US009027827B2

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

(10) **Patent No.:** **US 9,027,827 B2**
(45) **Date of Patent:** **May 12, 2015**

(54) **SYSTEM AND METHOD FOR PROVIDING A PERSONALIZED SHOPPING EXPERIENCE AND PERSONALIZED PRICING OF PRODUCTS AND SERVICES WITH A PORTABLE COMPUTING DEVICE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 288 days.

(21) Appl. No.: **13/365,424**

(22) Filed: **Feb. 3, 2012**

(65) **Prior Publication Data**

US 2013/0181045 A1 Jul. 18, 2013

Related U.S. Application Data

(60) Provisional application No. 61/586,900, filed on Jan. 16, 2012.

(51) **Int. Cl.**
G06F 17/00	(2006.01)
G06Q 30/06	(2012.01)
G06Q 30/02	(2012.01)
G06Q 20/32	(2012.01)
G06Q 20/20	(2012.01)
G06Q 30/00	(2012.01)

(52) **U.S. Cl.**
CPC *G06Q 30/0601* (2013.01); *G06Q 30/0207* (2013.01); *G06Q 20/322* (2013.01); *G06Q 20/20* (2013.01); *G06Q 30/01* (2013.01)

(58) **Field of Classification Search**
USPC 235/375, 380, 379; 705/14.25, 14.58, 705/14.53, 14.16, 14.64, 14.66, 14.19, 14.1, 705/26.1
See application file for complete search history.

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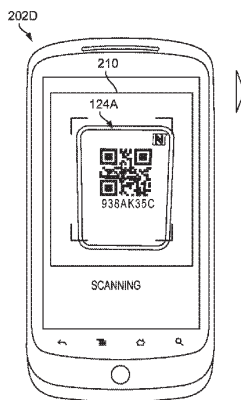*Primary Examiner* — Michael G Lee
Assistant Examiner — Tabitha Chedekel
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(57) **ABSTRACT**

A system and method for providing a personalized shopping experience with a portable computing device ("PCD") are described. The system and method may include checking-in PCD consumers upon entering an establishment of a merchant. The checking-in of the PCD consumer may include verifying credentials for gaining access to a central mobile payment controller and receiving a merchant identifier corresponding to a merchant from a computer communications network. Next, a scan of a machine-readable code associated with at least one of a good and a service may be received. Information associated with the machine-readable code may be retrieved from a database. Subsequently, a personalized price for the at least one good or service may be determined by applying one or more rules. The personalized price may be transmitted over a computer communications network to the portable computing device for display to the PCD consumer.
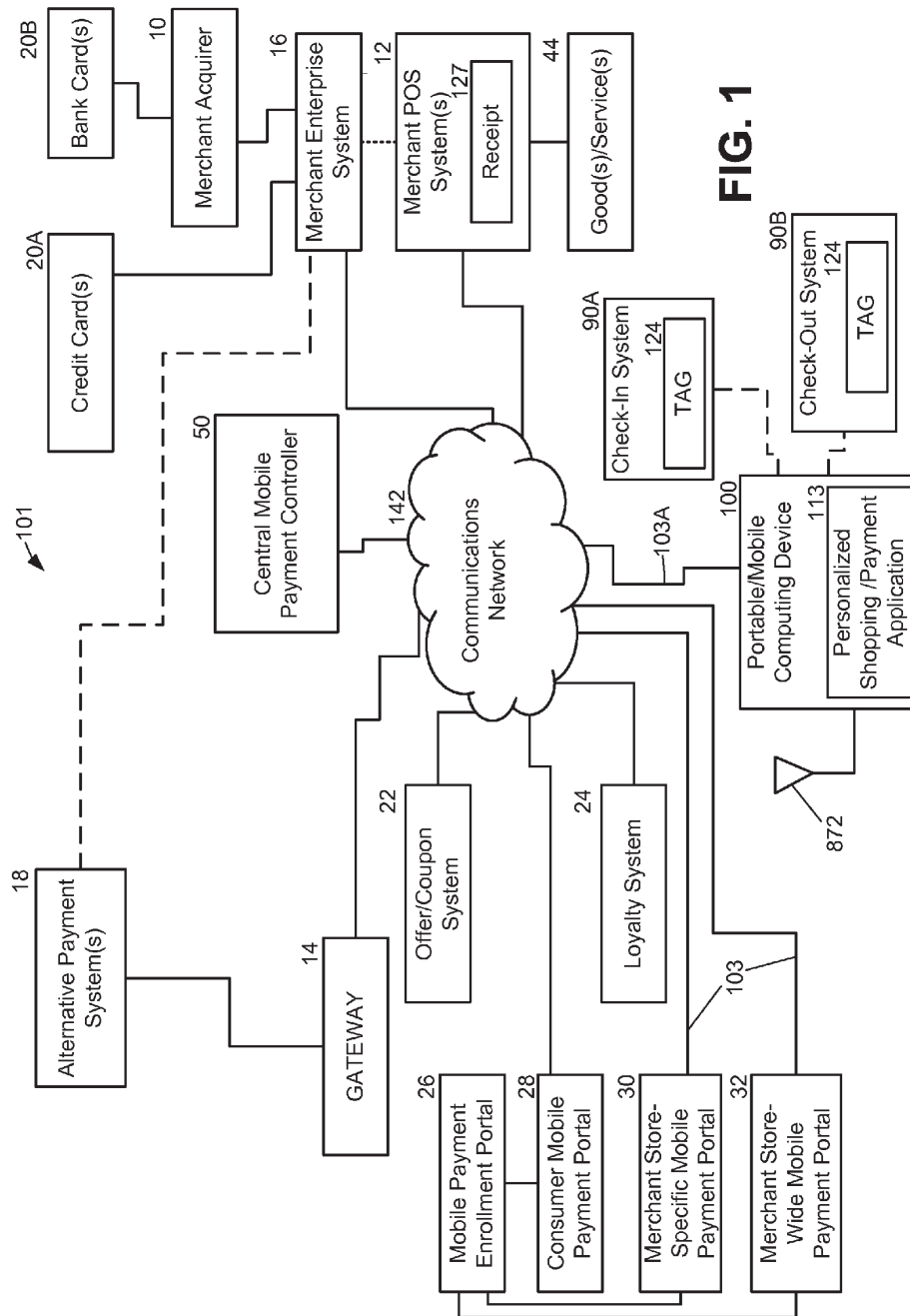
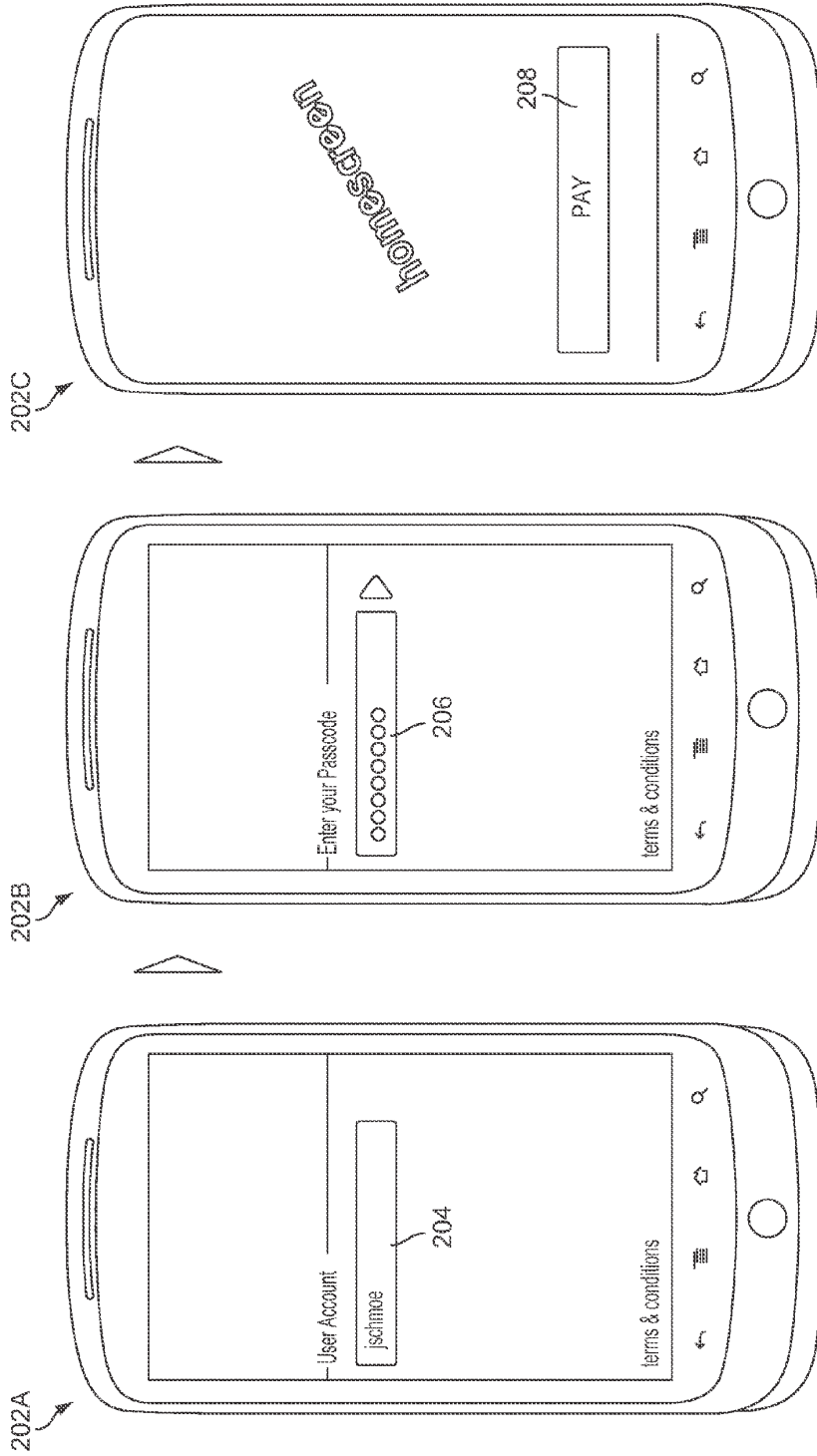**36 Claims, 26 Drawing Sheets**

FIG. 1

202A

User Account
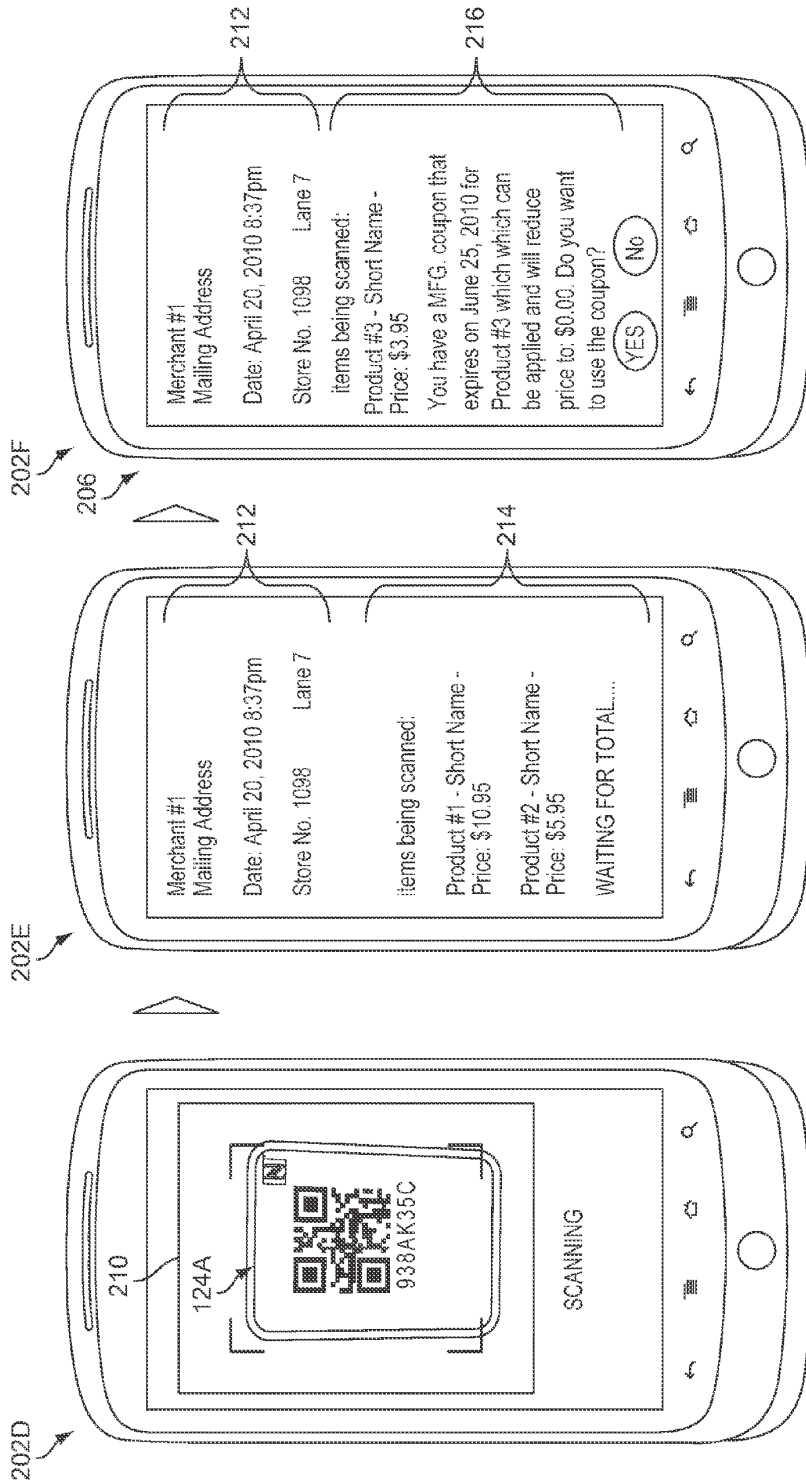
jschmoe

204

terms & conditions

FIG. 2A

202B

Enter your Passcode

OOOOOOOO

206

terms & conditions

FIG. 2B

202C

homescreen

PAY

208

FIG. 2C

202F

212

216

Merchant #1
Mailing Address

Date: April 20, 2010 8:37pm

Store No. 1098   Lane 7

Items being scanned:

Product #3 - Short Name -
Price: $3.95

You have a MFG. coupon that
expires on June 25, 2010 for
Product #3 which which can
be applied and will reduce
price to: $0.00. Do you want
to use the coupon?

(YES)   (No)

FIG. 2F

206

202E

212

214

Merchant #1
Mailing Address

Date: April 20, 2010 8:37pm

Store No. 1098   Lane 7

Items being scanned:

Product #1 - Short Name -
Price: $10.95

Product #2 - Short Name -
Price: $5.95

WAITING FOR TOTAL...

FIG. 2E

202D

210

124A

938AK35C

SCANNING

FIG. 2D

FIG. 2G

FIG. 2H

FIG. 2I

FIG. 3A

908

Device Display

PERSONALIZED SHOPPING/PAYMENT APPLICATION 113

314A	314B	314C	314D	314E
splash	homescreen	sign-in	password	scanning

314F	314G	314H	314I	314J
manual scan	pin	locations	nfc tap	search

314K	314L	314M	314N	314O
show map	store receipts	search receipt	my account	preferences

314P	314Q	314R
devices	sign-out	disable acct

316A	316B	316C	316D	316E
Scan Tag	pin	waiting	pay	paid

316F	316G
in-store	list items

316H	316I	316K	316L
waiting	paying	receipt	checked in

318A	318B	318C	318D	318E
in-store	items full	items check	partial pay	partial paid

318F	318G	318H
split check	items partial	items remaining

332

Skinning Capability

FIG. 3B

18
Alternate Payment Systems

20A
Credit Card(s)

10
Merchant Acquirer

16
Merchant Enterprise System

50
Central Mobile Payment Controller

402
eWallet

404
Credit Switch

406
Data Update

408
Enterprise Router

12
MERCHANT POS SYSTEM

410
Store Controller

127
Receipt

412
Retail ECR

132
Handheld Scanner
loyalty, gift card →

414
Loyalty

416
Credit

418
Private Label

134
Receipt Printer

128
Mag-Stripe Reader
track data →

420
Coupons / Discounts

422
PIN Debit

424
Check

133
2 x 20 Monitor
total →

129
MSR/PINpad
track data →

426
Item Entry

428
Gift Card

131
Graphical Customer Display
line item →

430
Cash

432
Mobile Payment

FIG. 4

20B

Bank Cards

20B1   20B2

CC#4   CC#N

10

Merchant Acquirer

502   504

Pass-Thru   Authorization / Settlement

20A2

T&E Cards

20A2a   20A2a   20A2b

CC#1   CC#2   CC#3

16

Merchant Enterprise System

20A1

Private Label

20A1a

Merchant Card #1

50

Central Mobile Payment Controller

FIG. 5

FIG. 6

18A
Internal Systems
18A1
SYSTEM BRAND #1

18B
Mobile Phone Carrier Billing
18A CARRIER #1
18A CARRIER #2

18C
Alternative Payment (eCommerce)
18C1 Music Account
18C2 On-Line Company #1
18C3 On-Line Company #2
18C4 Payment Provider #1
18C5 Payment Provider #2

18D
Alternate Deposit
18D1 Decoupled Debit

18E
Demand Deposit
18E1 ACH Transfer
18E2 Checks

18F
Stored Value
18F1 Gift Card

GATEWAY 14A
602 Credit Switch
604 Transaction Transport

GATEWAY VAULT 14B
606 track I/II data
608 CNP data
610 merchant gift card data
612 ACH data
614 loyalty data
616 credentials
618 Secure Data Transport
620 Tokenizer

High-Security Firewall
633

50 Central Mobile Payment Controller

FIG. 7A

FIG. 7B

702 3rd Party Offer Generator(s)

742 Personalized Pricing Module

16A SKU Database

737 Rules Engine

777		Ordinary Pricing
Tier 1	Off-the-street	1st Discount
Tier 2	Loyalty Member	2nd Discount
Tier 3	Special Class Loyalty Member	3rd Discount
Tier 4	VIP Loyalty Member	

737A — Rule #1: # of Store Visits

737B — Rule #2: purchase > certain level (i.e. $100)

737C — Rule #3: Product/Service scanned?

737D — Rule #4: Product/Service in wish list?

737E — Rule #5: Merchant provide private label and/or gift card available to consumer

FIG. 7C

742

Personalized Pricing Module

779

Level of Interest Module for PCD Consumer

1) Scan product/service?
2) product/service in wish list?
3) product/service in shopping cart?
4) product/service in check out list?
5) product/service purchased in past?

737

Rules Engine

744

Tender Steering Module

FIG. 7D

742

Personalized Pricing Module

16B

SKU Linkage Database

736E

Customer Profile

781

Product Ensemble Engine

736A

Demographics Database

16C

Promotion Database

FIG. 7E

FIG. 8

Start Method for personalizing
shopping with a portable
computing device

900A

Start Sub-Method for
Providing Personalized
Pricing

901

Receive client credentials from
personal computing device

903

NO

Client
Authenticated?

906

Yes

Receive ECR ID, merchant ID,
and PIN from client

909

Receive Mobile Payment Selection with ECR of
POS terminal

924

Send Mobile Payment parameters from ECR
to Central Mobile Payment Controller

927

Goto Step
930, FIG. 9B

FIG. 9A

From Step
927, Fig. 9A

900B

At Central Mobile Payment Controller,
Match purchase parameters received
from ECR with tag parameters received
from portable computing device

930

Receive selection(s) of
match(es) from client

939

Send selected match(es) to ECR
of POS System

942

Receive selected match(es)
ECR and apply against current
bill

945

Goto Fig. 9C,
Step 955

FIG. 9B

900C

From Fig.
9B, Step 945

Initiate Tender Steering
Alogorithm(s)/Business Rules — 955

Match total purchase data with
client preferences for payment
and relay to client — 956

Display total purchase data, user payment
method preferences, and relevant balance(s)
from payment method preferences — 959

Receive selection(s) for
payment from client — 962

Process payment(s) by sending
messages to one or more
payment systems — 965

Receive payment authorization
message(s) — 971

Goto Fig. 9D,
Step 973

FIG. 9C

From Fig.
9C, Step 971

900D

Relay payment authorization message(s) to Central Mobile Payment Controller and POS System — 973

Relay payment authorization message(s) to client — 976

Generate hard copy receipt with electronic cash register (ECR) — 979

Generate e-receipt and send e-receipt to client — 982

END

FIG. 9D

955

Start Sub-Method /
Routine for Tender
Steering

1005

Payment
Method Presentment Override
Activated?

No

1010

Profile associated
with merchant branded
account?

YES

No

1015

Prepare Offer for merchant
branded payment account

1020

Execute one or more business rules for
preparing offers associated with merchant
branded account(s)

1025

Add offer to a ranked list of user payment
methods

1030

Profile associated
with merchant branded
gift card?

NO

YES

YES

1035

Add gift card to a ranked list of user payment
methods

1040

Profile match
with loyalty program criteria
or frequency of
merchant visits?

YES

NO

1045

Execute one or more rules
associated with loyalty
program and/or visit
frequency

1050

Add offer to a ranked list
of user payment
methods

1055

Compare ranked list of
user payment methods
to purchase price

1060

Re-Order ranked list as
appropriate based on
comparison to purchase
price

1065

Review ranked list and
identify payment account
types

1070

Re-Order ranked list
based on payment
account types

RETURN TO BLOCK
956, FIG. 9C

FIG. 9E

```
          ┌─────────────────────────┐
         ╱  Start Sub-Method/        ╲        ⟋901A
        ╱   Routine for Providing     ╲
        ╲   Personalized Shopping     ╱
         ╲  with Personalized Pricing╱
          └─────────────────────────┘
                      │
                      ▼
          ┌──────────────────────────────┐  ⟋1105
          │ Identify user account        │
          │ associated with PCD          │
          │ and location of PCD and      │
          │ review loyalty status        │
          │ and wishlist                 │
          └──────────────────────────────┘
                      │
                      ▼
          ┌┤─────────────────────┤┐  ⟋1115
          │ Provide personalized  │
          │ pricing of            │
          │ goods/services        │
          └┤─────────────────────┤┘
                      │
                      ▼
          ┌──────────────────────────────┐  ⟋1120
          │ Display wishlist items        │
          │ previously stored by user     │
          └──────────────────────────────┘
                      │
                      ▼
          ┌──────────────────────────────┐  ⟋1125
          │ Receive scan of good(s)/      │
          │ service(s)                    │
          └──────────────────────────────┘
                      │
                      ▼
          ┌──────────────────────────────┐  ⟋1130
          │ Check database                │
          └──────────────────────────────┘
                      │
                      ▼
              ┌─────────────┐
              │ Goto Step   │
              │ 1135, Fig.  │
              │ 9G          │
               ╲───────────╱
                 ╲───────╱
```

FIG. 9F

From Step 1130, FIG. 1A

901B

Provide personalized pricing of goods/services — 1135

Display personalized prices and available payment methods for goods/services — 1140

Apply merchandise/service ensemble rules — 1145

Display additional goods and personalized pricing for additional goods/services based on merchandise ensemble rules — 1150

Receive goods/services for virtual shopping basket — 1155

Receive goods/services for wishlist — 1160

Display goods/services in basket with personalized prices — 1165

Receive command for checkout — 1170

Goto Step 903, FIG. 9A

FIG. 9G

Start Sub-Method/
Routine for Providing
Personalized Pricing

1115, 1135

Determine level of interest in product or
service from a PCD consumer

1205

Apply Rules based on level of interest
from PCD consumer

1210

RETURN TO
STEP 1120 FIG. 9F OR
STEP 1140 FIG. 9G

FIG. 9H

124B

Restaurant #1

DISCRETE. PAYING VIA YOUR CELL PHONE.

NO BILL EVER COMES TO THE TABLE.

AT THE END OF YOUR MEAL, YOU WILL BE NOTIFIED BY

PHONE. SIMPLY TAP YOUR PAYMENT CHOICES. YOUR

RECEIPT WILL AUTOMATICALLY BE SENT TO YOU

RECEIVE A FREE APPETIZER

SCAN THE BARCODE TO BEGIN...

222

938AK35C

this card is NFC-enabled [N]

FIG. 10A

202I

228

Restaurant #1
Mailing Address
Phone Number

Date: June 25, 2010 8:39PM
Server: Jamie   Table: 7

Thank You!

As a token of our
appreciation please select
anyone of the following free
appetizers:

230

8-Cheese Sticks
Value: $6.95 - FREE

6 Loaded Potato Skins
Value: $6.95 - FREE

FIG. 10B

202J

228

Restaurant #1
Mailing Address
Phone Number

Date: April 25, 2010 8:39PM
Server: Jamie   Table: 7

Tip: (+20% | $10.65)
TOTAL: 63.92

218B

payment
method #1   Bal. - $8.00

payment
method #2   Bal. - $100

payment
method #3   Credit - $1000

FIG. 10C

202K

206

228

Restaurant #1
Mailing Address
Phone Number

Date: April 25, 2010 8:39PM
Server: Jamie   Table: 7

E-RECEIPT

Entree #1 - $30.25
Entree #2 - $23.00

Subtotal: - $53.25

Tip: 20% - $10.65

TOTAL: 63.92

Payment Method #3 Selected

220B

FIG. 10D

FIG. 11A

FIG. 11B

FIG. 11C

FIG. 12B

1200B

228

Merchant #1
Mailing Address
Phone Number

Date: April 25, 2010 8:39PM
POS ID: 187

TOTAL: 63.92

Merchant
Gift Card   Bal. - $8.00

Merchant
Payment Acct.   Credit -
                           $1000

payment
method #3   Bal. - $100

218B

FIG. 12A

1200A

228

Merchant #1
Mailing Address
Phone Number

Date: April 25, 2010 8:39PM
POS ID: 187

Thank You!

As a token of our
appreciation please select
anyone of the following
Offers:

10% off with
New Merchant
Payment Account

5% off with Gift Card

230

1

SYSTEM AND METHOD FOR PROVIDING A PERSONALIZED SHOPPING EXPERIENCE AND PERSONALIZED PRICING OF PRODUCTS AND SERVICES WITH A PORTABLE COMPUTING DEVICE

PRIORITY CLAIM AND RELATED APPLICATIONS STATEMENT

This application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Patent Application Ser. No. 61/586,900, entitled, "SYSTEM AND METHOD FOR PROVIDING A PERSONALIZED SHOPPING EXPERIENCE AND PERSONALIZED PRICING OF PRODUCTS AND SERVICES WITH A PORTABLE COMPUTING DEVICE," filed Jan. 16, 2012. The entire contents of which are hereby incorporated by reference.

DESCRIPTION OF THE RELATED ART

Absent any use of portable computing devices ("PCDs") by consumers, like mobile phones, merchants in traditional shopping environments typically do not have the opportunity to strongly influence decisions of the consumer with respect to the products and/or services that a consumer desires to purchase. However, when consumers use PCDs to assist with their shopping experience (transforming these consumers into "PCD consumers"), merchants may now have the opportunity strongly influence the buying decision of such PCD consumers. Conventional PCD shopping applications exist and are offered by several merchants. But such conventional PCD shopping applications fall short in providing offers that are unique and personalized to each individual PCD consumer.

Accordingly, what is needed is a system and method that may overcome the generic product/service offering problems associated with conventional shopping applications for PCDs which are available to a consumer for purchasing goods or services (or both).

SUMMARY OF THE DISCLOSURE

According to one exemplary aspect of the system and method, a personalized shopping experience with a portable computing device may be provided by checking-in PCD consumers upon entering an establishment of a merchant. The checking-in of the PCD consumer may include verifying credentials for gaining access to a central mobile payment controller and receiving a merchant identifier corresponding to a merchant from a computer communications network. Next, a scan of a machine-readable code associated with at least one of a good and a service may be received. Information associated with the machine-readable code may be retrieved from a database. Subsequently, a personalized price for the at least one good or service may be determined by applying one or more rules. The personalized price may be transmitted over a computer communications network to the portable computing device for display to the PCD consumer.

Determining a personalized price for the consumer may include determining a level of interest in the good or service selected by the consumer. Exemplary ways to determine a level of interest in the good or service include, but are not limited to, determining if a machine-readable code associated with the good or service has been scanned by the portable computing device; determining if the product or service is contained within at least one of a wishlist, a virtual shopping

2

cart, and a virtual check out list; and determining if the product or service has been purchased previously by the consumer.

The method and system may further include executing one or more rules for generating a suggestion of an additional product or service associated with the scanned machine-readable code. At least one of a stock keeping unit database, a customer profile database, a demographics database, and a promotion database may be accessed in order to generate the suggestion.

BRIEF DESCRIPTION OF THE DRAWINGS

In the Figures, like reference numerals refer to like parts throughout the various views unless otherwise indicated. For reference numerals with letter character designations such as "102A" or "102B", the letter character designations may differentiate two like parts or elements present in the same Figure. Letter character designations for reference numerals may be omitted when it is intended that a reference numeral to encompass all parts having the same reference numeral in all Figures.

FIG. **1** is a diagram of a wireless portable computing device ("PCD") coupled to a wireless communications network which are integral parts of a system for managing transactions with the portable computing device;

FIG. **2A** is a diagram of a screen for entering a user's log-in credentials on the PCD to access the system;

FIG. **2B** is a diagram of a screen for entering additional log-in credentials such as a password on the PCD to access the system;

FIG. **2C** is a diagram of a screen for the PCD confirming access to system;

FIG. **2D** is a diagram of a screen that shows the contents of an image being scanned with a camera of the PCD;

FIG. **2E** is a diagram of a screen that shows merchant information relevant to a transaction and a line item listing of products being scanned by a product scanner coupled to an electronic cash register;

FIG. **2F** is a diagram of a screen that shows merchant information relevant to a transaction and a coupon option that may be selected by a user;

FIG. **2G** is a diagram of a screen that shows merchant information relevant to a transaction and a total bill for a purchase along with a plurality of payment options that may be selected by a user;

FIG. **2H** is a diagram of a screen that shows an electronic receipt that may be provided upon completion of a transaction with a merchant;

FIG. **2I** is a diagram of an exemplary machine-readable tag that may be coupled to an electronic cash register of a merchant;

FIG. **3A** is a diagram of hardware components and software components running on a portable computing device for supporting transactions with the portable computing device;

FIG. **3B** is a diagram of several software components for a personalized shopping/payment application running on a portable computing device;

FIG. **4** is a diagram illustrating details for the merchant point-of-sale system and the merchant enterprise system of FIG. **1** for completing a sales transaction;

FIG. **5** is a diagram illustrating details of a merchant acquirer and credit card subsystems of FIG. **1** for completing a sales transaction;

FIG. **6** is a diagram illustrating details of a gateway and alternative payment systems illustrated in FIG. **1**;

3

FIG. **7**A is diagram illustrating details for the central mobile payment controller illustrated in FIG. **1** that assists with providing personalized pricing and ensemble suggestions for the PCD consumer;

FIG. **7**B is a diagram illustrating several on-line portals for managing the transaction management system **101** according to one exemplary embodiment of the invention;

FIG. **7**C is a diagram illustrating a price look-up ("PLU") table and an exemplary relationship among a rules engine and a personalized pricing module;

FIG. **7**D is a diagram illustrating a level of interest module and exemplary relationships among the personalized pricing module, the rules engine, and a tender steering module;

FIG. **7**E is a diagram illustrating details of a product ensemble engine that may assist with providing a personalized shopping experience;

FIG. **8** is a functional block diagram illustrating an exemplary portable computing device;

FIGS. **9**A-**9**E are flowcharts illustrating a method for managing transactions with a PCD;

FIGS. **9**F-**9**G are flowcharts illustrating a submethod or routine for providing a personalized shopping experience with personalized pricing for a PCD consumer;

FIG. **9**H is a submethod or routine for providing personalized pricing for a PCD consumer;

FIG. **10**A is a diagram of an exemplary machine-readable tag that may be positioned on a surface such as a table at a restaurant;

FIG. **10**B is a diagram of a screen that shows relevant merchant information and an option for an offer from a merchant that may be selected by a user prior to the end of a transaction;

FIG. **10**C is a diagram that shows merchant information relevant to a transaction and a total bill for a purchase along with a plurality of payment options that may be selected by user;

FIG. **10**D is a diagram of a screen that shows electronic receipt that may be provided upon completion of a transaction with a merchant, such as a restaurant;

FIG. **11**A is a diagram of a screen that illustrates a good or product that has been scanned by a PCD **100** and its corresponding personalized price;

FIG. **11**B is a diagram of a screen that illustrates a virtual shopping cart or basket along with a suggested ensemble of related products by the ensemble engine;

FIG. **11**C is a diagram of a screen that illustrates a virtual wish list that may be updated by the PCD consumer with his or her PCD;

FIG. **12**A is a diagram of a screen that shows merchant information relevant to a transaction and a total bill for a purchase along with a plurality of offers which were generated by a tender steering algorithm; and

FIG. **12**B is a diagram of a screen that shows merchant information relevant to a transaction and a total bill for a purchase along with a plurality of payment options that may be selected by user and which were re-ordered by a tender steering algorithm.

DETAILED DESCRIPTION

The word "exemplary" is used herein to mean "serving as an example, instance, or illustration." Any aspect described herein as "exemplary" is not necessarily to be construed as preferred or advantageous over other aspects.

In this description, the term "application" may also include files having executable content, such as: object code, scripts, byte code, markup language files, and patches. In addition, an

4

"application" referred to herein, may also include files that are not executable in nature, such as documents that may need to be opened or other data files that need to be accessed.

The term "content" may also include files having executable content, such as: object code, scripts, byte code, markup language files, and patches. In addition, "content" referred to herein, may also include files that are not executable in nature, such as documents that may need to be opened or other data files that need to be accessed.

As used in this description, the terms "component," "database," "module," "system," and the like are intended to refer to a computer-related entity, either hardware, firmware, a combination of hardware and software, software, or software in execution. For example, a component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a computing device and the computing device may be a component. One or more components may reside within a process and/or thread of execution, and a component may be localized on one computer and/or distributed between two or more computers. In addition, these components may execute from various computer readable media having various data structures stored thereon. The components may communicate by way of local and/or remote processes such as in accordance with a signal having one or more data packets (e.g., data from one component interacting with another component in a local system, distributed system, and/or across a network such as the Internet with other systems by way of the signal).

In this description, the terms "communication device," "wireless device," "wireless telephone," "wireless communication device," and "wireless handset" are used interchangeably. With the advent of third generation ("3G") wireless technology and four generation ("4G"), greater bandwidth availability has enabled more portable computing devices with a greater variety of wireless capabilities. Therefore, a portable computing device may include a cellular telephone, a pager, a PDA, a smartphone, a navigation device, or a hand-held computer with a wireless connection or link.

Referring initially to FIG. **1**, this figure is a diagram of a wireless portable computing device ("PCD") **100** coupled to a communications network **142** via a wireless communication link **103**A which are integral parts of a system **101** (also referred to herein as a transaction management system **101**) for managing transactions with the portable computing device **100**.

Many of the system elements illustrated in FIG. **1** are coupled via communication links **103** to the communications network **142**. The communication links **103** illustrated in FIG. **1** may comprise wired or wireless links. Wireless links include, but are not limited to, radio-frequency ("RF") links, infrared links, acoustic links, and other wireless mediums. The communications network **142** may comprise a wide area network ("WAN"), a local area network ("LAN"), the Internet, a Public Switched Telephony Network ("PSTN"), a paging network, or a combination thereof.

The communications network **142** may be established by broadcast RF transceiver towers (not illustrated). However, one of ordinary skill in the art recognizes that other types of communication devices besides broadcast RF transceiver towers are included within the scope of this disclosure for establishing the communications network **142**.

The PCD **100** is shown to have a RF antenna **872** (see FIG. **8**) so that a respective PCD **100** may establish a wireless communication link **103**A with the communications network **142** via RF transceiver towers (not illustrated). The portable

5

computing device (PCD) **100** may support a personalized shopping/payment application **113** that may reside in memory **803** (See FIG. **8**) of the PCD **100**.

The personalized shopping/payment application **113** may allow the PCD **100** to communicate with the central mobile payment controller **50** over the communications network **142**. The personalized shopping/payment application **113** may also allow the PCD **100** to collect information from a machine-readable tag **124** (also referred to herein as tag **124**) that may be coupled to an electronic cash register ("ECR") **412** (not illustrated in FIG. **1**, but see FIG. **4**) of a check-out system **90**B or at some location within the premise of a merchant that comprises a check-in system **90**A. Further details about the check-in system **90**A and the check-out system **90**B will be described below in connection with FIG. **3**A.

The machine-readable tag **124** may comprise a unique merchant identifier and a unique terminal (or electronic cash register) identifier that helps the PCD **100** to manage point-of-sale (POS) transactions. Further details about the machine-readable tag **124** will be described below in connection with FIG. **2**I. The ECR **412** (not illustrated in FIG. **1**, but see FIG. **4**) of the Merchant POS system **12** may comprise a mechanical or electronic device or combination thereof for calculating and recording sales transactions. The ECR **412** of the merchant POS system **12** may produce a physical receipt **127** at the end of a transaction that lists goods and/or services purchased with the portable computing device **100**. Further details about the merchant POS system **12** will be described below in connection with FIG. **4**.

The merchant POS system **12** may be coupled to the merchant enterprise system **16** via the communications network **142**. The merchant enterprise system **16** may support the completion of transactions when credit cards or when bank cards have been selected as a form of payment for a particular transaction. Further details about the merchant enterprise system **16** will be described below in connection with FIG. **4**. The merchant enterprise system **16** may be coupled to a merchant acquirer **10** and one or more credit card systems **20**A. The merchant acquirer **10** may be coupled to one or more bank card systems **20**B supported by financial institutions like banks. Further details about the merchant acquirer **10**, the credit card systems **20**A, and bank card systems **20**B will be described below in connection with FIG. **5**.

The merchant enterprise system **16** may also be coupled to alternative payment systems **18**. Alternative payment systems **18** may include, but are not limited to, such systems like PAYPAL™, Google payments, etc. that currently exist as of this writing. The alternative payment systems **18** may be coupled to a gateway **14**. Further details about the alternative payment systems **18** and gateway **14** will be described below in connection with FIG. **6**.

A central mobile payment controller **50** is coupled to the portable computing device **100** via the communications network **142**. The central mobile payment controller **50** is responsible for connecting or linking the portable computing device **100** to the merchant POS system **12** and merchant enterprise system **16**. The central mobile payment controller **50** is also responsible for coupling the offer/coupon system **22** and loyalty system **24** to the portable computing device **100**. The central mobile payment controller **50** is also responsible for managing several online portals **26-32**. Further details about the central mobile payment controller **12** will be described below in connection with FIG. **7**A. Meanwhile, further details about be online portals **26-32** will be described below in connection with FIG. **7**B.

6

An operator (also referred to as a PCD consumer) of the PCD **100** may physically enter an establishment of a merchant, such as a store. The operator "checks-in" with the merchant's enterprise system **16** using his or her PCD **100**. An operator may check-in with the enterprise system **16** using a check-in system **90**A in combination with the PCD **100**. The check-in system **90**A may comprise a machine-readable tag **124** that is presented at an entrance to a merchant's store or in various locations within a particular store.

In other exemplary embodiments, the tag **124** may be coupled to individual products within a merchant's premises. In other cases, the tag **124** may be provided on any object in order to initiate a transaction using the portable computing device **100**. The tag **124** may be provided on billboards, in printed magazines, etc. In other scenarios, the tag **124** may be displayed on a television screen as part of a TV shopping network. The tag **124** may be provided on Internet Websites adjacent to products/services **44** to facilitate an on-line transaction using the portable computing device **100**.

The machine-readable tag **124** may comprise a machine-readable code **222** which may be scanned with a camera **848** (See FIG. **8**) of the PCD **100**. A personalized shopping/payment application **113** running on the PCD **100** may be able to process the scanned machine-readable code **222**.

The machine-readable code **222** may comprise either a one dimensional or two-dimensional barcode. Further, other machine-readable codes are included within the scope of the invention and may include contactless technologies, such as near-field communications (NFC), WiFi, acoustic, which may or may not be linked to a secure-element, and RFID cards as understood by one of ordinary skill in the art. For these contactless technologies, the tag **124** may comprise an antenna **224** coupled to an integrated-circuit chip (not illustrated).

Once "checked-in", the personalized shopping/payment application **113** running on the PCD **100** may provide a unique or personalized list of products/services **44**, such as "daily specials," for the PCD consumer available for purchase that is generated by the merchant enterprise system **16** working in conjunction with the central mobile payment controller **50**. The central mobile payment controller **50** has a rules engine **737**, a personalized pricing module **742**, and a product ensemble engine **781** that are illustrated and described in further detail below in connection with FIG. **7**A. The rules engine **737**, personalized pricing module **742**, and product ensemble engine **781** are responsible for providing product/service data to the personalized shopping/payment application **113**.

In addition to providing a personalized list of products/services **44**, the personalized shopping/payment application **113** may allow the PCD consumer to scan-in bar codes associated with products/services **44** that the PCD consumer may desire to purchase which are located within the establishment of the merchant. After a PCD consumer scans-in a product and/or service, the personalized shopping/payment application **113** working in conjunction with the central mobile payment controller **50** may provide personalized prices for the product and/or service which are significantly less than the ticketed price of the product or service. Further, the personalized shopping/payment application **113** may suggest an ensemble of products or services that may or may not be related to the scanned-in product or service which may be of interest to the PCD consumer.

The personalized shopping/payment application **113** running on the PCD **100** may support a wishlist of products and/or services that a PCD consumer is interested in but may not purchase until a future time. The personalized shopping/

7

payment application 113 may also support a virtual shopping cart or virtual shopping basket that may contain products and/or services that the PCD consumer desires to purchase before leaving the establishment of the merchant. The personalized shopping/payment application 113 may track a running total cost for the goods/products that the PCD consumer intends to purchase.

When the PCD consumer is ready to purchase the products and/or services in the virtual shopping cart or shopping basket, the PCD consumer may proceed to check-out where the products and/or services may be scanned with a product scanner 132 (See FIG. 4). Prior to or in parallel to the operation of scanning products with the product scanner 132, the operator of the PCD 100 may retrieve the unique terminal identifier and the merchant identifier associated with a tag 124 of a check-out system 90B which is affixed to the ECR 412 of the Merchant POS system 12. The operator of the PCD 100 may retrieve the data from the tag 124 by scanning the tag 124 with the camera 848 or with a near-field-communication ("NFC") antenna 879.

This unique terminal (or ECR) identifier and merchant identifier retrieved by the PCD 100 may be relayed back to the central mobile payment controller 50 along with a personal identification number ("PIN"). In response to receiving the terminal identifier, merchant identifier, and PIN, the central mobile payment controller 50 may send messages to merchant enterprise system 16. The central mobile payment controller 50 may request the merchant enterprise system 16 for the product scan data being generated by the product scanner 132 of the merchant POS system 12.

In response to this request from the central mobile payment controller 50, merchant enterprise system 16 may forward the product scan data to the central mobile payment controller 50. The central mobile payment controller 50, in turn, may relay the product scan data to the PCD 100 so that the product scan data may be displayed on the display device of the PCD 100. The PCD 100 may provide an option that may be selected by an operator to turn off this product scan data from being displayed on the display device of the PCD 100 while the products 130A are being scanned. This product scan data may be displayed adjacent to the personalized pricing that was previously calculated and displayed while the PCD consumer was shopping.

Meanwhile, when the product scanner 132 of the merchant POS system 12 is finished scanning the products/services 44 for purchase, the ECR 412 may generate a final total of money due for payment in connection with the purchase of the products/services 44. This final total data is communicated from the merchant POS system 12 to the merchant enterprise system 16. The merchant enterprise system 16 then relays the final total to the central mobile payment controller 50 which in turn relays this information to the PCD 100. In addition to relaying this final total data to the PCD 100, the central mobile payment controller 50 may also retrieve payment accounts available to the operator and that may have been selected by an operator in a predetermined order for display on the PCD 100. Alternatively, the system 101 via the tender steering module 744 of the central mobile payment controller 50 may list the payment accounts in a predetermined order or sequence as will be described below in connection with FIGS. 7A, 9E, and FIGS. 12A-12B.

At this time, or any time during the transaction cycle, an operator of the PCD 100 may select from one of a plurality of payment methods supported by the central mobile payment controller 50 and which are displayed on the PCD 100. Alternatively, an operator of the PCD 100 may select a plurality of payment methods in order to pay the final total due in con-

8

nection with the purchased products/services 44. Once a payment method or a combination of methods are selected by an operator of the PCD 100, the PCD 100 relays this selection to the central mobile payment controller 50.

Depending upon the form of payment selected, the central mobile payment controller 50 selects data from a gateway 14 for rendering payment associated with the final total data. If an alternative form of payment is selected by the operator of the PCD 100, then the central mobile payment controller 50 will relay the alternative payment account information through the gateway 14 to the alternative payment systems 18.

If a traditional form of payment is selected by the operator of the PCD 100, such as the selection of a credit card account, then the central mobile payment controller 50 may relay this credit card payment information over a secure channel to the merchant enterprise system 16. The merchant enterprise system 16 may relay the credit card payment information to the merchant acquirer 10 for bank card systems 20B or to credit card networks for credit card systems 20A.

Exemplary credit card networks, may include, but are not limited to, the VISA™ credit card network, the MASTER-CARD™ card network, the DISCOVER™ credit card network, the AMERICAN EXPRESS™ credit card network, and other similar charge card proprietary networks. One of ordinary skill in the art recognizes that transactions for merchant gift cards may also follow the same flow with the merchant enterprise system 16 directing the transaction to the merchant's stored value processor that may be part of the credit card systems 20A or alternative payment systems 18.

If payment is approved by one of the traditional payment systems 20, then the merchant enterprise system 16 may relay this approval message to the merchant POS system 12. The merchant POS system 12 relays the approval message to the electronic cash register 126 and to the central mobile payment controller 50. If payment is approved by one of the alternative payment systems 18, the central mobile payment controller 50 may relay this information to the PCD 100 and the merchant enterprise system 16.

The central mobile payment controller 50 may send any payment approval messages to the PCD 100 for display on the display device of the PCD 100. The central mobile payment controller 50 may generate an electronic receipt that can be forwarded and displayed on a display device of the PCD 100. Meanwhile, the ECR 412 may also generate a hard copy receipt 127.

FIG. 2A is a diagram of a screen 202A of the PCD 100 for entering a user's log-in credentials, such as a user name 204 on the PCD 100 to access the system 101. The user's log-in credentials 204 may comprise a unique user name selected by an operator of the PCD 100. When the user name is entered by the operator of the PCD 100, the central mobile payment controller 50 may verify that the user name entered and a unique identifier assigned to the PCD 100 match by checking client profiles which may be stored in the eWallet module 732F (See FIG. 7A). One of ordinary skill in the art recognizes that authentication of the operator of the PCD 100 at this stage may include other security measures beyond just a user name/password. Other security measures which may be used as alternatives or as supplemental security measures to those already described include, but are not limited to, biometrics, secure elements such as integrated-circuit (IC) cards or smart cards, and other like methods in the art of multi-factor authentication.

If the user name and unique identifier assigned to the PCD 100 do not match, then the central mobile payment controller 50 may deny entry to the system 101 and prompt the user for

9

correct credentials for a predetermined number of times. If the user name and unique identifier assigned to the PCD **100** do match, then the central mobile payment controller **50** may prompt the operator of the PCD **100** for a password **206** associated with the user name on the account such as illustrated in FIG. **2B**.

FIG. **2B** is a diagram of a screen **202B** for entering additional log-in credentials such as a password **206** on the PCD **100** to access the system **101**. If the correct password **206** is not entered by an operator of the PCD **100** after a predetermined number of times, the central mobile payment controller **50** may lock out the account associated with the user name that was entered in the screen **202A** of FIG. **2A**. If the correct password **206** is entered by an operator of the PCD **100**, then the central mobile payment controller **50** may generate a welcome screen **202C** such as illustrated in FIG. **2C**.

FIG. **2C** is a diagram of a screen **202C** for the PCD **100** confirming access to system **101**. The welcome screen **202C** may also comprise an execution button **208** that may activate the transaction software **501** residing on and supported by the PCD **100**. Upon selecting the execution button **208**, the PCD **100** may launch the personalized shopping/payment application **113** running on the PCD **100** which causes the PCD **100** to generate the next screen **202D** as illustrated in FIG. **2D**.

FIG. **2D** is a diagram of a screen **202D** that shows the contents of an image **210** being scanned with a camera **848** of the PCD **100**. The image **210** being scanned by the camera **848** (See FIG. **8** for camera) may comprise one of the tags **124** of FIG. **1**. As noted previously, the tag **124** of FIG. **1** may comprise machine-readable data such as a two-dimensional barcode that contains a unique identifier associated with a particular electronic cash register **126** and a particular merchant. The 2-D bar code may include, but is not limited to, the following symbologies: Aztec Code, 3-DI, ArrayTag, Small Aztec Code, Chromatic Alphabet, Chromocode, Codablock, Code 1, Code 16K, Code 49, ColorCode, Compact Matrix Code, CP Code, CyberCode, d-touch, DataGlyphs, Datamatrix, Datastrip Code, Dot Code A, EZcode, Grid Matrix Code, High Capacity Color Bar code, HueCode, INTACTA.CODE, InterCode, MaxiCode, mCode, MiniCode, Micro PDF417, MMCC, Nintendo e-Reader#Dot code, Optar, PaperDisk, PDF417, PDMark, QR Code, QuickMark Code, Semacode, SmartCode, Snowflake Code, ShotCode, SuperCode, Trillcode, UltraCode, UnisCode, VeriCode, VSCode, Water-Code, for example.

Instead of a two dimensional bar code, a one dimensional bar code may be employed to provide the unique electronic cash register identifier and the unique identifier associated with the merchant. Exemplary one-dimensional bar codes may include, but are not limited to, U.P.C., Codabar, Code 25—Non-interleaved 2 of 5, Code 25—Interleaved 2 of 5, Code 39, Code 93, Code 128, Code 128A, Code 128B, Code 128C, Code 11, CPC Binary, DUN 14, EAN 2, EAN 5, EAN 8, EAN 13, Facing Identification Mark, GS1-128 (formerly known as UCC/EAN-128), GS1 DataBar formerly Reduced Space Symbology ("RSS"), HIBC (HIBCC Bar Code Standard), ITF-14, Latent image bar code, Pharmacode, Plessey, PLANET, POSTNET, Intelligent Mail Bar code, MSI, Post-Bar, RM4SCC/KIX, JAN, and Telepen. Other machine-readable codes for retrieving the unique identifiers associated with the electronic cash register **126** and merchant are well within the scope of the invention such as contact-less or wireless communication methods such as near-field communications (NFCs) used with smart cards and RF-ID cards as understood by one of ordinary skill in the art. Further, in another exemplary embodiment, the operator of the PCD **100** may key-in a

10

human-readable code **223** associated with the unique identifier of the electronic cash register **126** and the merchant.

FIG. **2E** is a diagram of a screen **202E** that shows merchant information **212** relevant to a transaction and a line item listing **214** of products during check-out being scanned by a product scanner **132** coupled to an ECR **412** (See FIG. **4**). The merchant information **212** may comprise information such as, but not limited to, a merchant name, a mailing address of the store, date and time data relevant to the transaction, a store number, and a electronic cash register number, and other like information. The line item listing **214** of product scan data may comprise information such as, but not limited to, a product number, a short name for the product, a price and other similar information. According to an exemplary embodiment, an operator of the PCD **100** may shut "off" the line item listing **214** as a user defined preference which may be stored in the second storage device **146B**.

While the product scanner **132** (of FIG. **4**) is scanning the machine-readable product codes from the products/services **44**, the central mobile payment controller **50** may match these machine-readable product codes with coupon data retrieved from the offer/coupon system **22**, which was made while the PCD consumer was shopping previously. The offer/coupon system **22** may include one or more client profiles associated with the PCD **100**.

FIG. **2F** is a diagram of a screen **202F** that shows merchant information relevant to a transaction and a coupon option **216** that may be selected by an operator of the PCD **100**. Screen **202F** may be generated in response to the central mobile payment controller **50** determining a match between a coupon retrieved from the offer/coupon system **22** and products/services **44** being scanned. Screen **202F** may list merchant information **212** and the coupon option **216** which prompts the operator of the PCD **100** to decide whether or not to use a coupon that matches a product **130** which was scanned by the product scanner **132A**. This coupon option **216** may be turned off by an operator of the PCD **100** so that this screen **202F** is not generated when a match is found by the central mobile payment controller **50**.

An operator of the PCD **100** may allow automatic matching of coupons as they are discovered by the central mobile payment controller **50**. In the exemplary screen **202F**, the operator of the PCD **100** is asked to decide whether or not to use a manufacturer's coupon that may reduce the price of purchase for a products/services **44** to zero. If the operator of the PCD **100** decides not to use the coupon, then the coupon data may remain in storage accessible by the central mobile payment controller **50** until another match is found by the central mobile payment controller **50**.

FIG. **2G** is a diagram of a screen **202G** that shows merchant information **212** relevant to a transaction and a total bill for a purchase along with a plurality of payment options **218A** that may be selected by the operator. In the example illustrated in FIG. **2G**, the total amount due for the purchase is $16.90. The payment options **218A** allow a user to select the expense as a business expense towards taxes. The payment options **218A** also allow an operator of the PCD **100** to select among a plurality of payment methods that may have been previously selected by the operator and stored in a user's profile in the second storage device **146B**.

In other words, prior to conducting any transactions, an operator of the PCD **100** may arrange a predetermined listing of the sequence of payment methods which should be displayed to an operator of the PCD **100** whenever the operator employs the PCD **100** for a transaction. The operator of the PCD **100** may also create an association with the predetermined order of payment methods for particular merchants.

11

12

This means that an operator of a PCD 100 may have a first sequence of payment methods for a first merchant and a second different sequence of payment methods for a second merchant that are stored in a client profile of the central mobile payment controller 50.

The central mobile payment controller 50 via a tender steering module 744 (See FIG. 7A) may also display payment options 218A. These payment options 218A may provide the operator of the PCD 100 with additional benefits such as credit cards affiliated with a current merchant which may award more loyalty points if the affiliated credit card is used for a purchase.

In other exemplary embodiments, the central mobile payment controller 50 via the tender steering module 744 as described below in connection with FIG. 7A may allow the merchant to control the payment options 218A that are presented to the operator of the PCD 100. In this way, the merchant may be provided with a form of payment steering—an indirect control of how an operator of a PCD 100 may decide on how to pay for a products/services 44 through the intelligence provided by the tender steering module 744.

The operator of the PCD 100 may also select one or more different payment methods to pay the total final amount due for a particular purchase which are displayed on the PCD 100. So, for example, a operator may select a credit card to pay a portion of the final bill along with payment from a stored value card and payment from a debit card. According to one exemplary aspect of the invention, the current balances of stored value accounts as well as remaining credit on credit card accounts may be displayed in conjunction with the payment options 218A that are available for selection by the operator with the PCD 100 as illustrated in FIG. 2G.

According to another exemplary feature of the system 101, credit card issuers as well as debit card issuers and stored value account issuers do not need to send any physical tokens to an operator of the PCD 100 when new account numbers may be assigned to a particular operator of the PCD 100. Instead of mailing physical tokens bearing the new account numbers, the issuers of the new account numbers may update the data a storage device or a secure vault. A corresponding message may be transmitted from the central mobile payment controller 50 to the operator of the PCD 100 when new account numbers have been stored in the secure vault or a storage device in place of old account numbers.

FIG. 2H is a diagram of a screen 202H that shows an electronic receipt 220A that may be provided upon completion of a transaction with a merchant. The electronic receipt 220A may comprise a product listing as well as the total price paid for the products/services 44 which were purchased. The payment method(s) selected by the operator (though not illustrated) may also be displayed on the electronic receipt 220A.

FIG. 2I is a diagram of an exemplary machine-readable tag 124 that may be coupled to an electronic cash register 126 of a merchant that is part of a check-out system 90B. Alternatively or in addition to the check-out system 90B, the machine-readable tag 124 may be provided in a check-in system 90A as described above. The machine readable tag 124 may also be attached or affixed to a product and/or it may be associated with the cost of a service.

The machine-readable tag 124 may comprise a machine-readable code 222 which may be scanned with a camera 848 of the PCD 100. The personalized shopping/payment application 113 running on the PCD 100 may be able to process the scanned machine-readable code 222.

As noted above, the machine-readable code 222 may comprise either a one dimensional or two-dimensional barcode. Further, other machine-readable codes are included within the scope of the invention and may include contactless technologies, such as near-field communications (NFC) which may or may not be linked to a secure-element, and RFID cards as understood by one of ordinary skill in the art. For these contactless technologies, the tag 124 may comprise an antenna 224 coupled to an integrated-circuit chip (not illustrated).

As described above, for check-in scenarios or systems 90A, the tag 124 may provide a unique identifier associated with the physical location of the establishment of a merchant such as a store. For check-out scenarios for systems 90B, the tag 124 may provide a unique identifier associated with the electronic cash register 126 and a unique identifier associated with a merchant that operates the electronic cash register 126. These unique identifiers may be contained within the machine-readable code and/or associated with the code. The tag 124 may also comprise a human-readable code 223 that may be keyed-in by the operator of the PCD 100 instead of scanning the machine-readable code 222 with the PCD 100.

FIG. 3A is a diagram of hardware components and software components running on a portable computing device 100 for supporting transactions with the portable computing device 100. The components may include a device identification module 302, a communication hub module 310, an operating system platform ("O/S") module 312, a global positioning satellite ("GPS") module 322, a geo-positioning/triangulation module 324, a WiFi detector module 326, a scan module 328, a secure element module 877, and a near field communication module 330.

One of the software components may include the personalized shopping/payment application 113. The personalized shopping/payment application 113 may further comprise additional modules for rendering visuals on the device display 908. These additional modules may include, but are not limited to, a common display module 314, a retail display module 316, a restaurant display module 318, and other display modules #N 320. Further details about the additional modules that are part of the personalized shopping/payment application 113 will be described below in connection with FIG. 3B.

The device identification module 302 may also comprise submodules such as a device identifier or International Mobile Equipment Identity ("IMEI") module 304, a subscriber identity module ("SIM") serial number module 306, and/or a subscriber identifier module or international mobile subscriber identity ("IMSI") module 308. Usually, a portable computing device 100 would usually have only one of these modules to uniquely identify the portable computing device 100 to the communications network 142 and the central mobile payment controller 50 as understood by one of ordinary skill in the art.

The communication hub module 310 is responsible for relaying information between the device identification module 302 and the central mobile payment controller 50 as well as between the GPS module 322 and the central mobile payment controller 50. The communication hub module 310 may support conventional mobile phone communication protocols as understood by one of ordinary skill in the art.

The GPS module 322 and geo-positioning/triangulation module 324 may assist the central mobile payment controller 50 with determining the physical location of the portable computing device 100. Once the central mobile payment controller 50 is aware of the physical location of the portable computing device 100, the central mobile payment controller 50 may determine in which merchant location the portable computing device 100 is located.

13

14

The WiFi detector module **326** may communicate with a WiFi local area network router **142**A that is part of a check-in system **90**A. The check-in system **90**A may allow an operator of the portable computing device **100** to alert the central mobile payment controller **50** when the portable computing device has entered into the location of a merchant. In this way, the central mobile payment controller **50** may be able to provide unique offers to the operator of the portable computing device **100** before the operator decides to complete a transaction for a products/services **44**.

The check-in system **90**A may further comprise machine-readable tags **124** that include, but are not limited to, a QR barcode tag **124**A, and a radiofrequency-identifier ("RF-ID") tag **124**B. These machine-readable tags **124** of the check-in system **90**A may be positioned at the entrance of a store and they may be positioned in multiple locations within a store such as in a department store. In a department store example, a machine-readable tag **124** may be positioned within specific different departments such as in hardware and in athletic goods so that the central mobile payment controller **50** may generate unique offers tailored to the department within which the portable computing device **100** is located.

The check-out system **90**B may also comprise machine-readable tags **124** that are positioned at each point-of-sale terminal or electronic cash register ("ECR") **126**. Each machine-readable tag **124** of the check-out system **90**B, like the check-in system **90**A, may comprise a 2-D QR barcode **124**A and/or an RFID tag **124**B.

The scan module **328** may work in conjunction with the camera **848** of the portable computing device **100**. The scan module **328** may process scans of the 2-D QR barcodes that are present on respective machine-readable tags **124**. Similarly, the secure element module **877** and NFC module **330** may work with RFID tag **124**B that may be part of either the check-in system **90**A or the check-out system **90**B.

The O/S module **312** may comprise any one of conventional mobile phone operating systems known as of this writing. For example, the 0/S module **312** may comprise an android operating system, an iPhone operating system, a Java 2 Platform Micro Edition ("J2ME") operating system, a Research-In-Motion ("RIM") operating system, and a Binary Runtime Environment for Wireless ("BREW") MP operating system as understood by one of ordinary skill in the art.

FIG. **3**B is a diagram of several software components for a personalized shopping/payment application **113** running on a portable computing device **100**. The software components may form the common display module **314**, the retail display module **316**, and the restaurant display module **318** of FIG. **3**A. The software components for the common display module **314** may include, but are not limited to: a splash module **314**A, a home screen module **314**B, a sign-in module **314**C, a password module **314**D, a scanning module **314**E, a manual scan module **314**F, a personal identification number ("PIN") module **314**G, a locations module **314**H, an NFC tap module **314**I, a search module **314**J, a show map module **314**K, a store receipts module **314**L, a search receipt module **314**M, a "my account" module **314**N, a preferences module **314**O a devices module **314**P, a sign-account module **314**Q, and a disable account module **314**R as understood by one of ordinary skill in the art.

In this example, the splash module **314**A performs the user and device authentication check on the display **808**, such as a touch screen display, of the PCD **100**. The home screen module **314**B allows the operator to return to a home screen or default screen for the PCD **100**. The sign-in module **314**C allows manages any credentials that the operator enters into the PCD **100**. The password module **314**D reviews any

received credentials for a match with the password selected by the operator. The scanning module **314**E activates an automatic scanning feature supported by the PCD **100** so that the camera may automatically focus the camera for 848 for reading a tag **124**. The manual scan module **314**F activates a manual scanning feature in which the operator may control the focus of the camera **848** for reading a tag **124**.

The personal identification number ("PIN") module **314**G allows the operator to change his or her PIN as understood by one of ordinary skill in the art. The locations module **314**H supports a function in which the PCD **100** may display the closest merchants who support the PCD payment features. The NFC tap module **314**I allows an operator to activate NFC functionality of the PCD **100**. The search module **314**J allows an operator to search for specific transactions that were made using the PCD **100**. The show map module **314**K may support functions such as a geographical map relative to the location of the PCD **100** as well as maps of building plans for merchants who support payments with the PCD **100**.

The store receipts module **314**L allows an operator to pull up copies of electronics receipts for any transaction completed by the PCD **100**. The search receipt module **314**M allows the operator to search for specific electronic receipts that were generated by the PCD **100**. The "my account" module **314**N allows an operator to review the current balances and pending payments supported by the PCD **100** for transactions completed with the PCD **100**. The preferences module **314**O allows an operator to display preferences for the account associated with the PCD **100**, such as allowing the operator to select a preferred sequence of payment accounts to use with the PCD **100** for a transaction.

In some embodiments, the preferences module **314**O of FIG. **3**B may allow the operator of the portable computing device **100** to preconfigure the sequence or order of payment accounts that are displayed by the portable computing device **100**. This preconfiguration impacts when the operator is ready to make a payment using the portable computing device **100**. This preconfiguration of sequence or order of payment accounts may be a setting that cannot be overridden by the merchant via the tender steering module **744**. In other words, this preconfiguration setting or option supported by the preferences module **314**O of the PCD **100** may deactivate or disable some or all of the functions of the tender steering module **744** which is described below in connection with FIGS. **7**A, **9**E, and **12**A-**12**B.

This preconfiguration may also allow the operator of the PCD **100** to make a purchase with a one touch or single touch action instead of multiple actions to scroll through available payment account options. However, if an operator does not set up this preconfiguration, a default setting of the portable computing device **100** may allow the sequence or order of payment accounts to be controlled by the merchant as described below in connection with the tender steering module, which is a focus of FIG. **7**A and FIGS. **9**E, and **12**A-**12**B.

The devices module **314**P allows an operator to review the multiple PCDs **100** that may be used by the operator to complete transactions. For example, if the operator had a plurality of mobile phones, then the devices module **314**P may display a listing of the mobile phones associated with use of the mobile payment account. The sign-account module **314**Q may allow operator to enter his or her electronic signature for completing transactions such as ACH transactions which may require an electronic signature. The disable account module **314**R may support a function in which an operator may turn off his or her mobile payment account so that unauthorized use may not occur with other PCDs **100** that may be associated with the account.

15
16

The software components for the retail display module **316** may include, but are not limited to: a scan tag module **316**A, a PIN module **316**B, a first waiting module **316**C, pay module **316**D, a paid module **316**E, and in-store module **316**F, a list items module **316**G, a second waiting module **316**H, a paying module **316**I, a paid module **316**J, a receipt module **316**K, and a check-in module **316**L as understood by one of ordinary skill in the art.

The scan tag module **316**A may automatically activate the camera **848** for focusing on a tag **124**. The PIN module **316**B may allow operator to change his or her PIN that may be associated only with retail transactions. The first waiting module **316**C may activate a timer that an operator may select when he or she is waiting for the ECR **412** to communicate with the central mobile payment controller **50**. The pay module **316**D may allow the operator to automatically pay a balance when the balance is displayed by the PCD **100**. The paid module **316**E notifies the operator of the authorization or decline of each form of payment previously selected as well as the overall success or decline of the full transaction.

The in-store module **316**F may allow the operator to indicate that he or she is present within the store of a merchant prior to checking-in or checking-out using a tag **124**. The list items module **316**G may allow operator to redisplay any items being checked out for a payment transaction associated with the PCD **100**. A second waiting module **316**H may be activated by an operator of the PCD **100** when he or she is waiting for their payment options after a total bill for the transaction has been displayed. The paying module **316**I, which works with the tender steering module **744** of FIG. **7**A, may display the amount due along with a selection of applicable tender/payment methods previously loaded to the central mobile payment controller **50**.

The operator of the PCD is given the opportunity to select one or more methods of payment to satisfy the amount due. The receipt module **316**K allows an operator display the electronic receipt associated with the last transaction or the current transaction being processed by the PCD **100**. The check-in module **316**L may be activated by the operator when she or he is about to use the check-in system **90**A of FIG. **1**A.

The software components for the restaurant display module **318** may include, but are not limited to: an in-store module **318**A, an items full module **318**B, an items check module **318**C, a partial pay module **318**D, a partial paid module **318**E, a split check module **318**F, an items partial module **318**G, and an items remaining module **318**H as understood by one of ordinary skill in art.

The in-store module **318**A may allow operator to alert the central mobile payment controller **50** that the PCD **100** is present within a restaurant. The items full module **318**B displays the full list of items scanned in or otherwise entered by the "sales associate". The items check module **318**C allows an operator of the PCD **100** start a payment process associated with a restaurant transaction so that the operator does not need to wait for a waiter or waitress.

The partial pay module **318**D allows the operator of the PCD **100** to pay with the PCD **100** in addition to another form of payment not supported by the PCD **100** such as by a physical token like a credit card carried by the operator of the PCD **100**. In the case where multiple parties each identify themselves as payors of the full amount due, the partial paid module **318**E notifies the each operator of the approval or decline of their portion of the entire amount due.

The split check module **318**F allows an operator to split a check with another person who may be dining with the operator of the PCD **100**. The items partial module **318**G displays only the items that have been identified by the operator of the

PCD as his/her portion of the full bill. The items remaining module **318**H displays all items and remaining amount due that has not yet been satisfied during a split check.

The skinning capability module **332** provides a function for enabling a third party to utilize the full functionality of the system but with the look-n-feel of their choosing.

FIG. **4** is a diagram illustrating details for the merchant point-of-sale ("POS") system **12** and the merchant enterprise system **16** of FIG. **1** for completing a sales transaction with a portable computing device **100**. The merchant POS system **12** may comprise a store controller **410** and an electronic cash register ("ECR") **412**. The ECR **412** may comprise a drawer for storing cash currency. The ECR **412** may also print a receipt **127** for a customer with a printing device, like a printer (not illustrated).

The ECR **412** may be coupled to a handheld (or fixed) scanner **132** which may be used to scan other machine-readable labels attached to one or more products/services **44**. The scanner **132** may comprise a bar code reader or any type of similar device used to collect information from machine-readable labels attached to products/services **44**.

The ECR **412** may also be coupled to a reader (or terminal) **128**, such as a magstripe reader or other such device for reading any one of a number of tokens **123** such as credit cards, debit cards, loyalty cards, stored value cards such as gift cards, and the like.

For example, the reader **128** may comprise a device that reads magnetic stripes on cards, integrated circuit cards, and near-field-communication (NFC) cards as understood by one of ordinary skill in the art. The reader **128** may be coupled with a keypad **129** so that a consumer may enter appropriate information relative to any token that may be scanned or read by the reader **128**.

The ECR **412** is also coupled to the store controller **410**. The store controller **410** may support one or more electronic cash registers (ECRs) **126** for a particular location of a merchant. The store controller **410**, as understood by one of ordinary skill in the art, may comprise a computer server for tracking and matching scanned product codes with a product inventory database (not illustrated separately) which is maintained by the store controller **410**.

The store controller **410** may receive product data that is produced by the product scanner **132** and which is relayed by the ECR **412**. The store controller **410** may be responsible for securing authorization for payment from a consumer after a token is read by the POS terminal **128**B. The store controller **410** may support one or more product specific languages as understood by one of ordinary skill in the art such as, but not limited to, unified POS and JAVA™ POS.

To secure authorization for payment, such as for a credit or debit card, the store controller **410** communicates the merchant enterprise system **16** via the communications network **142**. The merchant enterprise system **16** may comprise an Ewallet system **402**, a credit switch **404**, a data update module **406**, and an enterprise router **408**.

As illustrated in FIG. **4**, the store controller **410** communicates with the enterprise router **408** of the merchant enterprise system **16**. The router **408** may comprise a device that interconnects two or more computer networks, and selectively interchanges packets of data between them, as is understood by one of ordinary skill in the art.

The router **408** of FIG. **4** couples the store controller **410** to credit card system **20**A and merchant acquirer **10** for traditional payment processing. The router **408** of FIG. **4** also couples the store controller **410** to alternative payment systems **18**. Traditional payment processing may include, but is not limited to, processing payments from accounts associated

17

with traditional credit cards and debit cards. The credit card system **20**A may comprise exemplary networks such as the VISA™ credit card network, the MASTERCARD™ card network, the DISCOVER™ credit card network, the AMERI-CAN EXPRESS™ credit card network, and other similar charge or debit card proprietary networks.

Meanwhile, the alternative payment systems **18** may be responsible for handling and managing non-traditional or alternative payment processing. For example, alternative payment processing may include, but is not limited to, processing payments from accounts associated with certain online financial institutions or other service providers, like PAYPAL™), BILL ME LATER™, Wii™, APPLE™, GREEN DOT™, and mobile phone carriers like SPRINT™ and VERIZON™).

The eWallet system **402** may provide information and support functions for one or more stored value accounts as well as other types of accounts, such as, but not limited to, credit card accounts and bank accounts, as understood by one of ordinary skill in the art. The data update module **406** may allow the merchant enterprise system **162** update its records for any new mobile payment accounts that were used by consumers to pay for transactions.

The electronic cash register ("ECR") **412** may comprise a plurality of components. These components may include hardware and software modules. Exemplary components include, but are not limited to, a loyalty module **414**, a credit module **416**, a private-label module **418**, a coupons/discounts module **420**, a PIN/debit module **422**, a check module **424**, an item entry module **426**, a gift card module **428**, a cash module **430**, and a mobile payment module **432**. The aforementioned components may be selected by an operator of the ECR **412** in order to complete payment for a transaction.

The ECR **412** may be coupled to a product scanner **132** for scanning one-dimensional and two-dimensional barcode labels. The ECR for 12 may also be coupled to a reader **128** that may comprise a magstripe and/or an NFC reader. The ECR **412** may also be coupled to a PIN pad **129** as well as a receipt printer **134** for printing a receipt **127**, a sale total monitor **133**, and a graphical customer display **131** that may list one items purchased during a transaction.

FIG. **5** is a diagram illustrating details of a merchant acquirer **10**, bank card systems **20**B, and credit card systems **20**A of FIG. **1** for completing a sales transaction. The merchant acquirer **10** may comprise a pass-through module **502** and an authorization/settlement module **504**. The pass-through module **502** may pass request for payment authorization information directly to a selected bank card system **20**B. Meanwhile, the authorization/settlement module **504** may perform some authentication prior to sending request for payment authorization onto a bank card system **20**B.

The merchant acquirer **10** usually supports credit card systems that are provided by financial institutions such as banks. For example, credit card **20**B1 may comprise a first bank card like a CHASE™ card from CHASE™ bank while credit card **20**B2 may comprise a second bank card like a NATIONS BANK™ card from the NATIONS BANK™ lender. These institutions usually offer their brand of VISA™ and MAS-TERCARD™ type cards.

Other credit card systems **20**A may comprise private-label cards **20**A1 as well as traditional travel and entertainment cards **20**A2. Private-label cards may include, but are not limited to, merchant based cards **20**A1*a* such as those for specific retail establishments like, THE HOME DEPOT™, WALMART™, NORDSTROM™, SAX™, etc. Traditional travel and entertainment cards **20**A2 may include, but are not limited to, DINERS CLUB CARD™, AMERICAN EXPRESS™, and DISCOVER™.

18

While a direct connection is illustrated between the merchant enterprise system **16** and the credit card systems **20**A as well as the merchant acquirer **10**, one of ordinary skill in the art recognizes that such a connection may be a virtual one which is supported by the communications network **142**. Similarly, a direct connection is illustrated between the merchant enterprise system **16** and the central mobile payment controller **50**. This direct connection may also comprise a virtual one supported by the communications network **142** as illustrated in FIG. **1**.

FIG. **6** is a diagram illustrating details of a gateway **14** and alternative payment systems **18** illustrated in FIG. **1**. The gateway **14** may comprise a traditional gateway module **14**A, a gateway vault **14**B, and a high-security firewall **633**. The high-security firewall **633** provides a secure communication channel between the central mobile payment controller **50** in the gateway **14**. A traditional gateway module **14**A may comprise a credit switch **602** and a transaction transport module **604**.

The traditional gateway module **14**A may comprise a payment server as understood by one of ordinary skill in the art. Communications between the central mobile payment controller **50** and the gateway **14** may comprise a secured socket layer (SSL) encrypted connection and may pass through the high-security firewall **633** as understood by one of ordinary skill in the art. Usually, the central mobile payment controller **50** issue commands to the gateway vault **14**B to relay account information to the gateway module **14**A. The payment gateway module **14**A may forward the transaction information to one of the alternative payment systems **18** via the credit switch **602**.

Specifically, the credit switch **602** may be responsible for exchanging data with each of the different alternative payment systems **18** illustrated in FIG. **6**. The transaction transport module **604** may be responsible for exchanging data with a secure data transport module **618** of the gateway vault **14**B.

The gateway vault **14**B may comprise track 1/track two data **606**, card not present ("CNP") data **608**, merchant gift card data **610**, automated clearinghouse ("ACH") data **612**, loyalty data **614**, and credentials **616**. The gateway vault **14**B may also comprise a tokenizer **620**. The tokenizer **620** may receive a payment authorization request from the central mobile payment controller **50** in format according to specific industry rules based on the payment accounts stored with or associated with the gateway vault **14**B.

The alternative payment systems **18** may comprise various different methods of payment available to the operator of the portable computing device **100** for completing a transaction. The alternative payment systems **18** may comprise internal systems **18**A, mobile phone carrier billing **18**B, e-commerce vendors **18**C, alternate deposit systems **18**D, demand deposit schemes **18**E, and stored value systems **18**F.

For example, an internal system **18**A may comprise accounts from an Ewallet system for the portable computing device **100**, such as SWAGG™ brand of mobile payments offered by Outlier (a subsidiary of QUALCOMM, Incorporated). Mobile phone carrier billing systems **18**B may include, but are not limited to, accounts from wireless carriers as of this writing such as, SPRINT™ accounts, AT&T™ accounts, VERIZON™ accounts, etc. e-commerce vendors **18**C may include, but are not limited to, accounts from e-commerce vendors like iTUNES™ accounts, GOOGLE™ check out accounts, AMAZON™ payments, BILLMELATER™ accounts, and PAYPAL™ accounts. Alternate deposit systems **18**D may include be coupled debit systems **18**D1 and the like. Demand deposit systems **18**E may include ACH trans-

fers **18E1** and checks **18E2**. And stored value systems **18F** may include gift cards **18F1** offered by a merchant.

FIG. **7A** is diagram illustrating details for the central mobile payment controller **50** illustrated in FIG. **1**. The central mobile payment controller **50** manages data between the PCD **100** and the merchant enterprise system **16**. The central mobile payment controller may support industry standard compliance measures. For example, the central mobile payment controller may be compliant with Payment Card Industry ("PCI") standards. In this way, the merchant enterprise system **16** and the PCD **100** do not store any sensitive data such as credit card information and personal information like social security numbers, home addresses, etc. Such sensitive data may be stored in the central mobile payment controller **50**.

The central mobile payment controller **50** is also responsible for communicating with a gateway **14** for establishing a connection with alternative payment systems **18**. The central mobile payment controller **50** may also relay product scan data sent from the merchant enterprise system **16** over the communications network **142** to the PCD **100**. In this way, the PCD **100** may display products individually (merchandise/service stock keeping unit—"SKU") on the display of the PCD **100** as they are scanned in by the product scanner **132** of the merchant POS system **12**. The central mobile payment controller **50** may also relay identification (loyalty), promotions (offers/discounts), and payment information between the PCD **100** and merchant POS system **12** as described in further detail below.

The central mobile payment controller **50** may comprise a payment communication module **730**, a user data store module **732**, a system datastore module **734**, a merchant data store module **736**, a rules engine **737**, an advertising API **720B**, an advertising transport module **728**, a loyalty API **720C**, a loyalty transport module **746**, a portal API **720D**, a portal communications module **748**, a client API **720E**, a client device communications module **750**, a merchant API **720F**, and a merchant enterprise communications module **752**.

The payment communications module **730** may support the communications between the central mobile payment controller **50** and the gateway **14** that is coupled to the alternative payment systems **18**. While a direct connection between the central mobile payment controller **50** and the gateway **14** is illustrated, one of ordinary skill in the art recognizes that this direct connection may be a virtual one using the communications network **142** of FIG. **1**. The user data store module **732** may comprise a plurality of submodules that include, but are not limited to, a demographics submodule **732A**, a device management module **732B**, a line item and purchase data module **732C**, a preferences module **732D**, a vault mappings module **732E**, and an Ewallet module **732F**.

The demographics submodule **732A** may track preferences of the operator of the PCD **100** as well as characterizations made by the PCD **100** about the possible race, age, and gender of the operator. The device management module **732B** may support functions for associating multiple PCDs **100** with the mobile payment accounts of a single operator. The line item and purchase data module **732C** may track all purchases made with the portable computing device **100**. The preferences module **732D** may store and support any new preferences requested by the operator using a PCD **100**. The vault mappings module **732E** may support request for payments from payment accounts associated with the gateway vault **14B** of FIG. **1**. An Ewallet module **732F** supports request for managing in a walled account associated with a particular PCD **100**.

The system datastore module **734** may comprise a plurality of submodules that include, but are not limited to, a transaction log module **734A**, a merchant management module **734B**, a user management module **734C**, a device management module **734D**, and a vault mappings module **734E**.

The transaction log module **734A** may automatically record and store the line items associated with each transaction paid with the portable computing device **100**. The merchant management module **734B** may automatically record and store the various merchants which received payment from the portable computing device **100**.

The user management module **734C** may allow the operator of the PCD **100** to manage various functions and options that are selectable for a given mobile count. The device management module **734D** may support functions for associating multiple PCDs **100** with the mobile payment accounts of a single operator. The vault mappings module **734E** may support request for payments from payment accounts associated with the gateway vault **14B** of FIG. **1**.

Similarly, the merchant data store module **736** may comprise a plurality of submodules that include, but are not limited to, a location demographics module **736A**, a graphic assets module **736B**, tag mappings module **736C**, and accepted payment options module **736D**, a preferences module **736E**, and MID mappings module **736F**.

The location demographics module **736A** may track the various merchant locations that are receiving payments with the PCD **100** for completing transactions. The graphic assets module **736B** may support the various graphical elements such as artwork and icons associated with the credit cards. The tag mappings module **736C** may store the various specific tags **124** that may be scanned with the PCD **100**. The accepted payment options module **736D** may control the listing of payment options that are displayed on the PCD **100** when a final amount is listed as due for a transaction. The preferences module **736E** may store various preferences from merchants such as payment types and costs associated with each payment type that may be selected by an operator of a PCD **100**. The merchant ID ("MID") mappings module **736F** associates the system's single "enterprise" relationship to each of the merchant's individual store locations.

The rules engine **737** may also comprise a plurality of modules. Exemplary modules include, but are not limited to, a loyalty sign-in module **738**, a balance display module **740**, the personalized pricing module **742**, a tender steering module **744**, and a product ensemble engine **781**. The loyalty sign-in module **738** may be responsible for automatically retrieving loyalty data associated with the portable computing device **100**. The balance display module **740** may be responsible for sending the data to the display **808** of the portable computing device **100**. Such data may include product scan data received from the merchant enterprise system **16** as well as the final total do for products/services **44** that are to be purchased using the portable computing device **100**.

The personalized pricing module **742** may be responsible for automatically retrieving offers and coupons from the offer/coupon system **22** based on the current location of the portable computing device as well as any products/services **44** that have been scanned in for purchase by the PCD user and/or the merchant POS system **12**. The offer/coupon system **22** includes a third party offer generators **702**, a consumer package goods ("CPG") module **714**, and a manufacturers module **716** which are described in further detail below. The rules engine **737** working in conjunction with the personalized pricing module **742** may provide the unique and customized or "personalized" pricing for products and/or services displayed by the personalized shopping/payment application

113. While the personalized pricing module **742** has been illustrated in FIG. 7A to be part of the rules engine **737**, one of ordinary skill in the art will recognize that the rules engine **737** could be designed to be part of the personalized pricing module **742**. Alternatively, the personalized pricing module **742** may be completely separate from the rules engine **737** so that two processing entities exist. The rules engine **737** and personalized pricing module **742** may comprise software or hardware or both. Further details of the rules engine **737** and personalized pricing module **742** are described below and illustrated in FIGS. 7C-7E.

The product/service ensemble engine **781** may suggest additional products and/or services that may be related to products/services **44** that have been scanned-in by the PCD consumer and/or those that are maintained in a wishlist for the PCD consumer. Similar to the personalized pricing module **742**, while the product/service ensemble engine **781** has been illustrated in FIG. 7A to be part of the rules engine **737**, one of ordinary skill in the art will recognize that the rules engine **737** could be designed to be part of the product/service ensemble engine **781**. Alternatively, the product/service ensemble engine may be completely separate from the rules engine **737** so that two processing entities exist.

The tender steering module **744** may be responsible for automatically displaying the options for paying for a particular transaction. The options would include those associated with the alternative payment systems **18** as well as the traditional payment systems **20** that are associated with the operator of the portable computing device **100**.

Specifically, with the tender steering module **744** of FIG. 7A working with the paying module **316I** of FIG. 3B, a merchant is provided with the ability to arrange payment accounts in a predetermined order or a predetermined sequence so that they are displayed to an operator of a portable computing device **100** so that the merchant may steer or influence the operator of a portable computing device **100** towards one or more payment accounts favored or desired by the merchant.

These payment accounts may be presented in the predetermined order or sequence once the tender steering module **744** receives a signal that indicates the consumer/operator is ready to make a payment on his or her purchase with the portable computing device **100**. These payment accounts may include merchant branded or otherwise known as private brand payment accounts which may permit a merchant to collect a rebate on the purchase made by the consumer/operator. Such rebates are usually percentage based and are usually on the order of about 5% of a purchase made by consumer as understood by one of ordinary skill in the art. Other payment accounts may include those accounts in which the merchant may pay a lower interchange rate for processing payments for a transaction. Other accounts that may lower interchange rates for merchants may include stored value accounts like merchant branded gift card accounts.

The tender steering module **744** may promote the use of partial payment with gift cards that do not have value equal to the purchase price. The operator may then select from the portable computing device **100** another form of payment account in addition to the stored value account if the stored value account does not have sufficient value to cover the entire purchase price. In this way, merchants may ensure that low value gift cards are utilized by the consumer so that the merchant may clear out gift card accounts. When merchants clear out gift card accounts, then this may substantially minimize account reporting services required for gift card accounts, especially for low value gift card accounts (such as those under a value on the order of $10 where the cost of the

reporting service may approach or exceed the amount of the value maintained in the stored value account).

The system **101** through the tender steering module **744** may order or sequence the payment accounts on a portable computing device **100** in such a fashion so that the most desirable or favored payment accounts by the merchant are presented first to the consumer while the least favored or less desirable payment accounts are pushed or placed at the very end of a list for display on the portable computing device **100**. Accounts presented at the end of the list may require additional scrolling effort for the consumer to reach by utilizing a series of sequenced displays as understood by one of ordinary skill in the art.

For example, if the consumer had a merchant branded gift card account, a merchant branded credit card account, and a non-merchant branded credit card account, then the system may allow the merchant to present the merchant branded gift card account first, the merchant branded credit card account second, and the non-merchant branded credit card account third—assuming that this ranking or listing of payment accounts favors the merchant in which the least expensive is displayed first while the most expensive is displayed last relative to the transaction costs which may be assessed against the merchant. This ranking of payment accounts may also prove beneficial for those non-merchant branded credit card accounts, such as rewards cards, which may have a significantly higher amount of fees that are charged to the merchant and may be used by the consumer.

The system **101** via the tender steering module **744** may also support an intelligence in which payment accounts are presented in a sequence on the PCD **100** that is determined by the actual purchase price for the transaction. For example, the consumer may have a debit card payment account as well as a gift card account. Certain fixed transactional fees may apply to the debit card account while no fees or a percentage of fees may apply to the gift card account. If transaction fees which apply to the debit card account far exceed the percentage of fees corresponding to the gift card, then the system **101** via the tender steering module **744** may select the gift card as the first option to present to the consumer for completing a transaction for the benefit of the merchant.

For example, if a consumer's final purchase price is $1.03 and his debit card charges a fixed fee of $0.50 per transaction to the merchant while the gift card account may only charge 5% of the transaction to the merchant, then the tender steering module **744** may strongly favor or present the gift card as the top choice for the consumer on the portable computing device instead of the higher fee debit card relative to the final purchase price.

In addition to presenting or sequencing the payment accounts for display on a portable computing device **100** in such a fashion so that the most desirable or favored by the merchant are presented first to the consumer while the least favored or less desirable payment accounts are pushed or placed at the very end of a list, the system **101** via the tender steering module **101** will enable merchants to promote or supply additional offers in order to steer or influence consumers towards a payment account desired by a merchant.

For example, the merchant may provide personalized and unique offers to consumers on the PCD **100** after the system **101** via the tender steering module **744** looks-up the consumer's history with the merchant or on other transactions. These personalized and unique offers may be presented adjacent to the payment accounts on the PCD **100** desired by the merchant for the consumer to use to complete a transaction. A merchant may present a reward, like a certain percentage discount, on the PCD **100** in order to persuade a consumer to

23   24

use a payment account desired by the merchant. These personalized and unique offers may be random in nature or presented in sequences depending on the frequency of use or frequency of transactions completed by the consumer with a merchant.

The merchant may set up certain business rules with the tender steering module **744** in order to control the development of the personalized and unique offers presented to each consumer on his or her PCD **100**. For example, the merchant may set up a rule that if a transaction is greater than a predetermined amount of money, then the tender steering module **744** via the pay modules **316**D and/or **3161** may present a certain desired payment account coupled with a percentage discount on the transaction to the consumer.

As another example, the merchant may set up a rule in the tender steering module **744** that reviews the loyalty program participation of the consumer and what the history of the consumer has been in the program. If the consumer has reached a certain number of visits and/or transaction volume (like money spent and/or or number of items) with the merchant, then the tender steering module **744** may offer a unique and personalized discount that could include a percentage discount on the transaction for the consumer if they use a specific payment account, like a merchant branded payment account. This allows the merchant to influence the payment account selection habits of the consumer since the consumer will likely want to use a payment account that generally may provide occasional discounts beyond other forms of payment accounts.

By looking at the first six digits of payment accounts available to the consumer, the system **101** via the tender steering module **744** may determine a status of the payment account such as its benefits level (i.e. whether the payment account qualifies as a gold level, a platinum level, a diamond level, etc.) and what corresponding interchange rates may apply based on that benefits level. Depending upon what fees will be assessed for the merchant for a particular payment account, the system **101** via the tender steering module **744** may organize or sequence the payment accounts in order from least expensive to most expensive relative to the fees assessed against the merchant for each payment account.

Usually payment accounts with lower status such as regular credit cards without any elite status (like diamond, gold, or platinum levels) will have lower interchange rates because there are fewer benefits provided to the payment account holder. As of this writing, merchants may pay on the order of between about 2.14% to about 5.00% on interchange rates for cards with elite status. Meanwhile, cards without this elite status, especially the merchant branded credit cards or gift cards, will usually be significantly less and, in some instances, the merchant may even receive rebates with their own branded credit card or gift card account.

According to another exemplary aspect, the rules maintained and executed by the tender steering module **744** may determine that the consumer does not have a certain merchant branded payment accounts that would be desirable for the merchant. Since the tender steering module **744** has access to the consumers contact information through a loyalty program, the rules in the tender steering module **744** may allow the merchant to offer the consumer to accept a new payment account starting with the current transaction at hand. If the consumer decides to accept the offer for the new payment account offered by the merchant via the tender steering module **744**, then the system **101** via the tender steering module **744** and other modules may run an immediate credit and/or background check to determine if the consumer should be approved for this new payment account. This credit and back-

ground check may happen on-the-fly and may be completed within a few minutes upon acceptance by the consumer to take this new merchant branded payment account offered by the merchant through the tender steering module **744**.

Referring back again to FIG. 7A, the advertising transport module **728** may support communications between the central mobile payment controller **50** and the offer/coupon system **22**. While a direct connection between the central mobile payment controller **50** and the offer/coupon system **22** is illustrated, one of ordinary skill in the art recognizes that this direct connection may be a virtual one using the communications network **142** of FIG. **1**. The advertising transport module **728** establishes communications with the offer/coupon system **22** through an advertising API **720**B.

The offer/coupon system **22** may comprise a plurality of modules. Exemplary modules include, but are not limited to, third-party offer generators **702**A-D as well as a system account manager **704**. The offer/coupon system **22** that produces targeted coupons based upon specific products purchased by a consumer. The third-party offer generator **702** may comprise modules supported by Catalina Marketing, Inc., SWAGG™ from Outlier (a subsidiary of Qualcomm, Incorporated), YOWZA!™, Mobilecoupon.com, and GROUPON™ brand of offers/coupons. Other types of offer/coupon system **22** are within the scope of the disclosure is understood by one or a skill in the art.

The offer/coupon system **22** may further comprise a merchant's module **712**, a consumer packaged goods ("CPG") module **714**, a manufacturers module **716**, and a GOOGLE™ module **718**.

The loyalty transport module **746** may be responsible for supporting the communications between the central mobile payment controller **50** and the loyalty system **24**. While a direct connection between the central mobile payment controller **50** and the loyalty system **24** is illustrated, one of ordinary skill in the art recognizes that this direct connection may be a virtual one using the communications network **142** of FIG. **1**. The loyalty transport module **746** exchanges communications through the loyalty API **720**C.

The portal communications module **748** may be responsible for supporting communications between the central mobile payment controller **50** and the online portals **26-32**. While a direct connection between the central mobile payment controller **50** and the online portals **26-32** is illustrated, one of ordinary skill in the art recognizes that this direct connection may be a virtual one using the communications network **142** of FIG. **1**. The online portals **26-32** will be described in further detail below in connection with FIG. **7**B.

The client device communications module **750** may support communications between the central mobile payment controller **50** and the portable computing device **100**. While a direct connection between the central mobile payment controller **50** and the portable computing device **100** is illustrated, one of ordinary skill in the art recognizes that this direct connection may be a virtual one using the communications network **142** of FIG. **1**. The client device communications module **750** may establish communications with the portable computing device **100** through a client API **720**E. Specifically, the client device communications module **750** may establish a persistent communication with the portable computing device **100** that may be characterized as a form of secure chat messaging.

The merchant enterprise communications module **752** may support communications between the central mobile payment controller **50** and the merchant enterprise system **16**. While a direct connection between the central mobile payment controller **50** and the merchant enterprise system **16** is

25 26

illustrated, one of ordinary skill in the art recognizes that this direct connection may be a virtual one using the communications network 142 of FIG. 1. The merchant enterprise communications module 752 may establish communications with the merchant enterprise system 16 by using a merchant API 720F. A secure communication channel may be established over the communications network 142 between the merchant enterprise communications module 752 and the merchant enterprise system 16 as understood by one of ordinary skill in the art.

All of the inbound and outbound communications for the central mobile payment controller 50 may pass through firewall/security layers 722A-F as understood by one of ordinary skill in the art. Each firewall/security layer 722 may comprise a device or set of devices designed to permit or deny network transmissions based upon a set of rules.

FIG. 7B is a diagram illustrating several online portals 26-32 for managing the transaction management system 101 according to one exemplary embodiment of the invention. The transaction management system 101 may comprise a mobile payment enrollment portal 26, a consumer mobile payment portal 28, a merchant store-specific mobile payment portal 30, and a merchant store-wide mobile payment management portal 32. Each of these portals 26, 28, 30, 32 may be coupled to the central mobile payment controller 50. While a direct connection as illustrated between the portals 26, 28, 30, 32 and the central mobile payment controller 50, one of ordinary skill in the art recognizes that this direct connection may be a virtual one that is established over the communications network 142. The communications between the central mobile payment controller 50 and each of the respective portals 26, 28, 30, 32 may be shielded with an appropriate firewall/security layer 722A as understood by one of ordinary skill in the art.

The mobile payment enrollment portal 26 may allow a consumer to open an account with their portable computing device 100. The mobile payment enrollment portal 26 may also allow a merchant to open account so that particular store locations may be managed by the transaction management system 101. The mobile payment enrollment portal 26 may comprise a teaser site module 26A, a public website module 26B, a merchant request module 26C, and a user registration module 26D. The merchant request module 26C may support the enrollment for a merchant who wishes to access the services provided by the transaction management system 101. The user registration module 26D may support the enrollment of individual consumers or operators of the PCDs 100.

The consumer mobile payment portal 28 may comprise an enrollment module 28A, a cards module 28B, a devices module 28C, a favorites module 28D, in account preferences module 28E, and a reporting module 28F.

The merchant store-specific mobile payment portal 30 may comprise a location demographics module 30A, a graphics assets module 30B, an account preferences module 30C, a tender preferences module 30D, a reporting module 30E, and an advertising distribution rules module 30F.

The merchant store-wide mobile payment management portal 32 may comprise a merchant management module 32A, a user management module 32B, a payment management module 32C, a system preferences module 32D, and a reporting module 32E.

FIG. 7C is a diagram illustrating a price look-up ("PLU") table 777 and an exemplary relationship among the rules engine 737 and the personalized pricing module 742. Product/Service information may be retrieved by the personalized pricing module 742 from the merchant enterprise system 16, such as a SKU database 16A, in which these databases 16

supply the current price of a product/service to. However, the rules engine 737 with the personalized pricing module 742 in combination with CRM data from the merchant enterprise system 16 may set the price of a product/service which is personalized or customized for the PCD consumer.

For example, the rules engine 737 may review manufacturer rebates from the third party system 22, and specifically data from the manufacturer module 718 and/or third party offer generator(s) module 702. The rules engine 737 may also take into consideration the number of uses of the personalized shopping/payment application 113 by the PCD consumer, the detail or depth of product research conducted by the PCD consumer using the personalized shopping/payment application 113 (i.e. see Rules #3 737C, #4 737D), and if the PCD consumer has now reached a predetermined tier or level, such first tier or second tier of the PLU table 777 for certain discounts.

Therefore, a merchant may create a rule in the rules engine 737 that allows second tier PCD consumer to be offered a sale a week prior to the sale becoming public or storewide. In other words, the merchant may allow a second tier PCD consumer (Tier 2 in PLU table 777) a sale price much earlier than other consumers or customers, such as those consumer designated as first tier (Tier 1 of PLU table 777) PCD consumers.

The rules engine 737 and/or the personalized pricing module 742 may also take into consideration the form of payment selected by the mobile user. For example the mobile user may have a private label credit card account as well as a gift card (See Rule #5 737E of FIG. 7C). This combination of payment options being selected by the PCD consumer may trigger another threshold set by the rules engine 737 in order to provide the PCD consumer with additional discounts towards a transaction. The merchant, through the personalized shopping/payment application 113, may be able to give additional savings by sharing or absorbing some of the cost with processing the private label credit card account that is managed by the merchant or the merchant's processor 10.

In other words, with respect to discounts applied to the pricing data, a PCD consumer's loyalty or purchase history may place a PCD consumer into a particular tier or level for pricing in the PLU table 777. The PLU table 777 may have several tiers or levels within it as illustrated in FIG. 7C.

The lowest level for pricing discounts (which may not include any discounts at all—See Tier 1 of PLU table 777) may cover an ordinary consumer entering the merchant establishment for the first time, such as "off-the-street." This level may comprise an ordinary retail price.

The next level, such as Tier 2 of PLU table 777, may include PCD consumers who are characterized as "loyalty members" relative to the merchant in that they may have completed a transaction with a merchant previously and/or they have enrolled into a merchant's loyalty member program. These loyalty members, such as Tier 2 in PLU table 777, may be provided with a price for a product which is different, and lower relative to the lowest level or ordinary retail price, such as Tier 1 of PLU table 777.

The next level of pricing discounts above or supplemental to loyalty members at Tier 2 of PLU table 777 may include special classes of PCD consumers such as PCD consumers affiliated with military or consumers affiliated with a certain age bracket, such as senior citizens. See Tier 3 of PLU table 777.

Another class or level of PCD consumers may include those characterized as very important persons (VIPs) who may be characterized as such based on their purchase history or based on their volume of purchases or dollar spent in prior transactions with the merchant. See Tier 4 of PLU table 777.

27

Each of these levels may be stored in the PLU table **777** and may be associated with a certain SKU from the SKU database **16***a*. In other words, each SKU for a product and/or service may have a plurality of prices associated with it based upon the levels or tiers in PLU table **777** as described above.

Once the PCD consumer checks-in, the rules engine **737** in combination with the personalized pricing module **742** may check the loyalty status of the PCD consumer. As noted previously, a PCD consumer's loyalty status may be associated with a level in the PLU table **777** (i.e.—Tier 1 through Tier 4) as described above. The rules engine **737** may pull this price data from the PLU table **777** which may be maintained by a server operated by the merchant.

The rules engine **737** may then apply additional rules to the price data retrieved from the PLU table **777** in order to apply additional discounts. For example, a PCD consumer may have already enrolled into a loyalty program with a merchant. Therefore, the PCD consumer may be associated with the loyalty level of pricing for a product/service that is stored in the PLU table **777**, such as Tier 2.

The merchant may establish or modify rules to apply to this loyalty level in the PLU table **777**. For example, the merchant may establish a rule, such as Rule #1 **737A**, that applies an additional discount based on a number of visits to the merchant by the PCD consumer. As an example, for PCD consumers that visit a merchant more than ten times within a particular timeframe such as a month or quarter (three months), such a PCD consumer may be entitled to an additional five percent discount beyond the loyalty level price available to the PCD consumer at Tier 2 of PLU table **777**. In other words, meeting a condition as defined by a rule, such as Rule #1 **737A** in combination with Tier 2 of the PLU table **777** may provide for additional discounts beyond the discount listed only for Tier 2 of PLU table **777**.

Another exemplary rule may include, but is not limited to, one that applies an on top of the loyalty level price (i.e. Tier 2 of PLU table **777**) or even on top of the merchant visit rule (i.e. Rule #1 **737A**) described. This exemplary rule (i.e. Rule #2 **737B**) may provide an additional discount such as another five percent off the price available to the PCD consumer for a PCD consumer who has purchased more than a certain dollar amount, such as $100, within a particular timeframe such as a month or a quarter (three months).

The personalized pricing module **742** may also conduct research on what are available other discounts that apply to the SKU of the product/service, such as manufacturer coupons, offers, rebates, and other similar discounts that can be retrieved from the third part offers/coupon database **22**. The personalized pricing module **782** may automatically apply these other discounts without ever requesting input from the PCD consumer. For example, the personalized pricing module **742** may apply a manufacturer's rebate for a product such as a television.

So this means that in addition to any loyalty discounts applied to a product/service by the merchant, the personalized pricing module **742** may also apply a manufacture's rebate towards this personalized price of a product or service for a PCD consumer.

FIG. **7D** is a diagram illustrating a level of interest module **779** and exemplary relationships among the personalized pricing module **742**, the rules engine **737**, and the tender steering module **744**. With the level of interest module **779**, the personalized pricing module **742** may track levels of interest in a particular product or service by a PCD consumer. The personalized pricing module **742** may gauge a PCD user's level of interest in a product or service by tracking if the PCD consumer performs any one of the following actions: 1)

28

scanning the barcode of the product or service to display its price, 2) reviewing a wish list of products or services that have been created by the PCD consumer, 3) determining if the product or service was ever placed into the virtual shopping cart or virtual shopping basket of the PCD consumer, and 4) if the product or service was ever being checked out during a transaction but never actually purchased by the PCD consumer, and 5) if the PCD consumer actually purchased such a product or service in the past from the merchant.

A wish list may be created by the PCD consumer during a shopping experience for those products or services that the PCD consumer desires but may not be able to purchase currently for one reason or another (i.e. lack of funds, etc.). The personalized pricing module **742** and/or the personalized shopping/payment application **113** may manage and support this wishlist. Further details of an exemplary wishlist are illustrated in FIG. **11B** described below.

A virtual shopping cart or virtual shopping basket may contain those products or services desired by the PCD consumer to be purchased prior to leaving a merchant location. The personalized pricing module **742** and/or the personalized shopping/payment application **113** may manage and support this virtual shopping basket/cart. Further details of an exemplary shopping cart/basket are illustrated in FIG. **11B** described below.

The rules engine **737** in combination with the personalized pricing module **742** and the level of interest module **779** may work together to assess one or more different details related to the level of interest in a product and/or service for each PCD consumer. For example, one rule of the rules engine **737** may define a visit for an establishment of a merchant as requiring at least two barcode scans for two different products within the establishment of the merchant. Such a rule may eliminate counting a visit for a mobile user who merely "checks-in" or walks into the establishment of the merchant without ever looking or reviewing products or services available at the merchant.

Another rule within the rules engine **737** may be set by another merchant that requires at least one purchase by the PCD consumer to constitute a visit to the establishment of the merchant. Another exemplary rule may weigh-in each of the levels of interest factors noted above, by assigning values such as weighted percentages. For example, one exemplary rule may provide an additional discount for a PCD user if the rules engine **737** determines that the PCD consumer has conducted product scans previously with his or her PCD **100** and has maintained a wishlist of the same products with their PCD **100** and when that wishlist has decreased upon subsequent visits by the PCD consumer in the establishment of the merchant. In such a scenario, the rules engine **737** may execute an algorithm that deduces that it is likely that the PCD consumer has purchased items in his or her wishlist since the wishlist quantity has decreased.

In summary of the relationships described above and illustrated in FIGS. **7C-7D**, the rules engine **737** in combination with the personalized pricing module **742** may track at least one or more of the following aspects PCD consumer data: real-time assessment of the PCD consumer; records of past transactions made by the PCD consumer; accessing real-time rebates and/or discounts from third parties; and the rules engine **737** in combination with the personalized pricing module may work with the tender steering module **744** for assisting the PCD consumer with payment options for a transaction that may afford a PCD consumer with additional discounts towards products and/or services to be purchased.

The personalized pricing module **742**, level of interest module **779**, rules engine **737**, and tender steering module

744 may comprise software or hardware or both. While each of these components has been illustrated as a separate and distinct processing entity, one of ordinary skill in the art recognizes that all of the components may be combined into and/or executed by a single processing entity.

FIG. 7E is a diagram illustrating details of a product/service ensemble engine **781** that may assist with providing a personalized shopping experience. The product/service ensemble engine **781** may suggest additional products and/or services that may be related to products/services **44** that have been scanned-in by the PCD consumer and/or those that are maintained in a wishlist for the PCD consumer. The product ensemble engine **781** may be coupled to the personalized pricing module **742** illustrated with dashed lines in FIG. 7E. Like the personalized pricing module **742**, the product ensemble engine may comprise software or hardware or both.

There may be at least four data regions tracked with the product ensemble engine **781**: 1) cross sell—SKU linkage databases **16**B; 2) customer preferences or profiles **736**; 3) a demographics database **736**A; and 4) a promotion database **16**C. Cross sell stock keeping unit ("SKU") linkage databases **16**B may be generated by each merchant. For example, a merchant may link the SKU of a first product to the SKU of a second product. More specifically, a first product that includes a television set may have its SKU link to the SKU of electrical cables, such as HDMI cables.

A SKU linkage may involve more than one product and may include a series of products such as a first product which has an SKU linkage to a plurality of other SKUs of other second products. The products may be any type of product: from hard products like electronics to soft products like clothing. For soft products, a first clothing product such as a shirt may be linked to two more different types of pants and shoes. These suggestions sets may be formulated by the merchant and not third parties. However, third parties, in other exemplary embodiments, such as manufacturers of the products/services **44**, may also form SKU linkage databases **16**B. These SKU linkage databases **16**B, as part of an inventory system of a merchant, may be accessed by the ensemble engine **781**.

Customer profiles **736**E, which may be accessed by the produce ensemble engine **781**, may generally involve prior purchases made by the PCD consumer. These prior purchases are generally tied to a single merchant and not multiple merchants. However, in other exemplary embodiments, if two or more merchants decide to share data, then it is possible to review prior purchases across more than one merchant.

A demographics database **736**A, which may also be accessed by the ensemble engine **781**, may includes a review of the demographics of the PCD consumer compared to purchases made by other consumers with the merchant having similar demographics (gender, race, age, etc.). As part of a registration process for the personalized shopping/payment application **113**, the PCD user may be requested to enter demographic information about his or herself that can be used in combination with the demographics database **736**A by the ensemble engine **781**.

The promotion database **16**C may comprise products/services **44** that a merchant wants to get rid of from his or her establishment. A merchant may be able to entice PCD consumers with excess inventory items with the ensemble engine **781** that may suggest these products to the PCD consumer.

Referring to FIG. **8**, an exemplary, non-limiting aspect of a portable computing device ("PCD") is shown and is generally designated **100**. As shown, the PCD **100** includes an on-chip system **822** that includes a multicore CPU **802**. The multicore CPU **802** may include a zeroth core **810**, a first core **812**, and an Nth core **814**.

As illustrated in FIG. **8**, a display controller **828** and a touch screen controller **830** are coupled to the multicore CPU **802**. In turn, a display **808** external to the on-chip system **822** is coupled to the display controller **828** and the touch screen controller **830**. An NFC antenna **879** may be coupled to the CPU **802** and may support functions that work in combination with a secure element module **877**. The secure element module **877** may comprise software and/or hardware and/or firmware as understood by one of ordinary skill in the art.

FIG. **8** further shows that a video encoder **834**, e.g., a phase alternating line ("PAL") encoder, a sequential color a memoire ("SECAM") encoder, or a national television system(s) committee "(NTSC") encoder, is coupled to the multicore CPU **802**. Further, a video amplifier **836** is coupled to the video encoder **834** and the touch screen display **108**. Also, a video port **838** is coupled to the video amplifier **836**. As shown in FIG. **8**, a universal serial bus ("USB") controller **840** is coupled to the multicore CPU **802**. Also, a USB port **842** is coupled to the USB controller **840**. Memory **404**A and a subscriber identity module ("SIM") card **846** may also be coupled to the multicore CPU **802**.

Further, as shown in FIG. **8**, a camera **848** may be coupled to the multicore CPU **802**. In an exemplary aspect, the camera **848** is a charge-coupled device ("CCD") camera or a complementary metal-oxide semiconductor ("CMOS") camera.

As further illustrated in FIG. **8**, a stereo audio coder-decoder ("CODEC") **850** may be coupled to the multicore CPU **802**. Moreover, an audio amplifier **852** may coupled to the stereo audio CODEC **850**. In an exemplary aspect, a first stereo speaker **854** and a second stereo speaker **856** are coupled to the audio amplifier **852**. FIG. **8** shows that a microphone amplifier **858** may be also coupled to the stereo audio CODEC **850**. Additionally, a microphone **860** may be coupled to the microphone amplifier **858**. In a particular aspect, a frequency modulation ("FM") radio tuner **862** may be coupled to the stereo audio CODEC **850**. Also, an FM antenna **864** is coupled to the FM radio tuner **862**. Further, stereo headphones **866** may be coupled to the stereo audio CODEC **850**.

FIG. **8** further illustrates that a radio frequency (RF) transceiver **868** may be coupled to the multicore CPU **802**. An RF switch **870** may be coupled to the RF transceiver **868** and an RF antenna **872**. As shown in FIG. 4C, a keypad **874** may be coupled to the multicore CPU **802**. Also, a mono headset with a microphone **860** may be coupled to the multicore CPU **802**. Further, a vibrator device **878** may be coupled to the multicore CPU **802**. FIG. **8** also shows that a power supply **880** may be coupled to the on-chip system **822**. In a particular aspect, the power supply **880** is a direct current (DC) power supply that provides power to the various components of the PCD **100** that require power. Further, in a particular aspect, the power supply is a rechargeable DC battery or a DC power supply that is derived from an alternating current (AC) to DC transformer that is connected to an AC power source.

FIG. **8** further shows that the PCD **100** may also include a network card **888** that may be used to access a data network, e.g., a local area network, a personal area network, or any other network. The network card **888** may be a Bluetooth network card, a WiFi network card, a personal area network (PAN) card, a personal area network ultra-low-power technology (PeANUT) network card, or any other network card well known in the art. Further, the network card **888** may be

incorporated into a chip, i.e., the network card **888** may be a full solution in a chip, and may not be a separate network card **888**.

As depicted in FIG. **8**, the display **808**, the video port **838**, the USB port **842**, the camera **848**, the first stereo speaker **854**, the second stereo speaker **856**, the microphone **860**, the FM antenna **864**, the stereo headphones **866**, the RF switch **870**, the RF antenna **872**, the keypad **874**, the mono headset **876**, the vibrator device **878**, and the power supply **880** are external to the on-chip system **822**.

In a particular aspect, one or more of the method steps described herein may be stored in the memory **803** as well as in the central mobile payment controller **50**, merchant enterprise system **16**, merchant POS system **12**, and other storage devices as computer program instructions. These instructions may be executed by the multicore CPU **802**, central mobile payment controller **50**, merchant enterprise system **16**, and merchant POS system **12** in order to perform the methods described herein. Further, the multicore CPU **802**, merchant enterprise system **16**, merchant POS system **12**, other storage devices, and memory **803** of the PCD **100**, or a combination thereof may serve as a means for executing one or more of the method steps described herein.

FIG. **9A** is a flowchart illustrating a method **900A** for managing transactions with a PCD **100**. Routine or sub-method block **901** is the first step in the process **900** for managing transactions with the PCD **100**. In routine or sub-method block **901**, personalized pricing for products and/or services may be provided by the personalized shopping/payment application **113** in combination with the rules engine **737** and personalized pricing module **742**. As noted previously, the personalized shopping/payment application **113** may be running on a portable computing device ("PCD"), like a mobile phone, while the rules engine **737** and personalized pricing module are executed by a server, such as the central mobile payment controller **50** as illustrated in FIG. **1**. Further details of routine **901** will be described in further detail below in connection with FIG. **9F**.

After block **901**, in optional block **903**, client credentials entered in screens **202A** and **202B** of FIGS. **2A-2B** may be received by the central mobile payment controller **50** from the portable computing device (PCD) **100**. As noted previously, the client credentials may comprise a user name **204**, a password or personal identification number ("PIN") **206**, and a unique identifier assigned to the PCD **100**. Block **903** is highlighted with dashed lines in FIG. **9A** to indicate that this block is optional. Block **903** is optional because a PCD consumer may enter his or her client credentials in routine block **901**, and specifically, in block **1105** of FIG. **9F**. In some exemplary embodiments, the client personalized shopping/payment application **113** may require client credentials again in block **903** for more secure operation when a PCD consumer desires to check-out products and/or services for purchase with the PCD **100**.

Next, in decision block **906**, the central mobile payment controller **50** determines if the client is authenticated based on the credentials that it received in block **903**. In this decision block **906**, the central mobile payment controller **50** may verify that the user name **204** of screen **202A** matches the unique client identifier assigned to the PCD **100** which is maintained in the system datastore module **734** of FIG. **7A**. The system datastore module **734** may comprise a client database containing client profiles associated with PCDs **100**. If the central mobile payment controller **50** verifies that the user name **204** matches the client unique identifier assigned to the PCD **100**, then the central mobile payment controller **50** checks to see if the password or PIN **206** of screen **202B**

matches the user name **204** of screen **202A** based on a review of the client profile stored in the system datastore module **734**.

If the inquiry to decision block **906** is negative, then the "No" branch is followed back to block **903** for receiving the client's credentials for a predetermined number of times. If the inquiry to decision block **906** is positive, then the "Yes" branch is followed to block **909** in which the ECR **412** or terminal identifier, merchant identifier, and PIN are received from the PCD **100**. In this block **909**, the PCD **100** may conduct a scan of the tag **124** that comprises the machine-readable code **222** which contains the ECR **412** or terminal identifier as well as the merchant identifier.

Next, in block **924**, the central mobile payment controller **50** may receive a signal from the ECR **412** of the merchant POS system **12** that a mobile payment option has been selected. This signal is usually generated by an employee of the merchant who is operating the ECR **412**.

Next, in block **927**, one or more mobile payment parameters and the product scan data may be sent from the ECR **412** to the central mobile payment controller **50**. The one or more mobile payment parameters may comprise a total due, a transaction identifier, a terminal identifier, a merchant identifier, and the sequence number. The process then continue continues to block **930** of FIG. **9B**.

FIG. **9B** is a continuation flowchart corresponding to the flowchart of FIG. **9A** which illustrates a method **900B** for managing transactions with a PCD **100**. Block **930** is the first block of this continuation flowchart for managing transactions with the PCD **100**. In block **930**, the central mobile payment controller **50** matches the purchase parameters received from the ECR **412** with the parameters from the tag **124** received from the portable computing device. As noted previously, the purchase parameters received from the ECR **412** may comprise the total amount due for the transaction, a transaction identifier, a terminal identifier, a merchant identifier, and a sequence number. The parameters from the tag **124** relayed by the portable computing device **100** may comprise a terminal identifier, the merchant identifier, and the PIN for the portable computing device **100**. If these two sets of parameters do not match, the central mobile payment controller **50** would stop the transaction from being completed and would not display any options for payment on the portable computing device **100**.

Next, in block **939**, the central mobile payment controller **50** may receive one or more selection(s) of coupon or rebate match(es) from the PCD **100** in response to the operator of PCD **100** selecting one or more options displayed in screen **202F** of FIG. **2F**. As noted previously, coupon or rebate matches may be automatically applied without requiring input from the PCD consumer. In block **942**, the central mobile payment controller **50** sends any coupon or rebate match(es) over the communications network **142** and the communication links **103** to the ECR **412** of the merchant POS system **12**. The process then proceeds to block **955** of FIG. **9C**.

FIG. **9C** is a continuation flowchart corresponding to the flowchart of FIG. **9B** which illustrates a method **900C** for managing transactions with a PCD **100**. Routine or sub-method block **955** is the first block of method **900C**. In routine or submethod block **955**, the central mobile payment controller **50** may initiate one or more tender steering algorithms or business rules with respect to payment options for the operator of the PCD **100**. Further details of routine **955** will be described below in connection with FIG. **9E**. Next, in block **956**, the central mobile payment controller **50** may match the total due with the payment options selected by the tender steering module **744** of FIG. **7A** as described above. The

central mobile payment controller **50** may then relay these payment methods to the PCD **100**.

In block **959**, the total purchase data, optional payment methods generated by the tender steering module **744**, and relevant balances from the payment methods may be displayed. For example, see screen **202**G as illustrated in FIG. **2**G and generally designated by reference numeral **218**A. As other examples, see screens **1200**A and **1200**B of FIGS. **12**A-**12**B. Next, in block **962**, the central mobile payment controller **50** may receive one or more selection(s) for the payment methods over the communications network **142** from the PCD **100** based on selections made by the operator of PCD **100**.

Next, in block **965**, the central mobile payment controller **50** may process the selected payment methods by sending messages to one or more payment systems **18** and **20** via the gateway **14** and/or the merchant enterprise system **16**. Specifically, the central mobile payment controller **50** may send messages to the gateway **14** if one or more alternative payment systems **18**, such as, but not limited to, PAYPAL™ brand of online financial payment solutions and SPRINT™ brand of mobile telephone networks, have been selected by the operator of the PCD **100** for paying the final amount due for a purchase. The central mobile payment controller **50** may also send information related to traditional payment systems **20**, such as, but not limited to conventional credit card accounts via the communications network **142**.

Next in block **971**, the central mobile payment controller **50** may receive payment authorizations from any of the payment systems **18** and **20**. The process then continues to block **973** of FIG. **9**D.

FIG. **9**D is a continuation flowchart corresponding to the flowchart of FIG. **9**C which illustrates a method **900**D for managing transactions with a PCD **100**. Block **973** is the first block of this continuation flowchart for managing transactions with the PCD **100**. In block **973**, the central mobile payment controller **50** may relay the payment authorization messages from the alternative payment systems **18** and traditional payment systems **20** to the ECR **412** of the merchant POS system **12** via the merchant enterprise system **16**. In block **976**, the central mobile payment controller **50** may also relay the payment authorization messages from the alternative payment systems **18** as well as the payment authorization messages from the traditional payment systems **20** over the communications network **142** to the PCD **100**.

Next, in block **979**, the electronic cash register ("ECR") **412** of the merchant POS system **12** may generate a hard copy receipt **127**. Similarly, in block **982**, the central mobile payment controller **50** may generate an electronic receipt and send it over the communications network **142** to the PCD **100** for display on the display **808** of the PCD **100** as illustrated in screen **202**H of FIG. **2**H. The process then ends.

The system **101** may generally support businesses such as restaurants or other establishments which may provide products as well as services and which usually do not employ a product scanner **132** coupled to ECR **412**. In this exemplary operating environment, other differences include ECR **412** not being present. However, one of ordinary skill in the art recognizes that in some restaurant environments, depending upon the owner's preferences, may include ECR **412** without departing from the scope of this disclosure. In some restaurant environments, terminals may provided and are coupled to the store controller **410**. The terminals may comprise token readers, such as magnetic-stripe readers, attached to or integral with the housing of the terminals as understood by one of ordinary skill in the art.

FIG. **9**E is a flowchart illustrating a routine or submethod **955** of FIG. **9**C for tender steering which is executed by the tender steering module **744** of FIG. **7**A. Decision block **1005** is the first block of submethod **955**. In decision block **1005**, the tender steering module **744** determines if the payment method presentment override feature or function has been activated by the operator of the PCD **100**. Decision block **1005** corresponds with the preferences module **314**O of FIG. **3**B as described above. If the inquiry to decision block **1005** is positive, then the "YES" branch is followed to block **956** of FIG. **9**C. If the inquiry to decision block **1005** is negative, then the "NO" branch is followed to decision block **1010**.

In decision block **1010**, the tender steering module **744** determines if the profile of the PCD **100** associated with a merchant branded account, such as a merchant branded credit card like a merchant named (i.e. a department store name) MASTERCARD™ brand or VISA™ brand credit card account. If the inquiry to decision block **1010** is positive, then the "YES" branch is followed to block **1020**. If the inquiry to decision block **1010** is negative, then the "NO" branch is followed to block **1015**.

In block **1015**, the tender steering module **744** alone or in combination with other modules, such as the loyalty transport module **746** and the merchant loyalty module **724** of FIG. **7**A, may prepare one or more offers for a merchant branded payment account, like a merchant named (i.e. a department store name) MASTERCARD™ brand or VISA™ brand credit card account. In this block **1015**, the tender steering module **744** may determine an account type to offer the operator or profile associated with the portable computing device **100**. Next, the tender steering module **744** in block **1020** may execute one or more business rules for preparing offers that may be associated with the merchant branded payment account.

For example, the tender steering module **744** may determine if the merchant should offer a certain percentage discount to be applied against the purchase price of the services and/or merchandise should the operator of the PCD **100** decide to use the merchant branded payment account. Specifically, the tender steering module **744** may generate an offer such as 10% off or 20% off the total purchase price if the operator of the PCD **100** chooses the merchant branded payment account to complete the purchase.

The one or more offers in block **1025** may be added to a ranked list of user payment methods. In this block **1025**, the tender steering module **744** may range all available payment options for the operator of the PCD **100** according to a ranking, such as, but not limited to, putting each payment method in a sequence according to the level of benefit relative to the merchant. In this way, the tender steering module **744** may present those payment options with the highest benefit to the merchant to be presented first while the payment options with the lowest benefit are saved for the very end or are positioned at or near the end of the list.

In decision block **1030**, the tender steering module **744** may determine if the profile of the PCD **100** is associated with a merchant branded gift card account. As noted previously, one objective for this decision block **1030** is to identify all gift card accounts in possession of the operator so that the operator may have the opportunity to clear or use low value gift cards against a purchase in combination with other forms of payment, such as a credit card payment.

If the inquiry to decision block **1030** is negative, then the "NO" branch is followed to decision block **1040**. If the inquiry to decision block **1030** is positive, then the "YES" branch is followed to block **1035**. In block **1035**, the one or more gift card accounts associated with the profile of the PCD

100 are added to the ranked list of user payment methods. In this block **1035**, the tender steering module may also arrange or reorganize the ranked list such that the one or more gift card accounts are appropriately positioned among the other payment accounts available to the profile of the PCD **100**.

As noted previously, it is usually very beneficial for the merchant to have the operator of the PCD **100** used a gift card account says the merchant will likely not pay any interchange fees that are often associated with other payment accounts like credit card accounts. Therefore, the tender steering module **744** would usually put gift card accounts ahead of non-merchant branded credit card accounts or elite status credit card accounts which may command significantly higher interchange rates from the merchant.

Next, in decision block **1040**, the tender steering module **744** may also determine if the profile associated with the PCD **100** matches any loyalty program data and/or if the profile of the PCD **100** has reached a certain frequency of visits with a merchant. In this decision block **1040**, the tender steering module may work in combination with the loyalty transport modules **146** and the merchant loyalty module **724** as illustrated in FIG. **7A**.

If the inquiry to decision block **1040** is positive, then the "YES" branch is followed to block **1045**. If the inquiry to decision block **1040** is negative, then the "NO" branch is followed to block **1055**. In block **1045**, the tender steering module **744** may execute one or more business rules associated with the loyalty program and or a number of visits associated with the profile of the PCD **100** relative to the merchant. From these business rules, the tender steering module **744** may provide one or more additional offers associated with merchant branded payment accounts and/or merchant branded gift card accounts.

In block **1050**, a tender steering module **744** may add the one or more offers to the ranked list of user payment methods. Subsequently, in block **1055**, the tender steering module **744** may compare the ranked list of user payment methods against the purchase price of the merchandise and/or services. In this block **1055**, the tender steering module **744** may compare fixed fees associated with one or more payment accounts against percentage-based fees associated with one or more other payment accounts.

As noted in an a previous example, if a consumer's final purchase price is $1.03 and his debit card charges a fixed fee of $0.50 per transaction to the merchant while the gift card account may only charge 5% of the transaction to the merchant, then the tender steering module **744** may strongly favor or present the gift card as the top choice for the consumer on the portable computing device instead of the higher fee debit card relative to the final purchase price.

In block **1060**, the tender steering module **744** may reorder the ranked list as appropriate based on the aforementioned comparison to the purchase price. In block **1065**, the tender steering module **744** may review the ranked list and identify the various payment account types that are available to the operator of the PCD **100**. Specifically, the tender steering module **744** may review the first six digits of payment accounts available to the consumer and then determine a status of the payment account such as its benefits level (i.e. whether the payment account qualifies as a gold level, a platinum level, etc.) and what corresponding interchange rates may apply based on that benefits level.

Depending upon what fees will be assessed for the merchant for a particular payment account, the tender steering module **744** may organize or sequence the payment accounts in block **1070** in order from least expensive to most expensive relative to the fees assessed against the merchant for each

payment account. Specifically, in block **1070**, the tender steering module **744** may reorder the ranked list from block **1050** again based on payment account types, such as putting forward merchant branded gift card accounts first, merchant branded credit card accounts next, followed by non-merchant branded other types of payment accounts. The submethod or routine **955** returns to block **956** of FIG. **9C**.

FIGS. **9F-9G** are flowcharts **901A, 901B** illustrating a submethod or routine **901** corresponding to FIG. **9A** for providing a personalized shopping experience with personalized pricing for a PCD consumer. Block **1105** is the first block of method **901A**. In block **1105**, a user account associated with the PCD **100** and a location of the PCD **100** may be determined. Additionally, the loyalty status of the PCD consumer at this stage may be determined. Also, any wishlists stored by the PCD consumer may be reviewed by the personalized pricing module **742**.

This block **1105** generally corresponds to when a PCD consumer checks-in via the check-in system **90A** as illustrated in FIG. **1** in which the PCD consumer has a PCD **100** conduct a read of the machine-readable tag **124**.

Once the PCD consumer has checked-in with his or her personalized shopping/payment application **113**, the central mobile payment controller **50**, via the personalized pricing module **742**, may review the loyalty data stored in the loyalty system **24**. Specifically, the payment controller **50** may issue a request for data to the loyalty system **24** using the client identifier. If the central mobile payment controller **50** determines that there is one or more matches between any loyalty account data received from the loyalty system **24** and the merchant identifier, then the central mobile payment controller **50** sends the loyalty account data over the communications network **142** to the portable computing device **100**. The portable computing device **100** may display the amount of loyalty points earned and/or used for a particular transaction. If the operator of the PCD **100** has not been enrolled in the loyalty system **24** for a particular merchant, the central mobile payment controller **50** may facilitate the enrollment of the operator at this stage. The central mobile payment controller **50** may manage the received loyalty account data with the personalized pricing module **742**. The personalized pricing module **742** may apply appropriate discounts and/or benefits to any items in a PCD consumer's wishlist based on the loyalty status of the PCD consumer. The application of the discounts and/or benefits to the wishlist may be based on the products/services **44** purchased by the operator of the PCD **100** in the past or they may be based on other factors or a combination of factors such as the number of re-occurrences of purchased products from the merchant.

The personalized pricing module **742** may compare wishlist data and prior purchase data with offer data as well as with the coupon data received from the loyalty system **24** and data already stored in a client profile. The personalized pricing module **742** at this stage may pull in or retrieve third-party offers from the offer/coupon system **22**, and specifically, from a third-party offer generator **702** or manufacturer rebate database **718**. These third-party offers and manufacture rebates may be applied to the current items in the wishlist of the PCD consumer and/or new items suggested by the offer/coupon system **22**.

As described previously, a third-party offer generator **702** may comprise off-the-shelf units, such as, but not limited to, units/modules sold as of this writing by Catalina Marketing, Inc. The offers produced by the third-party offer generator **702** may comprise coupons targeted for a particular operator of PCD **100** based upon the products/services **44** that have been purchased and recorded by the product scanner **132** and

the ECR **412**. The offer/coupon system **22** may also generate private label offers for new credit cards such as a credit card bearing the name of the merchant, such as a WALMART™ or TARGET™ credit card. The personalized pricing module **742** may take the received third-party offer data and store it in a storage device corresponding to a particular profile of the operator of the PCD **100**.

Next, in routine or submethod block **1115**, the personalized pricing module **742** in combination with the rules engine **737** may provide personalized pricing of the goods/services present in the wishlist. If there is no wishlist at this stage, then this routine block **1115** may be skipped. Further details of routine block **1115** described below in connection with FIG. **9**H. Routine block **1115** generally corresponds to FIGS. **7**C-**7**D described above.

In block **1120**, the personalized pricing module **742** communicates the wishlist of items associated with the PCD consumer to the personalized shopping/payment application **113** over the communications network **142**. Then, the personalized shopping/payment application **113** may display the wishlist items previously stored by the PCD consumer. An exemplary wishlist in a screen **1100**C is illustrated in FIG. **11**C described below.

Next, in block **1125**, the personalized shopping/payment application **113** may receive a scan of machine-readable codes, such as a barcode, associated with goods or services from the PCD **100**. For a sample scan of a machine-readable code, see FIG. **2**D described above. While FIG. **2**D illustrates a scan of tag **124** for a check-in scenario, tag **124** may easily be affixed to a product or it may represent a service as understood by one of ordinary skill in the art. The personalized shopping/payment application **113** may relay data from a scan of the machine-readable code to the personalized pricing module **742**. Subsequently, in block **1130**, the personalized pricing module **742** may send a query comprising the scan data to the merchant enterprise database **16**. The method **901**A then continues to routine block **1135** of FIG. **9**G.

FIG. **9**G is a continuation flowchart corresponding to the flowchart of FIG. **9**F which illustrates a method **901** for providing a personalized shopping experience with personalized pricing for a PCD consumer. The first block of method **901**B is routine block **1135**. Routine block **1135** generally corresponds with routine block **1115** described above. In other words, in this routine block **1135**, the personalized pricing module **742** in combination with the rules engine **737** may provide personalized pricing of the goods/services that were just scanned by the PCD user. Further details of routine block **1135** described below in connection with FIG. **9**H. Routine block **1135** generally corresponds to FIGS. **7**C-**7**D described above.

Next, in block **1140**, the personalized pricing module **742** relays the customized or personalized prices for the goods/services to the personalized shopping/payment application **113**. The personalized shopping/payment application **113** then displays the personalized prices on the display device of the PCD **100**. The personalized shopping/payment application **113** may also display available payment methods available to the PCD consumer. See FIG. **11**A which illustrates an exemplary personalized price **1103** for a good **1101**, comprising clothing such as jeans.

Next, in block **1145**, the ensemble engine **781** may apply its rules as described above in connection with FIG. **7**E such that additional goods and/or services may be displayed to the PCD consumer via the personalized shopping/payment application **113**. The ensemble engine **781** may suggest additional products and/or services which may be of interest to the PCD consumer based on the rules.

In block **1150**, the personalized shopping/payment application **113** may display the additional products and/or services on the display device of the PCD **100**. See for example, the bottom half portion of the display **1100**B of FIG. **11**B described in further detail below. The additional products and/or services suggested by the ensemble engine **781** will also have personalized prices corresponding to the PCD user as generated by the personalized pricing module **742** in combination with the rules engine **737**.

In block **1155**, the personalized shopping/payment application **113** may receive goods and/or services for storage within the virtual shopping basket. An exemplary virtual shopping basket as illustrated in FIG. **11**B described in further detail below.

In block **1160**, the personalized shopping/payment application **113** may receive goods and/or services for the wishlist. An exemplary wishlist as illustrated in FIG. **11**C described in further detail below. Next, in block **1165**, the personalized shopping/payment application **113** may display the goods and/or services in the basket along with their personalized prices for review by the PCD consumer.

In block **1170**, the personalized shopping/payment application **113** may receive a command for checkout that will allow the PCD consumer to purchase the goods and/or services present in the virtual shopping basket. The method **901**B then continues to block **903** of FIG. **9**A described above.

FIG. **9**H is a submethod or routine **1115**, **1135** for providing personalized pricing for a PCD consumer. Submethod or routine **1115**, **1135** corresponds to submethod **901** as illustrated in FIGS. **9**F-**9**G. This submethod or routine **1115**, **1135** also corresponds with FIGS. **7**C-**7**D that describe the relationship between the personalized pricing module **742** and the rules engine **737**.

In block **1205**, the personalized pricing module **742** in combination with the level of interest module **779** FIG. **7**D may determine a level of interest of a PCD consumer for a product or service that is in a wishlist or has been scanned by the PCD **100**. This block **1205** corresponds to the features and functions of the personalized pricing modules **142** and the level of interest module **779** described above in connection with FIG. **7**D.

Next, in block **1210**, the rules engine **737** may apply its rules based on the level of interest determined in block **1205** by the personalized pricing module **742** and the level of interest module **779**. Block **1210** generally corresponds with FIG. **7**C described above in which the rules engine **737** may apply its rules based on the level of interest and/or based upon loyalty tiers as illustrated in the product look-up ("PLU") table **777**. The submethod then returns to either block **1120** of FIG. **9**F or block **1140** of FIG. **9**G.

In the exemplary embodiment illustrated in FIG. **10**A, a machine-readable tag **124** may be placed on a table in a restaurant so that it may be scanned in with a PCD **100** running the personalized shopping/payment application **113**. The machine-readable tag **124** may be part of a menu or a display component that is very accessible to an operator of the PCD **100** when he or she is seated at a table in the restaurant.

In the exemplary embodiment illustrated in FIG. **10**A, the machine-readable code **222** may be integral with an advertisement about the restaurant. The advertisement may also convey an offer which may be available to an operator of a PCD **100**. To encourage patrons of the restaurant to utilize the system **101** instead of traditional card tokens associated with traditional forms of payment, the restaurant may entice the operators of PCDs **100** with special offers such as an offer for a free appetizer if the operator of the PCD **100** scans the

machine-readable code **222** with the PCD **100** in order to indicate that the patron will likely pay his or her final bill with the PCD **100**.

In response to scanning the machine-readable code **222** of FIG. **10**, the central mobile payment controller **50** may generate a message and send the message to the display of the PCD **100** as illustrated in FIG. **10**B.

FIG. **10**B is a diagram of a screen **202**I that shows relevant merchant information **228** and options **230** for an offer from a merchant that may be selected by an operator prior to the end of a transaction. The options **230** for the offer may include one or more choices of food products sold by the restaurant which is utilizing the system **101**. In the exemplary embodiment illustrated in FIG. **10**B, the choices of food products include, but are not limited to, free cheese sticks and free potato skins.

Once an option **230** is selected by an operator of the PCD **100**, the PCD **100** may relay this information back to the store controller **410** which in turn relays this information upstream to the central mobile payment controller **50** as well as any server terminals in the restaurant. A waiter or service professional monitoring the terminal may be provided with a display of the appetizer selected by the operator of the PCD **100**. Along these lines, in other exemplary embodiments, the operator of the PCD **100** may also select all of their food items from a menu by scanning in machine-readable codes from the menu or by keying-in codes or names of food items listed in the menu.

FIG. **10**C is a diagram of a screen **202**J that shows merchant information **228** relevant to a transaction and payment options **218**B for a purchase along with a plurality of payment options that may be selected by an operator of the PCD **100**. The payment options **218**B comprising the plurality of payment options that may be selected by the operator is very similar to the payment options **218**A described above in connection with FIG. **2**G. As noted previously, one or more payment options may be selected by the operator with this screen **202**J. The payment options may also provide or display any remaining balances available with credit card accounts as well as balances available for debit accounts so that the operator will know if there are sufficient funds in respect of accounts to pay for the final bill. Also with this screen **202**J, a drop-down menu **229** may be provided for display and selection of an appropriate amount of tip corresponding to the service provided at the merchant such for the service provided by a waiter at a restaurant.

FIG. **10**D is a diagram of a screen **202**K that shows electronic receipt **220**B that may be provided upon completion of a transaction with a merchant, such as a restaurant. The electronic receipt **220**B of screen **202**K is very similar to the electronic receipt **220**A of screen **202**H noted above. The electronic receipt **220**B may list the food products purchased, as well as the tip for service selected, a total bill amount, and the payment method which was selected for the transaction.

FIG. **11**A is a diagram of a screen **1100**A that illustrates the results of a scanned machine-readable code for a good or product **1101** that has been scanned by a PCD **100** and its corresponding personalized price **1103**. The screen **1100**A may be produced by the personalized shopping/payment application **113** running on the PCD **100**.

FIG. **11**B is a diagram of a screen **1100**B that illustrates a virtual shopping cart or basket **11** along with a suggested ensemble of related products **1113** by the ensemble engine **781**. The screen **1100**B may be produced by the personalized shopping/payment application **113** running on the PCD **100**.

FIG. **11**C is a diagram of a screen **1100**C that illustrates a virtual wish list **1117** that may be updated by the PCD con-

sumer with his or her PCD. The virtual wishlist may comprise a plurality of goods and/or services desired by a PCD consumer in connection with the future purchase. The screen **1100**C may be produced by the personalized shopping/payment application **113** running on the PCD **100**.

FIG. **12**A is a diagram of a screen **1200**A that shows merchant information **228** relevant to a transaction and a total bill for a purchase along with a plurality of offers **230** which were generated by a tender steering algorithm executed by the tender steering module **744**. In this exemplary embodiment, the options **230** were generated by the tender steering module **744** such as described above in connection with blocks **1020**, **1045**. Specifically, the tender steering module **744** of this embodiment generated a 10% off the purchase price if the operator of the PCD **100** uses a new merchant payment account that may be established relatively instantaneously with the portable computing device **100**. The tender steering module **744** also produced a 5% off the purchase price if the operator of the PCD **100** utilizes a merchant branded gift card.

FIG. **12**B is a diagram of a screen **1200**B that shows merchant information relevant to a transaction and a total bill for a purchase along with a plurality of payment options **218**B that may be selected by user and which were re-ordered by a tender steering algorithm **744**. The payment options **218**B may also be characterized as the ranked list of payment account types described above in connection with FIG. **9**E and the tender steering module **744**. As illustrated in FIG. **12**B, the tender steering module **744** has presented the merchant gift card payment option first, the merchant branded payment account second, and another type of payment account third.

The final purchase price listed is $63.92. Meanwhile the balance remaining on the merchant branded gift card is $8 and the credit limit of the merchant payment account is listed as $1000. In this way, the operator of the PCD **100** may select the merchant branded gift card payment option to be used in combination with the merchant branded payment account. Such a selection of payment options, in some cases, would not require any interchange fees from the merchant. In fact, in some cases, the selection of these two payment options could provide rebates for the merchant as understood by one of ordinary skill the art. By controlling the sequence of display for the payment options, a merchant through the tender steering module **744** may influence or "steer" a consumer towards the payment options which are most beneficial to the merchant.

Certain steps in the processes or process flows described in this specification naturally precede others for the invention to function as described. However, the invention is not limited to the order of the steps described if such order or sequence does not alter the functionality of the invention. That is, it is recognized that some steps may performed before, after, or parallel (substantially simultaneously with) other steps without departing from the scope and spirit of the invention. In some instances, certain steps may be omitted or not performed without departing from the invention. Further, words such as "thereafter", "then", "next", etc. are not intended to limit the order of the steps. These words are simply used to guide the reader through the description of the exemplary method.

Additionally, one of ordinary skill in programming is able to write computer code or identify appropriate hardware and/or circuits to implement the disclosed invention without difficulty based on the flow charts and associated description in this specification, for example.

Therefore, disclosure of a particular set of program code instructions or detailed hardware devices is not considered necessary for an adequate understanding of how to make and

use the invention. The inventive functionality of the claimed computer implemented processes is explained in more detail in the above description and in conjunction with the Figures which may illustrate various process flows.

In one or more exemplary aspects, the functions described may be implemented in hardware, software, firmware, or any combination thereof. If implemented in software, the functions may be stored on or transmitted as one or more instructions or code on a computer-readable medium. Computer-readable media include both computer storage media and communication media including any medium that facilitates transfer of a computer program from one place to another. A storage media may be any available media that may be accessed by a computer. By way of example, and not limitation, such computer-readable media may comprise RAM, ROM, EEPROM, CD-ROM or other optical disk storage, magnetic disk storage or other magnetic storage devices, or any other medium that may be used to carry or store desired program code in the form of instructions or data structures and that may be accessed by a computer.

Also, any connection is properly termed a computer-readable medium. For example, if the software is transmitted from a website, server, or other remote source using a coaxial cable, fiber optic cable, twisted pair, digital subscriber line ("DSL"), or wireless technologies such as infrared, radio, and microwave, then the coaxial cable, fiber optic cable, twisted pair, DSL, or wireless technologies such as infrared, radio, and microwave are included in the definition of medium.

Disk and disc, as used herein, includes compact disc ("CD"), laser disc, optical disc, digital versatile disc ("DVD"), floppy disk and blu-ray disc where disks usually reproduce data magnetically, while discs reproduce data optically with lasers. Combinations of the above should also be included within the scope of computer-readable media.

Although selected aspects have been illustrated and described in detail, it will be understood that various substitutions and alterations may be made therein without departing from the scope of the disclosure, as defined by the following claims.

What is claimed is:

1. A method for providing a personalized shopping experience to a user of a portable computing device, the method comprising:

verifying credentials for gaining access to a central mobile payment controller;

receiving a merchant identifier corresponding to a merchant over a computer communications network from the portable computing device;

receiving from the portable computing device a scan of a machine-readable code primarily associated with at least one of a primary good and a primary service;

retrieving information associated with the machine-readable code from a database;

determining a personalized price, for a consumer associated with the portable computing device, corresponding to the at least one primary good or primary service;

generating a suggestion of an additional good or service secondarily associated with the scanned machine-readable code; and

transmitting the personalized price and the suggestion over a computer communications network to the portable computing device.

2. The method of claim 1, wherein determining a personalized price for the consumer further comprises determining a level of interest in the good or service selected by the consumer.

3. The method of claim 2, wherein determining a level of interest in the good or service selected by the consumer comprises determining if a machine-readable code associated with the good or service has been scanned by the portable computing device.

4. The method of claim 3, wherein determining a level of interest in the good or service selected by the consumer comprises determining if the product or service is contained within at least one of a wish list, a virtual shopping cart, and a virtual check out list.

5. The method of claim 3, wherein determining a level of interest in the good or service selected by the consumer comprises determining if the product or service has been purchased previously by the consumer.

6. The method of claim 1, further comprising:

accessing at least one of a stock keeping unit database, a customer profile database, a demographics database, and a promotion database.

7. The method of claim 1, further comprising:

comparing one or more payment options and their corresponding interchange rates to a final purchase price for the product or service.

8. The method of claim 1, further comprising:

re-ordering potential payment options by payment account types.

9. The method of claim 1, further comprising:

displaying the one or more preferred payment options in a ranked fashion that may favor a merchant on a display device of the personal computing device.

10. A computer system for providing a personalized shopping experience to a user of a portable computing device, the method comprising:

a processor for:

verifying credentials for gaining access to a central mobile payment controller;

receiving a merchant identifier corresponding to a merchant over a computer communications network from the portable computing device;

receiving from the portable computing device a scan of a machine-readable code primarily associated with at least one of a primary good and a primary service;

retrieving information associated with the machine-readable code from a database;

determining a personalized price, for a consumer associated with the portable computing device, corresponding to the at least one primary good or primary service;

generating a suggestion of an additional good or service secondarily associated with the scanned machine-readable code; and

transmitting the personalized price and the over a computer communications network suggestion to the portable computing device.

11. The system of claim 10, wherein determining a personalized price for the consumer further comprises determining a level of interest in the good or service selected by the consumer.

12. The system of claim 11, wherein determining a level of interest in the good or service selected by the consumer comprises determining if a machine-readable code associated with the good or service has been scanned by the portable computing device.

13. The system of claim 12, wherein determining a level of interest in the good or service selected by the consumer comprises determining if the product or service is contained within at least one of a wish list, a virtual shopping cart, and a virtual check out list.

43
44

14. The system of claim **12**, wherein determining a level of interest in the good or service selected by the consumer comprises determining if the product or service has been purchased previously by the consumer.

15. The system of claim **10**, wherein the processor is further operable for:

accessing at least one of a stock keeping unit database, a customer profile database, a demographics database, and a promotion database.

16. The system of claim **10**, wherein the processor is further operable for:

comparing one or more payment options and their corresponding interchange rates to a final purchase price for the product or service.

17. The system of claim **10**, wherein the processor is further operable for:

re-ordering potential payment options by payment account types.

18. The system of claim **10**, wherein the processor is further operable for:

displaying the one or more preferred payment options in a ranked fashion that may favor a merchant on a display device of the personal computing device.

19. A computing system for providing a personalized shopping experience to a user of a portable computing device, the method comprising:

means for verifying credentials for gaining access to a central mobile payment controller;

means for receiving a merchant identifier corresponding to a merchant over a computer communications network from the portable computing device;

means for receiving from the portable computing device a scan of a machine-readable code primarily associated with at least one of a primary good and a primary service;

means for retrieving information associated with the machine-readable code from a database;

means for determining a personalized price, for a consumer associated with the portable computing device, corresponding to the at least one primary good or primary service;

means for generating a suggestion of an additional good or service secondarily associated with the scanned machine-readable code; and

means for transmitting the personalized price and the suggestion over a computer communications network to the portable computing device.

20. The system of claim **19**, wherein the means for determining a personalized price for the consumer further comprises a means for determining a level of interest in the good or service selected by the consumer.

21. The system of claim **20**, wherein the means for determining a level of interest in the good or service selected by the consumer comprises a means for determining if a machine-readable code associated with the good or service has been scanned by the portable computing device.

22. The system of claim **21**, wherein the means for determining a level of interest in the good or service selected by the consumer comprises a means for determining if the product or service is contained within at least one of a wish list, a virtual shopping cart, and a virtual check out list.

23. The system of claim **21**, wherein the means for determining a level of interest in the good or service selected by the consumer comprises a means for determining if the product or service has been purchased previously by the consumer.

24. The system of claim **19**, further comprising:

means for accessing at least one of a stock keeping unit database, a customer profile database, a demographics database, and a promotion database.

25. The system of claim **19**, further comprising:

means for comparing one or more payment options and their corresponding interchange rates to a final purchase price for the product or service.

26. The system of claim **19**, further comprising:

means for re-ordering potential payment options by payment account types.

27. The system of claim **19**, further comprising:

means for displaying the one or more preferred payment options in a ranked fashion that may favor a merchant on a display device of the personal computing device.

28. A computer program product comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a method for providing a personalized shopping experience to a user of a portable computing device, said method comprising:

verifying credentials for gaining access to a central mobile payment controller;

receiving a merchant identifier corresponding to a merchant over a computer communications network from the portable computing device;

receiving from the portable computing device a scan of a machine-readable code primarily associated with at least one of a primary good and a primary service;

retrieving information associated with the machine-readable code from a database;

determining a personalized price, for a consumer associated with the portable computing device, corresponding to the at least one primary good or primary service;

generating a suggestion of an additional good or service secondarily associated with the scanned machine-readable code; and

transmitting the personalized price and the suggestion over a computer communications network to the portable computing device.

29. The computer program product of claim **28**, wherein determining a personalized price for the consumer further comprises determining a level of interest in the good or service selected by the consumer.

30. The computer program product of claim **29**, wherein determining a level of interest in the good or service selected by the consumer comprises determining if a machine-readable code associated with the good or service has been scanned by the portable computing device.

31. The computer program product of claim **30**, wherein determining a level of interest in the good or service selected by the consumer comprises determining if the product or service is contained within at least one of a wish list, a virtual shopping cart, and a virtual check out list.

32. The computer program product of claim **30**, wherein determining a level of interest in the good or service selected by the consumer comprises determining if the product or service has been purchased previously by the consumer.

33. The computer program product of claim **28**, wherein the program code implementing the method further comprises:

accessing at least one of a stock keeping unit database, a customer profile database, a demographics database, and a promotion database.

34. The computer program product of claim **28**, wherein the program code implementing the method further comprises:

comparing one or more payment options and their corresponding interchange rates to a final purchase price for the product or service.

35. The computer program product of claim **28**, wherein the program code implementing the method further comprises:

re-ordering potential payment options by payment account types.

36. The computer program product of claim **28**, wherein the program code implementing the method further comprises:

displaying the one or more preferred payment options in a ranked fashion that may favor a merchant on a display device of the personal computing device.

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