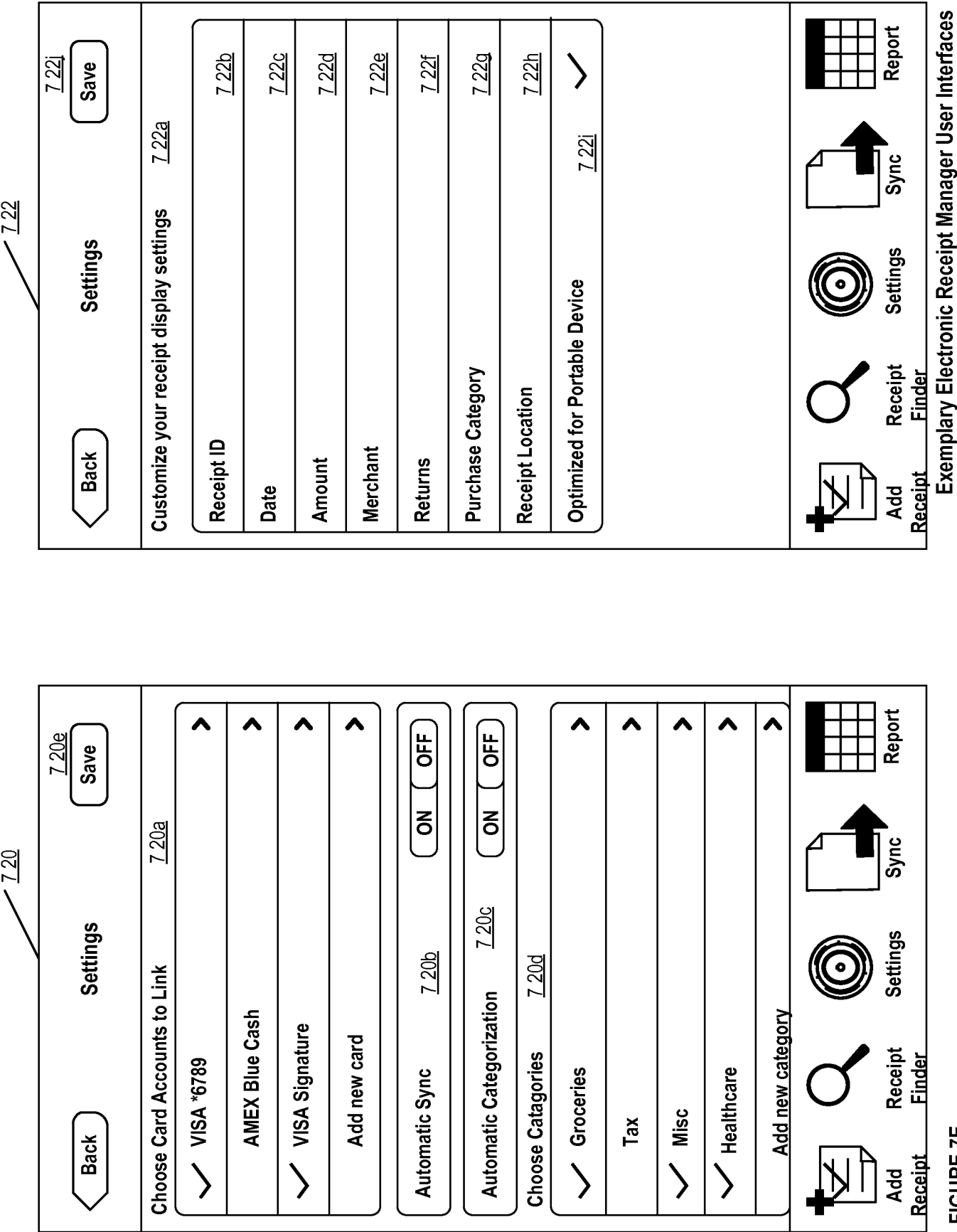
Revolving Jdrew
Jane Doe
XXXXXXXXX5020 \$550.00


R207023274373294820842



Exemplary Electronic Receipt Manager User Interfaces

FIGURE 7D



7 26a

Report

Setting

7 26b

7 26c

7 26d

Groceries

Tax

+

7 26e

+

Date	Amount	Merchant	Receipt ID
1/3/20XX	96.00	WholeFoods	123
1/15/20XX	98.00	WholeFoods	456
2/3/20XX	11.99	Shaws	789
2/28/20XX	15.90	Shaws	899
3/1/20XX	5.60	Winn-Dixie	1023
3/15/20XX	120.00	WholeFoods	1025

Copy

Paste

Delete

Create Chart

7 26f

7 26g

7 26h

7 26i

7 26j

7 26k

7 26l

7 26m

7 26n

7 26o

Refresh

Save

Export

Print

Email

+

7 26p

7 26q

7 26r

7 26s

7 26t

7 26u

7 26v

7 26w

7 26x

7 26y

7 26z

+

7 26aa

7 26ab

7 26ac

7 26ad

7 26ae

7 26af

7 26ag

7 26ah

7 26ai

7 26aj

7 26ak

7 26al

7 26am

7 26an

7 26ao

7 26ap

7 26aq

7 26ar

7 26as

7 26at

7 26au

7 26av

7 26aw

7 26ax

7 26ay

7 26az

+

7 26ba

7 26bb

7 26bc

7 26bd

7 26be

7 26bf

7 26bg

7 26bh

7 26bi

7 26bj

7 26bk

7 26bl

7 26bm

7 26bn

7 26bo

7 26bp

7 26bq

7 26br

7 26bs

7 26bt

7 26bu

7 26bv

7 26bw

7 26bx

7 26by

7 26bz

+

7 26ca

7 26cb

7 26cc

7 26cd

7 26ce

7 26cf

7 26cg

7 26ch

7 26ci

7 26cj

7 26ck

7 26cl

7 26cm

7 26cn

7 26co

7 26cp

7 26cq

7 26cr

7 26cs

7 26ct

7 26cu

7 26cv

7 26cw

7 26cx

7 26cy

7 26cz

+

7 26da

7 26db

7 26dc

7 26dd

7 26de

7 26df

7 26dg

7 26dh

7 26di

7 26dj

7 26dk

7 26dl

7 26dm

7 26dn

7 26do

7 26dp

7 26dq

7 26dr

7 26ds

7 26dt

7 26du

7 26dv

7 26dw

7 26dx

7 26dy

7 26dz

+

7 26ea

7 26eb

7 26ec

7 26ed

7 26ee

7 26ef

7 26eg

7 26eh

7 26ei

7 26ej

7 26ek

7 26el

7 26em

7 26en

7 26eo

7 26ep

7 26eq

7 26er

7 26es

7 26et

7 26eu

7 26ev

7 26ew

7 26ex

7 26ey

7 26ez

+

7 26fa

7 26fb

7 26fc

7 26fd

7 26fe

7 26ff

7 26fg

7 26fh

7 26fi

7 26fj

7 26fk

7 26fl

7 26fm

7 26fn

7 26fo

7 26fp

7 26fq

7 26fr

7 26fs

7 26ft

7 26fu

7 26fv

7 26fw

7 26fx

7 26fy

7 26fz

+

7 26ga

7 26gb

7 26gc

7 26gd

7 26ge

7 26gf

7 26gg

7 26gh

7 26gi

7 26gj

7 26gk

7 26gl

7 26gm

7 26gn

7 26go

7 26gp

7 26gq

7 26gr

7 26gs

7 26gt

7 26gu

7 26gv

7 26gw

7 26gx

7 26gy

7 26gz

+

7 26ha

7 26hb

7 26hc

7 26hd

7 26he

7 26hf

7 26hg

7 26hh

7 26hi

7 26hj

7 26hk

7 26hl

7 26hm

7 26hn

7 26ho

7 26hp

7 26hq

7 26hr

7 26hs

7 26ht

7 26hu

7 26hv

7 26hw

7 26hx

7 26hy

7 26hz

+

7 26ia

7 26ib

7 26ic

7 26id

7 26ie

7 26if

7 26ig

7 26ih

7 26ii

7 26ij

7 26ik

7 26il

7 26im

7 26in

7 26io

7 26ip

7 26iq

7 26ir

7 26is

7 26it

7 26iu

7 26iv

7 26iw

7 26ix

7 26iy

7 26iz

+

7 26ja

7 26jb

7 26jc

7 26jd

7 26je

7 26jf

7 26jg

7 26jh

7 26ji

7 26jj

7 26jk

7 26jl

7 26jm

7 26jn

7 26jo

7 26jp

7 26jq

7 26jr

7 26js

7 26jt

7 26ju

7 26jv

7 26jw

7 26jx

7 26jy

7 26jz

+

7 26ka

7 26kb

7 26kc

7 26kd

7 26ke

7 26kf

7 26kg

7 26kh

7 26ki

7 26kj

7 26kk

7 26kl

7 26km

7 26kn

7 26ko

7 26kp

7 26kq

7 26kr

7 26ks

7 26kt

7 2

Back
Report Setting
Save
7 24m

Choose Report Criteria 7 24a

	Groceries	<u>7 24b</u>
	Tax	<u>7 24c</u>
	Misc	<u>7 24d</u>
	Healthcare	<u>7 24e</u>
	Merchant	<u>7 24f</u>
	Add new category	<u>7 24g</u>

Choose Report Format 7 24h

List of receipts	<u>7 24i</u>
Summary	<u>7 24j</u>
Spreadsheet	<u>7 24k</u>

Get Report
7 24l

Add Receipt
 Search
 Settings
 Sync
 Report

FIGURE 7F

17/22

8.00

RECEIPT MANAGER

RECEIPT ID	DATE	AMOUNT	MERCHANT	RETURNS
123	01/02/10	34.50	GAP	N/A
456	01/23/10	98.00	M KORS	14 DAYS
<u>789</u>	02/04/10	3.54	SBUX	N/A
012	02/28/10	8.23	CONVERSE	30 DAYS
345	03/01/10	256.21	MACYS	30 DAYS
678	03/03/10	45.98	BCBG	60 DAYS
<u>901</u>	03/03/10	20.00	CK	14 DAYS
234	03/12/10	49.87	GAP	7 DAYS
567	03/16/10	38.77	IN & OUT	N/A
890	03/17/10	124.76	OAKLEY	30 DAYS
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•

8.02



8.04 8.06 8.08 8.10

FIGURE 8A

Exemplary Electronic Receipt Manager User Interfaces

18/22

8 05

STARBUCKS
123 NONAME ROAD
CITY, ST 12234
Store No.: 89012344

02/04/10
13:12:14 P

ACCT # : XXXXXXXXXX 9000

LG REG COFFEE

DANISH

SUBTOTAL

TAX

TOTAL

2.00

1.00

3.00

0.54

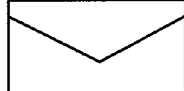
3.54

789

8 12


8 14


8 16


8 18


8 20

FIGURE 8B

Exemplary Original Receipt

19/22

8 15

VISA				
ACCOUNT ENDING IN x9000				
DESCRIPTION	DATE	DEBITS	CREDITS	BALANCE
GAP 01/02/10 11:59 1234567 CITY, ST <u>123</u>	01/04/10	34.50		421.00
M KORS 01/23/10 15:10 3454677 CITY, ST <u>456</u>	01/24/10	98.00		323.00
SBUX 02/04/10 13:12 89012344 CITY, ST <u>789</u>	02/06/10	3.54		319.46
•	•	•		•
•	•	•		•
•	•	•		•

8 22

FIGURE 8C

Exemplary User Account Statement

8 35

Back

Recent Activity

Pay Bill

Visa - 9000

8 35a

JDREW

700 SW Fifty Ave.
Nice city, OR 97120

STORE: 00506 CASHIER: McKenzie
ASSOCIATE: 0000000999 REGISTER: 003
1: 20 PM 4/29/20XX

Rex dress in silk charmeuse 1 @ \$550.00
Item No. 57093
Color: Blue Size: 2

Merchandise Total: \$550.00
Sales Tax: \$0.00
Total: \$550.00

Visa
Jane Doe
XXXXXXXXXX9000 \$550.00


R207023274373294820842

8 35c

8 35d

8 35e

Print

Save

Email

05/02/20XX

WHOLEFDS TAN 10327
CITY, STATE

8 25f

\$41.22

8 25g

04/29/20XX

JDREW 5745656
NICE CITY, OR

\$550.00

04/28/20XX

M KORS 567786878
CITY, STATE

\$323.00

GAP 1223243
CITY STATE

\$421.00

SBUX 89012344
CITY, STATE

\$319.46

Home

My cards

Contact us

Help

8 25

Back

Recent Activity

Pay Bill

Visa - 9000

JANE DOE

8 25a

8 25b

8 25c

Date	Amount	Description
05/02/20XX	8 25d	8 25e
WHOLEFDS TAN 10327 CITY, STATE	8 25f	\$41.22 8 25g
04/29/20XX		
JDREW 5745656 NICE CITY, OR		\$550.00
SHELL OIL 5745687 CITY, STATE		\$56.03
04/28/20XX		
M KORS 567786878 CITY, STATE		\$323.00
GAP 1223243 CITY STATE		\$421.00
SBUX 89012344 CITY, STATE		\$319.46

Home

My cards

Contact us

Help

Exemplary User Account Application User Interfaces

FIGURE 8D

8.55

Back

Recent Activity

Pay Bill

Visa - 9000

8.55a

These receipts may be associated with the selected transaction.

8.55b

NONAME
MERCHANT
RECEIPT 1

8.55c

NONAME
MERCHANT
RECEIPT 2

8.55d

NONAME
MERCHANT
RECEIPT 3

8.55e

Link

05/WH CITY

04/SH CITY

04/SH CITY

04/MH CITY, STATE

GAP 1223243 CITY STATE

SBUX 89012344 CITY, STATE

Home

My cards

Contact us

Help

8.45

Back

Recent Activity

Pay Bill

Visa - 9000

JANE DOE

Date

Amount

Description

05/02/20XX

WHOLEFDS TAN 10327 CITY, STATE

\$41.22

04/29/20XX

JDREW 5745656 NICE CITY, OR

\$550.00

SHELL OIL 5745687 CITY, STATE

\$56.03

04/28/20XX

M KORS 567786878 CITY, STATE

\$323.00

GAP 1223243 CITY STATE

\$421.00

NONAME MERCHANT 89012344 CITY, STATE

\$52.00

8.45a

Home

My cards

Contact us

Help

FIGURE 8E

Exemplary User Account Application User Interfaces

22/22

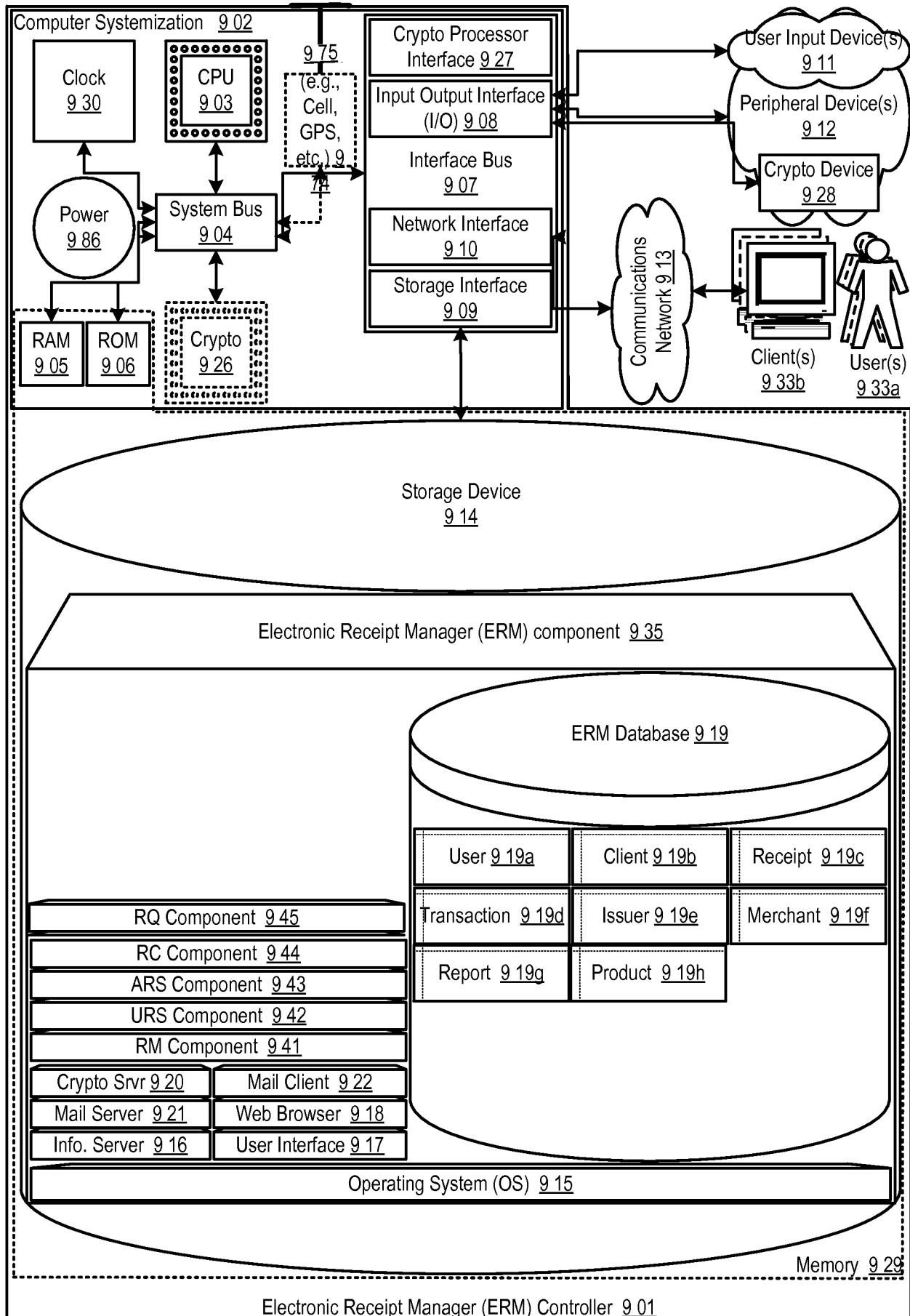


FIGURE 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/037597

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06Q 10/00 (2012.01)

USPC - 705/24

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, 30/00 (2012.01)

USPC - 705/17, 21, 24, 30

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Questel Orbit, Google Patent, Google, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7,725,369 B2 (SHIFTAN et al) 25 May 2010 (25.05.2010) entire document	1-18, 20
Y	CA 2 684 434 A1 (BHINDER) 25 January 2010 (25.01.2010) entire document	1-18, 20
Y	US 7,069,240 B2 (SPERO et al) 27 June 2006 (27.06.2006) entire document	4
Y	US 2011/0106714 A1 (JUNGER) 05 May 2011 (05.05.2011) entire document	5
Y	US 2009/0119278 A1 (CROSS et al) 07 May 2009 (07.05.2009) entire document	15
A	US 2010/0100434 A1 (SOCK) 22 April 2010 (22.04.2010) entire document	1-18, 20
A	US 2009/0089194 A1 (MATHIS et al) 02 April 2009 (02.04.2009) entire document	1-18, 20

☐ 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

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"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

06 September 2012

Date of mailing of the international search report

21 SEP 2012

Name and mailing address of the ISA/US

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P.O. Box 1450, Alexandria, Virginia 22313-1450

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Authorized officer:

Blaine R. Copenheaver

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PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/037597

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.:
1-18, 20

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.

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 1-18, 20, drawn to a processor implemented method for managing a receipt on a portable device; a portable device and a processor readable tangible medium storing processor issuable instructions to determine a set of fields for formatting receipt data from the receipt; format the receipt data from the receipt to include the set of fields to obtain formatted receipt data; and store the formatted receipt data in a memory of the portable device.

Group II, claim 19, drawn to a portable device having a processor and memory element to obtain an electronic receipt display setting stored in the memory; format receipt data in accordance with the electronic receipt display setting; a display interface to display the receipt identifier along with the formatted receipt data.

Group III, claims 21-23, drawn to an electronic receipt manager system, a processor implemented electronic receipt management method implemented at a cloud storage system and a processor implemented electronic receipt management method implemented at an issuer that issued an account on which a transaction corresponding to an electronic receipt is conducted by storing an electronic receipt in associated with the receipt identifier in a database; transmit the receipt identifier and at least one transaction identifying information to the issuer; identifying the transaction corresponding to the transaction identifying information; linking the receipt identifier to the at least one transaction; and providing a user of the account access to the electronic receipt stored in the database via the receipt identifier.

The inventions listed as Groups I, II and III 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: determine a set of fields for formatting receipt data from the receipt; format the receipt data from the receipt to include the set of fields to obtain formatted receipt data; and store the formatted receipt data in a memory of the portable device as claimed therein is not present in the invention of Groups II and III. The special technical feature of the Group II invention: obtain an electronic receipt display setting stored in the memory; format receipt data in accordance with the electronic receipt display setting; a display interface to display the receipt identifier along with the formatted receipt data as claimed therein is not present in the invention of Groups I or III. The special technical feature of the Group III invention: storing an electronic receipt in associated with the receipt identifier in a database; transmit the receipt identifier and at least one transaction identifying information to the issuer; identifying the transaction corresponding to the transaction identifying information; linking the receipt identifier to the at least one transaction; and providing a user of the account access to the electronic receipt stored in the database via the receipt identifier as claimed therein is not present in the invention of Groups I or II.

Groups I, II and III lack unity of invention because even though the inventions of these groups require the technical feature of receiving a receipt through an interface; generating a unique receipt identifier associated with a receipt, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of US 7,725,369 B2 (SHIFTAN et al) 25 May 2010 (25.05.2010) figure 1; column 6, line 47 through column 8, line 60.

Since none of the special technical features of the Group I, II or III inventions are found in more than one of the inventions, unity of invention is lacking.