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**Simons**

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(54) **METHOD FOR ONLINE INFORMATION SHARING FOR COMPLETING ELECTRONIC FORMS**

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(22) Filed: **Mar. 10, 2000**

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(51) **Int. Cl.**
***G06F 15/00*** (2006.01)
*G06F 17/00* (2006.01)

(52) **U.S. Cl.** ..... **715/505**; 715/506; 715/507; 715/508

(58) **Field of Classification Search** ..... 715/505–508
See application file for complete search history.

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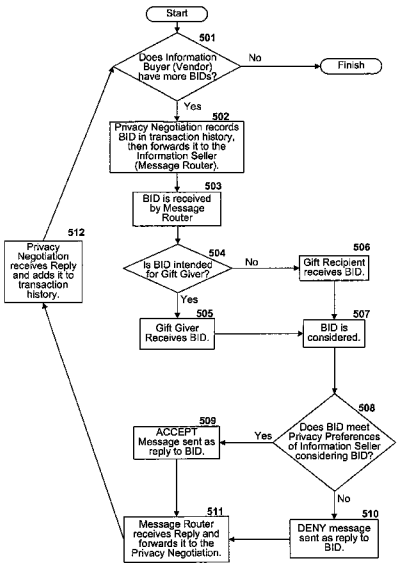
(57) **ABSTRACT**

Methods are disclosed for gathering information from different sources to be used to automatically fill in online forms. The information is collected using a persona of an individual. A persona is created by filtering a larger set of raw data for that user so that only certain fields are allowed to be seen and used by others. An individual can have several personas, each assigned to a particular other individual, such as a family member or a friend. The individual allowing one of his personas to be shared is the information provider and the user requesting the information is the information requester. The information is taken from both the provider and requester, and used by a vendor in a form, filled out by the information requester. In one embodiment, the information requester is a "gift giver" and the provider is a "gift receiver." The gift giver is requesting shipping and other information from the gift receiver, who can grant one of his personas to the particular gift giver. The information, along with billing information from the gift giver, is used to fill out a vendor online form.

**14 Claims, 9 Drawing Sheets**



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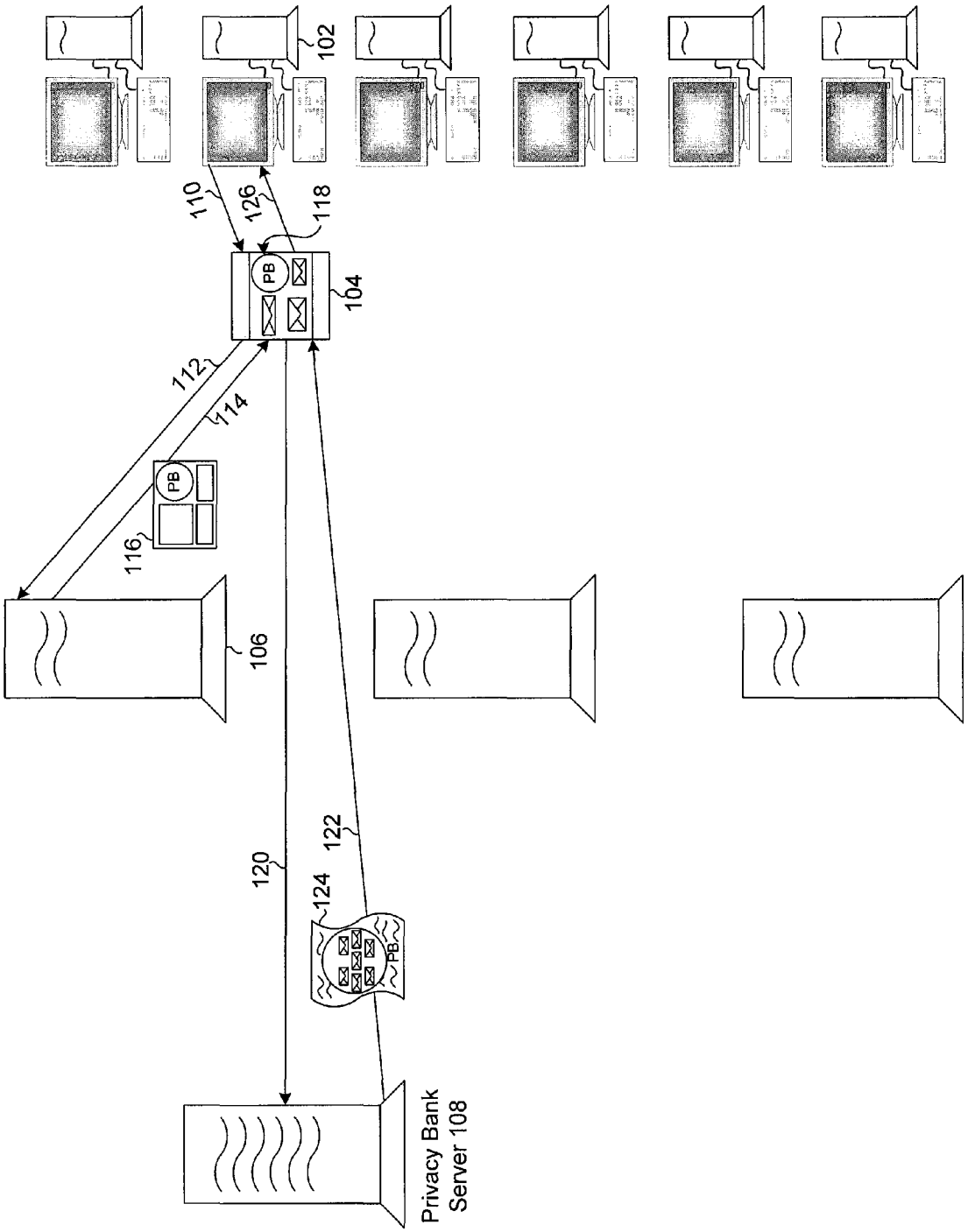

102
110
126
118
PB
104
112
114
PB
116
106
120
122
124
PB
Privacy Bank
Server 108

FIG. 1A

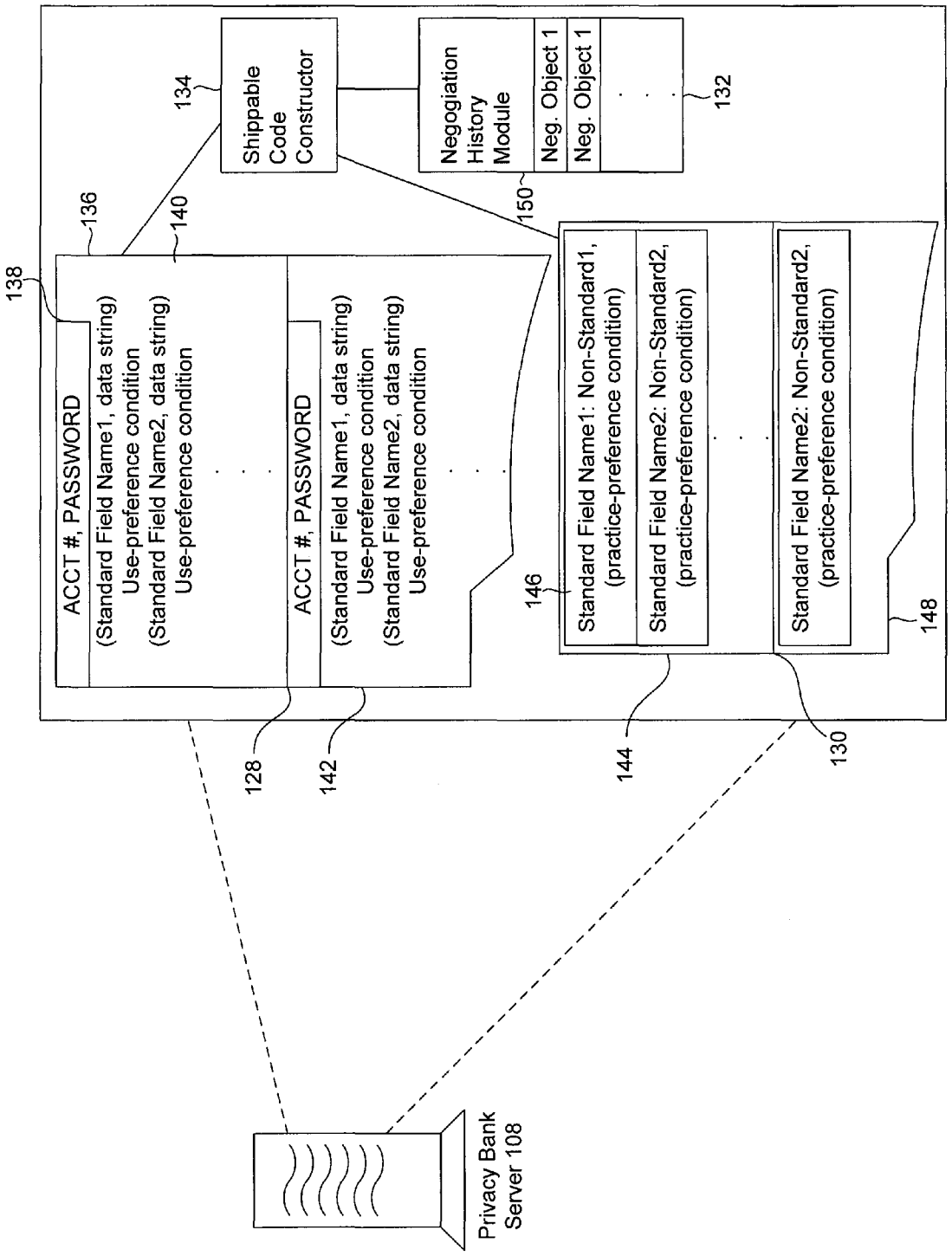

Shippable Code Constructor
134
Negogiation History Module
Neg. Object 1
Neg. Object 1
132
150
136
140
138
ACCT #, PASSWORD
(Standard Field Name1, data string)
Use-preference condition
(Standard Field Name2, data string)
Use-preference condition
ACCT #, PASSWORD
(Standard Field Name1, data string)
Use-preference condition
(Standard Field Name2, data string)
Use-preference condition
146
Standard Field Name1: Non-Standard1, (practice-preference condition)
Standard Field Name2: Non-Standard2, (practice-preference condition)
Standard Field Name2: Non-Standard2, (practice-preference condition)
148
128
142
144
130
Privacy Bank Server 108

FIG. 1B

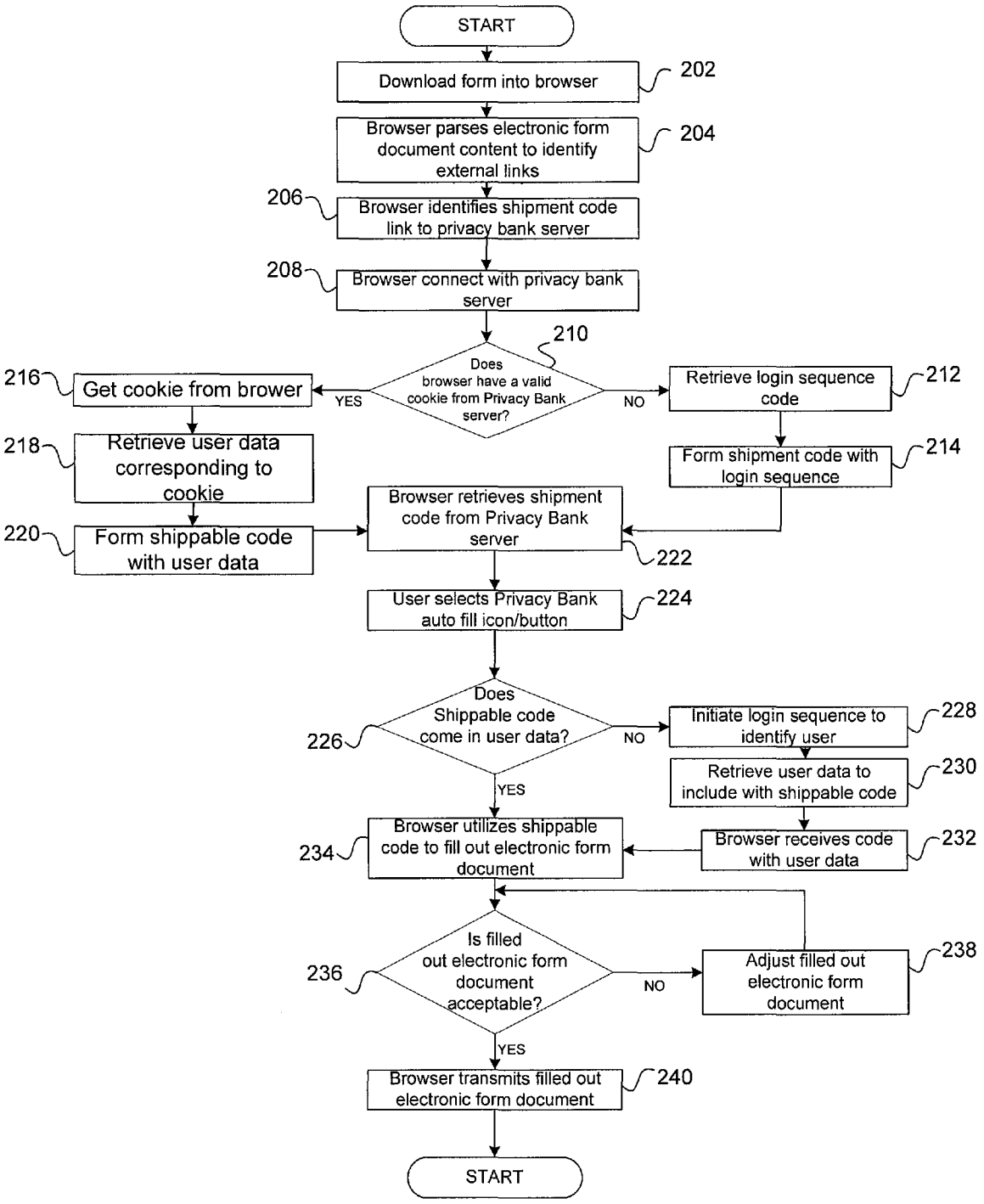

START
Download form into browser
202
Browser parses electronic form document content to identify external links
204
206
Browser identifies shipment code link to privacy bank server
208
Browser connect with privacy bank server
210
Does browser have a valid cookie from Privacy Bank server?
YES
NO
216
Get cookie from brower
Retrieve login sequence code
212
218
Retrieve user data corresponding to cookie
Form shipment code with login sequence
214
Browser retrieves shipment code from Privacy Bank server
220
Form shippable code with user data
222
User selects Privacy Bank auto fill icon/button
224
Does Shippable code come in user data?
226
NO
Initiate login sequence to identify user
228
Retrieve user data to include with shippable code
230
YES
Browser utilizes shippable code to fill out electronic form document
234
Browser receives code with user data
232
Is filled out electronic form document acceptable?
236
NO
Adjust filled out electronic form document
238
YES
Browser transmits filled out electronic form document
240
START

FIG. 2

302 304 306 308 310

| User | Category | Type | Short display name |
|---|---|---|---|
| Home. (312) | Physical Contact Information, Online Contact Information Demographic Data | Info. | Home |
| Work. (314) | Physical Contact Information, Online Contact Information Demographic Data | WorkInfo. | Work |
| Billing. (316) | Physical Contact Information, Online Contact Information Demographic Data Financial Data | BillInfo. | Billing |
| Shipping. (318) | Physical Contact Information, Online Contact Information Demographic Data | Info. | Shipping |

320

| Info. | Category | Type | Short display name |
|---|---|---|---|
| Name. (322) | Physical Contact Information Demographic Data | Person Name. | Name |
| Address. | Physical Contact Information Demographic Data | Address. | Postal Address |
| Phone. | Physical Contact Information | PhoneNum. | Phone Number |
| Fax. | Physical Contact Information | PhoneNum. | Fax Number |
| Internet. | Online contact Information | Internet. | Internet |

| WorkInfo. | Category | Type | Short display name |
|---|---|---|---|
| Name. | Physical Contact Information Demographic Data | PersonName. | Name |
| Employment. | Demographic Data | Employment. | Employment |
| Address. | Physical Contact Information Demographic Data | Address. | Postal Address |
| Phone. | Physical Contact Information | PhoneNum. | Phone Number |
| Fax. | Physical Contact Information | PhoneNum. | Fax Number |
| Internet. | Online Contact Information | Internet. | Internet |

FIG. 3A

| BillInfo. | Category | Type | Short display name |
|---|---|---|---|
| Name. | Physical Contact Information Demographic Data | PersonName. | Name |
| Address. | Physical Contact Information Demographic Data | Address. | Postal Address |
| Phone. | Physical Contact Information | PhoneNum. | Phone Number |
| Fax. | Physical Contact Information | PhoneNum. | Fax Number |
| Internet. | Online Contact Information | Internet. | Internet |
| Credit Card | Financial Data | CreditCard. | Favorite Credit Card |

302

| PersonName. | Category | Type | Short display name |
|---|---|---|---|
| Prefix | Demographic Data | Text | Prefix |
| First | Physical Contact Information | Text | First Name |
| Middle | Physical Contact Information | Text | Middle Name |
| Last | Physical Contact Information | Text | Last Name |
| Suffix | Demographic Data | Text | Suffix |

| Address. | Category | Type | Short display name |
|---|---|---|---|
| Street1 | Physical Contact Information | Text | Street 1 |
| Street2 | Physical Contact Information | Text | Street 2 |
| City | Physical Contact Information | Text | City |
| StateProv | Physical Contact Information | Text | State/Province |
| PostalCode | Demographic Data | Text | Post/Zip Code |
| Country | Demographic Data | Text | Country |

| PhoneNum. | Category | Type | Short display name |
|---|---|---|---|
| AreaCode | Physical Contact Information | Text | Area Code |
| Number | Physical Contact Information | Text | Number |
| Extension | Physical Contact Information | Text | Extension |

FIG. 3B

| Internet. | Category | Type | Short display name |
|---|---|---|---|
| Email | Online Contact Information | Text | Email |
| HomePage | Online Contact Information | Text | Home Page |

| Employment | Category | Type | Short display name |
|---|---|---|---|
| Employer | Demographic Data | Text | Employer |
| Department | Demographic Data | Text | Department |
| JobTitle | Demographic Data | Text | Job Title |

| Credit Card. | Category | Type | Short display name |
|---|---|---|---|
| Type | Financial Data | Text | Card Type |
| Number | Financial Data | Text | Account Number |
| ExpMonth | Financial Data | Text | Expiration Month |
| ExpYear | Financial Data | Text | Expiration Year |

FIG. 3C

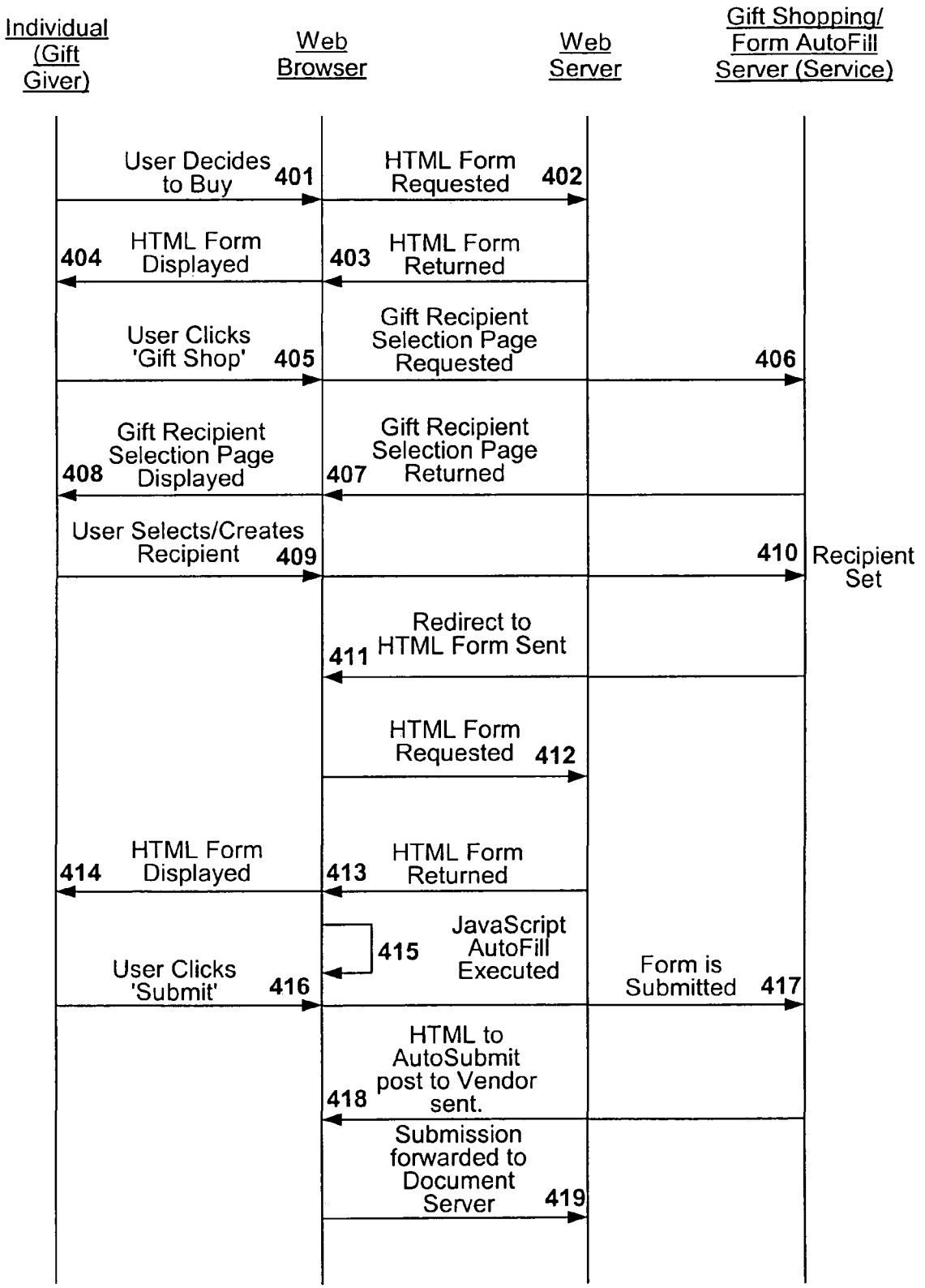

Individual (Gift Giver)
Web Browser
Web Server
Gift Shopping/ Form AutoFill Server (Service)
User Decides to Buy 401
HTML Form Requested 402
404 HTML Form Displayed
403 HTML Form Returned
User Clicks 'Gift Shop' 405
Gift Recipient Selection Page Requested 406
Gift Recipient Selection Page Displayed 408
Gift Recipient Selection Page Returned 407
User Selects/Creates Recipient 409
410 Recipient Set
Redirect to HTML Form Sent 411
HTML Form Requested 412
HTML Form Displayed 414
HTML Form Returned 413
415 JavaScript AutoFill Executed
User Clicks 'Submit' 416
Form is Submitted 417
HTML to AutoSubmit post to Vendor sent. 418
Submission forwarded to Document Server 419

Figure 4

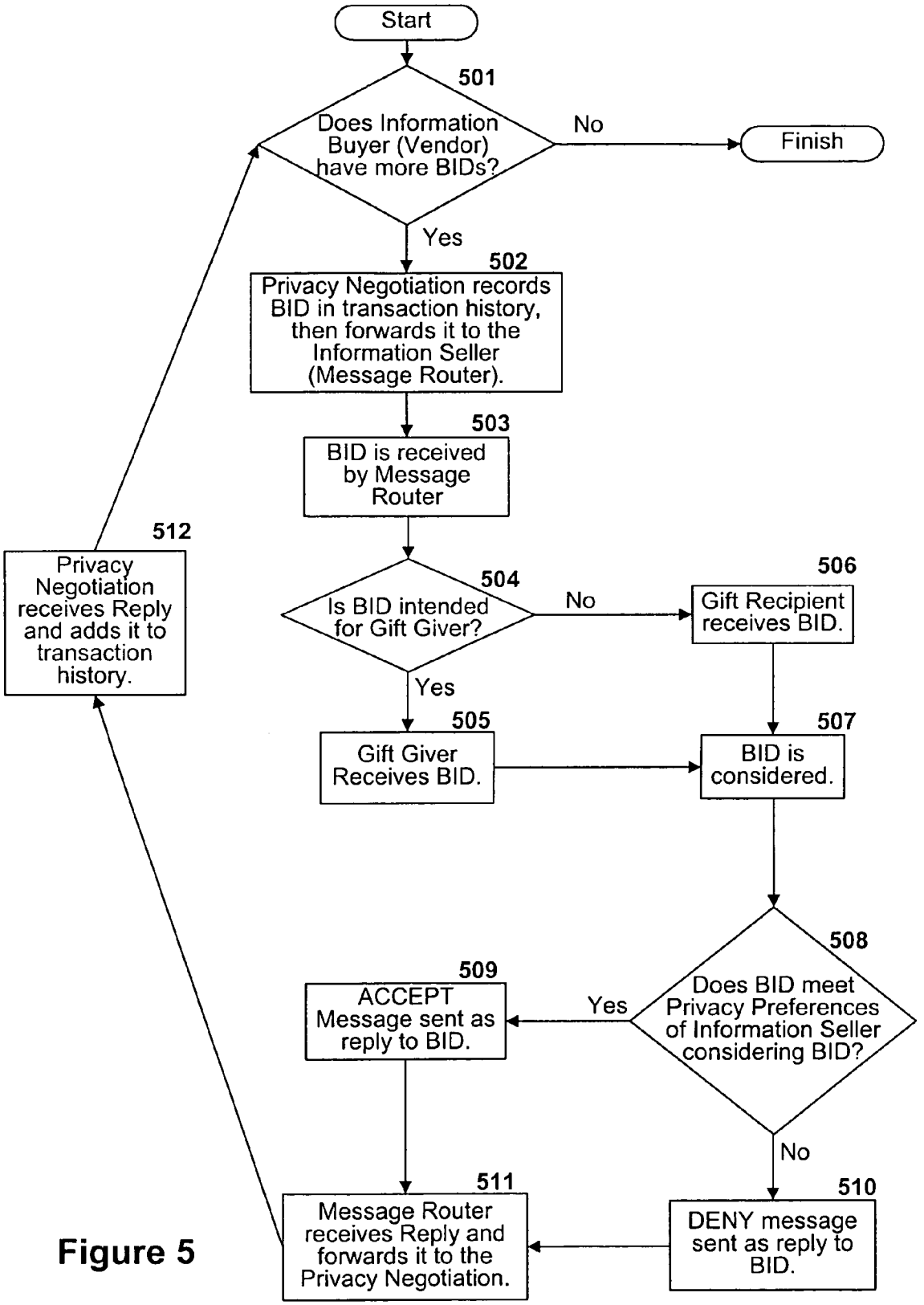

Start
501
Does Information Buyer (Vendor) have more BIDs?
No
Finish
Yes
502
Privacy Negotiation records BID in transaction history, then forwards it to the Information Seller (Message Router).
503
BID is received by Message Router
512
Privacy Negotiation receives Reply and adds it to transaction history.
504
Is BID intended for Gift Giver?
No
506
Gift Recipient receives BID.
Yes
505
Gift Giver Receives BID.
507
BID is considered.
508
Does BID meet Privacy Preferences of Information Seller considering BID?
Yes
509
ACCEPT Message sent as reply to BID.
No
510
DENY message sent as reply to BID.
511
Message Router receives Reply and forwards it to the Privacy Negotiation.

Figure 5

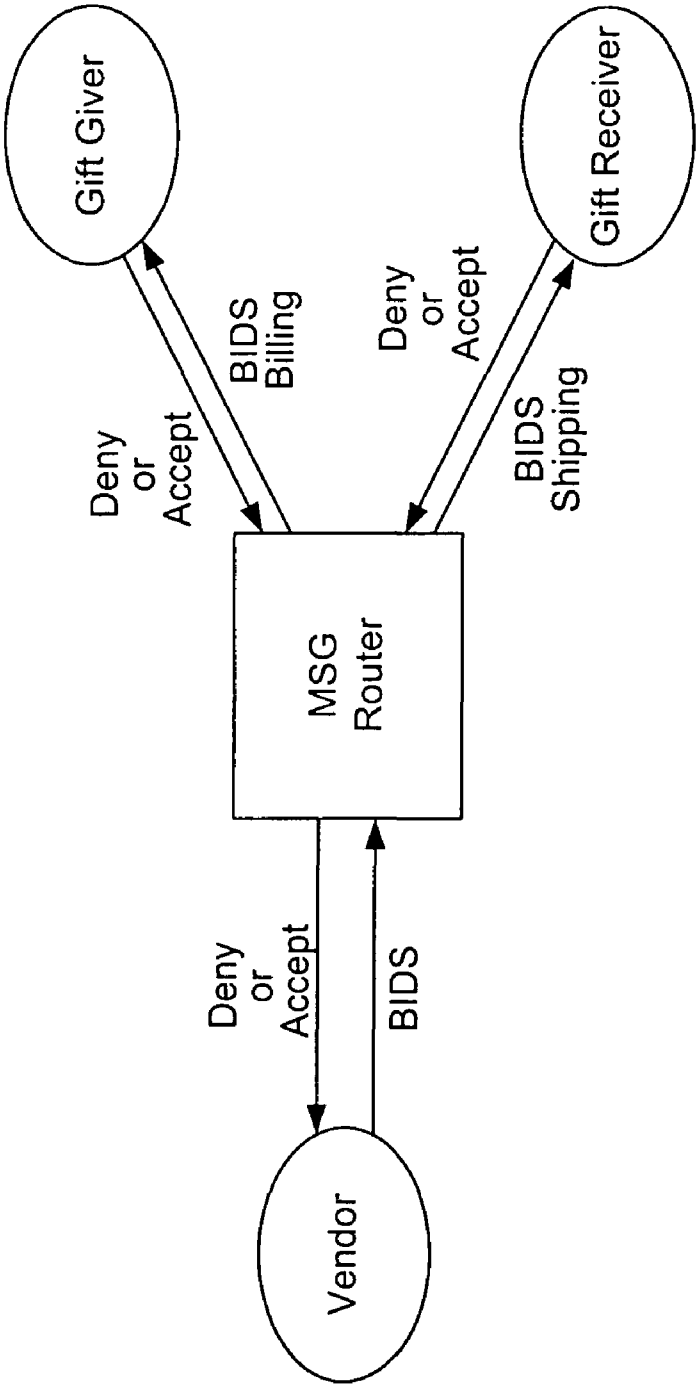

Gift Giver
Deny or Accept
BIDS Billing
Gift Receiver
Deny or Accept
BIDS Shipping
MSG Router
Deny or Accept
BIDS
Vendor

Figure 6

# METHOD FOR ONLINE INFORMATION SHARING FOR COMPLETING ELECTRONIC FORMS

## CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of priority under 35 USC § 119(e) to provisional Patent Application No. 60/123,605, filed Mar. 10, 1999, naming Geoffrey W. Simons as inventor.

U.S. application Ser. No. 09/231,644, filed Jan. 15, 1999, commonly owned, is incorporated by reference herein for all purposes.

## BACKGROUND OF THE INVENTION

The present invention relates generally to computer software for filling out form documents over a computer network. More particularly, the present invention provides a method and system for sharing information among users for the purpose of automatically filling out fields in an electronic form document.

The present invention describes a process for purchasing goods and services over an electronic computer network, namely the World Wide Web, for the purpose of Gift Shopping. Gift Shopping is defined as the act of buying a good or a service (the Product) for another person. Within the scope of the electronic computer network, Gift Shopping entails that the Gift Giver release personal information pertaining to the billing of the Product, and that the Gift Recipient release personal information pertaining to the shipping, size, and type of the Product.

Thus, it is desirable to be able to share personal information with other users on a network. In such a system, a gift giver, for example, can access certain items of information, collectively referred to as a persona, which a gift receiver has indicated can be accessed by others. A user can have a number of personas, each one used by a group of other users or one other user.

## SUMMARY OF THE INVENTION

To achieve the foregoing, methods, apparatus, and computer-readable mediums are disclosed which provide an online shopper can share information with intended gift receivers. The information sharing can be used on numerous non-affiliated sites. That is, the sites at which the goods are purchased do not have to be within, for example, a portal's shopping mall or any type of "walled garden." Thus, the online gift giver can access information of gift receivers from a wide variety of non-associated and non-affiliated sites. While there are features similar to information sharing within restricted online shopping malls and networks of sites, information sharing outside these confines is presently unavailable.

The present invention is a technique use to gather information from different sources to be used to automatically fill in online forms. The information is collected using a persona of an individual. A persona is created by filtering a larger set of raw data for that user so that only certain fields are allowed to be seen and used by others. An individual can have several personas, each assigned to a particular other individual, such as a family member or a friend. The individual allowing one of his personas to be shared is the information provider and the user requesting the information is the information requester. The information is taken from



both the provider and requester, and used by a vendor in a form, filled out by the information requester. In one embodiment, the information requester is a "gift giver" and the provider is a "gift receiver." The gift giver is requesting shipping and other information from the gift receiver, who can grant one of his personas to the particular gift giver. The information, along with billing information from the gift giver, is used to fill out a vendor online form.

In one aspect of the invention a method of allowing an information requester, such as a gift giver, to access data from an information provider, such as a gift receiver, in order to complete an online merchant form is described. A filtered data set is created that contains data the information provider is willing to share with particular third-party users, including the information requester. An online merchant form is retrieved from a merchant or service provider site upon request by an information requester, the online merchant form having numerous fields. Data from the information requester is inserted into the appropriate fields in the form, such as billing information. Access to the filtered data set is granted by the information provider to the information requester. This enables data from the filtered data set to be inserted into the appropriate fields in the form, such as shipping information. The online form being filled out is from an online merchant or service provider that is not necessarily affiliated with other online merchants, such as being in an online shopping mall, a "walled garden," or network of sites associated with a portal.

## BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood by reference to the following description taken in conjunction with the accompanying drawings in which:

FIG. **1**A is a diagrammatical representation of a system for automatically filling in electronic form documents in accordance with one embodiment of the present invention.

FIG. **1**B is a block diagram showing components of a server enabling the automatic insertion of data in to an electronic form on a remote computer in accordance with one embodiment of the present invention.

FIG. **2** is a flow diagram of a process for automatically filling in an electronic form document in accordance with one embodiment of the present invention.

FIGS. **3**A, **3**B, and **3**C are table diagrams showing the field names and format of registered user data in accordance with one embodiment of the present invention.

FIG. **4** is a sequence diagram outlining a process of conducting purchasing gifts over a distributed network in accordance with one embodiment of the present invention.

FIG. **5** is a flowchart describing a privacy negotiation for gathering information associated with purchasing gifts over a distributed network in accordance with one embodiment of the present invention.

FIG. **6** is a block diagram showing the various parties and possible message passing between the parties in accordance with one embodiment of the present invention.

## DETAILED DESCRIPTION

Reference will now be made in detail to a preferred embodiment of the invention. An example of the preferred embodiment is illustrated in the accompanying drawings. While the invention will be described in conjunction with a preferred embodiment, it will be understood that it is not intended to limit the invention to one preferred embodiment. To the contrary, it is intended to cover alternatives, modi-

fications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

A method and system for automatically filling in electronic forms on a computer and not requiring a user to download or install any resident software on the computer is described in the various figures. As the presence of merchants and services increases on the Internet, electronic commerce or e-commerce will grow. More and more consumers will resort to the Internet, for example, to purchase goods and services for themselves or others (e.g., gift shopping). This will typically require the consumer/user to provide at least some data, either the users own or another individuals, to the merchant typically through filling out an electronic form having various fields, most commonly names, addresses, credit card numbers, phone numbers, etc. For consumers purchasing goods from numerous merchant sites and possibly using different computers (e.g. using a computer at work, using another computer at home, and yet another one while travelling), manually filling in these forms repeatedly can become tedious and inefficient. The present invention seeks to alleviate the burden of filling in electronic forms, while informing the consumer/user of privacy precautions taken by a particular merchant site, and not require the user to download any resident software. Inherent in the latter feature is allowing the consumer to use the processes of the present invention from any computer connected to the network, the Internet in particular.

The present invention uses a remote server or "privacy bank," a novel electronic resource that responds to requests for data by preparing and transmitting a specialized document in the form of a JavaScript. This JavaScript is formed dynamically by the privacy bank upon receipt of the request for data. The JavaScript created by the privacy bank is a "profile" or mapping between field names in a particular form the user needs to fill in at a particular merchant site (e.g. "www.fishermanstore.com") and standardized field names stored in the privacy bank server. Once the user's browser program is served this profile from privacy bank, most of the fields in the fishermanstore form are automatically filled in. In the described embodiment, the user becomes a member of the privacy bank resource by providing personal information, also referred to as the raw data, to privacy bank once. This raw data can be updated from time to time by the user if desired. In addition, several filtered raw data sets or "personas" can be created for use by others who may need to access the user's information. In another embodiment, the user can enter privacy rules or requirements once when initially becoming a member. The user does not need to download any software from privacy bank or any other resource. In the described embodiment, the merchant (e.g. The Fisherman Store) becomes an affiliate member of the privacy bank network by providing a sample document of its form or forms. Privacy bank can then build a mapping between fields in the merchant's form and the standardized fields in its own database.

FIG. **1**A is a block diagram of a system for automatically filling out electronic form documents in accordance with one embodiment of the present invention. A number of end-user computers are shown on the right side of the diagram. These computers can be client computers in a network with access to the Internet or be part of an intranet. In the described embodiment an end-user computer **102** is a stand-alone computer with access to the Internet and contains an Internet browser program, a browser window for which is shown at **104**. In the center of the diagram is a number of Web servers. A particular Web server **106** is a server for a merchant Web site, such as www.fishermanstore.com to which users or consumers can visit to purchase goods online over the Internet. On the left side of the diagram is a specialized electronic resource referred to in the described embodiment as a privacy bank server computer **108**, also connected to the Internet.

The process of automatic electronic form completion begins with a user downloading the form from a Web site such as fishermanstore site. Returning to FIG. **1**A, a user/consumer on computer **102** ("user **102**") opens a browser window **104** in an Internet browser program such as Netscape Navigator or Internet Explorer, depicted by arrow **110**. User **102** then goes to www.fishermanstore.com shown by arrow **112** via the browser and decides to purchase goods. User **102** then downloads from the Web site contained on Web server **106** an electronic purchasing form that needs to be completed as depicted by arrow **114**. A purchasing form **116**, typically an HTML document, is returned and downloaded into and displayed in browser window **104**. At this juncture, user **102** would normally have to "manually" fill in each field in purchasing form **116**. Much of this information is typically standard: name, address, phone number, payment method, user email address, etc. In accordance with one embodiment of the present invention, user **102** can "click" on a privacy bank icon or button in form **116** and have the form automatically filled in.

As stated earlier, it is assumed in this discussion that www.fishermanstore.com is registered with and thus an affiliate member of the privacy bank service assessable from privacy bank server **108**. Being an affiliate member of the privacy bank service, purchasing form **116** contains a privacy bank icon or button **118**. By clicking on privacy bank icon **118**, user **102** essentially completes a process for automatically filling in form **116** by transparently transmitting a completed form to the privacy bank service on server **108**, depicted by an arrow **120**. The information needed for filling in the form is transmitted to user **102** once form **116** (an HTML document) is parsed, which occurs when form **116** is downloaded. This process is described in greater detail in FIG. **4**. User **102** informs privacy bank server **108** of the identity of the user and of which Web site and which form on that Web site (if more than one) the user wishes to have filled in. This information is transmitted to privacy bank server **108**, unbeknownst to user **102**, when form **116** is downloaded. Techniques for accomplishing this are described below. Once privacy bank server **108** receives a request from registered user **102** (by virtue of an external link in form **116** executed when the form is parsed by user **102**), it begins preparing information needed to fill in form **116** on user computer **102**. In the described embodiment, the information sent to user computer **102** is a JavaScript program **124** referred to as a "profile." Explained briefly, this profile contains a mapping of privacy bank standardized fields and fields in purchasing form **116** and "raw," generally personal, data associated with user **102**. The content of this profile and JavaScript program in general is described in greater detail in FIGS. **7**A and **7**B below. Once received by the browser program on user computer **102**, the filled out purchasing form **116** is displayed to user **102** as depicted by arrow **126**. This occurs when user **102** presses or clicks on privacy bank icon **118**. The information needed to complete form **116** is already resident in the browser program. At this juncture, user **102** can decide whether to proceed with submitting the form (typically after filling out a few more fields such as which items to purchase, quantity, etc.) or

declining to submit the form, perhaps after reviewing the fishermanstore's Web site privacy safeguards or for any other reason.

FIG. **1**B is a block diagram showing components of a privacy bank server enabling the automatic filling in of electronic forms on a remote user computer. A privacy bank server, such as server **108** in FIG. **1**A, contains several functional and storage components needed for compiling the data needed for filing in a form, such as form **116**. Shown in FIG. **1**B are four major components of a privacy bank server in the described embodiment. These components and storage areas include a raw data profile storage area **128**, a form mapping storage area **130**, a negotiation history module **132**, and a shippable code constructor **134**. Raw data profile storage area **128** contains sets of data relating to registered users of the privacy bank service, one set or profile shown in area **136**. A registered user has a unique account number that can be used as an identifier and a password, shown in an area **138**. The standard field names set by the privacy bank service, discussed in greater detail in FIGS. **8**A, **8**B, and **8**C, are paired with a user entered data string (such as first name or home street address), followed by a use-preference condition. This data is contained in an area **140**. Another profile for another registered user is shown in an area **142**. Each registered user has a similar raw data profile.

Form mapping area **130** includes multiple form mappings, an example of which is shown in an area **144**. Each electronic form that is registered with the privacy bank service by an online merchant or seller (i.e. an affiliate member) has a form mapping. A privacy bank standard field name, as discussed below in FIGS. **3**A, **3**B, and **3**C, and as mentioned above in area **140**, is matched or mapped with a "non-standard" field name from the electronic form registered with the service. For example, a non-standard field name for a person's last name could be "Last Name," "Surname" or simply "Last." Different forms use different variations of names for this field and for other fields. This would be mapped against the privacy bank "standard" field name, which in the described embodiment, is "PersonName.Last." Also contained in area **146** is a practice-preference condition provided by the online merchant or seller when registering the form. As with the use-preference condition in area **140**, this condition is used by negotiation history module **150** and shippable code constructor **134**, and is discussed in greater detail below in FIG. **7**. Another mapping **148** having the same format for another registered form follows area **144**.

Negotiation history module **132** is used to determine which fields in the electronic form will be automatically filled in by the privacy bank server. A process associated with negotiation history module **132** is described in greater detail in FIG. **7**. Module **132** includes multiple negotiation objects, an example of which is shown in an area **150**. In the described embodiment, each negotiation object corresponds to one "non-standard" field in the form. Described briefly, negotiation object **150** contains information as to whether the field in the form should be filled in based on privacy and use preferences set by the user (as conveyed in use-preference condition in area **140**) and compared to intended practices (as conveyed by practice-preference condition in area **146**). This comparison is performed in the negotiation history module, which includes a negotiator or comparator for comparing these conditions. Specific conditions in the described embodiment are described below. If it is determined that the non-standard field in the form will be filled in, a data string, shown in area **140**, will be included in negotiation object **150**. Shippable code constructor **134** accesses component **132** and storage areas **128** and **130**, to derive a software module to be transmitted to a user computer. In the described embodiment, the software module is a JavaScript program which is transmitted to and executed by a browser in the user computer, thereby inserting the data strings into the form fields.

FIG. **2** is a flow diagram of a process for automatically filling in electronic forms in a computer network in accordance with one embodiment of the present invention. The process described below can be performed in a configuration of servers and computers as described in FIG. **1**A above. At a step **202** an online user/consumer desiring to purchase certain goods on the Internet downloads an electronic form for making a purchase into the user's browser program. At step **204** the browser parses the electronic form content, typically an HTML document, to identify all external links. As is commonplace for Web pages, the HTML contains links to other external Web sites from which content or other types of data is retrieved. In many instances, a Web page is a composite of different components from various sites embedded in a core HTML document. An example is an external link to an ad server to retrieve a banner ad component of a core HTML document. In this case, the electronic form can be seen as a core HTML document. This parsing is done automatically by the browser and is a well known feature.

At step **206** the browser identifies an external link to the privacy bank server. In the described embodiment, this link will necessarily be present since the Web site is an affiliated site of the privacy bank service network of registered sites. A description of what "registered" implies in this context is described in greater detail below. At step **208**, the browser executes the external link to connect the browser to the privacy bank server. The external link is referred to in the described embodiment as a shippable code link to the privacy bank server. The shippable code in this context is a JavaScript program that is transmitted from the privacy bank server to the user computer and browser. This shippable code enables the electronic form to be filled in automatically in a process that is described in greater detail below. At step **210**, once the privacy bank server has been contacted via the shippable code link in the electronic form, the privacy bank server determines whether the user computer or browser has a valid state identifier, referred to as a "cookie", previously assigned to it by the privacy bank server. A cookie is an identifier assigned by a Web site, whether a Web server or a server such as the privacy bank server, to a user/visitor when the user visits the Web site for the first time in a given session (the time from which a user logs onto the Web and the time he or she exits the Web by exiting the browser). The cookie, assigned by a Web site, belongs to a particular user. In the described embodiment, the user keeps this cookie during its session (a temporary cookie) and if the user goes back to that Web site during that session, it shows the Web site that cookie from which the Web site can identify the user and retrieve characteristics of that user from its data repository. As is known in the art of Internet application programming, cookies can also be permanent in that they subsist with a user after the user has logged off the browser and can be used again in a new session. The concept and implementation of cookies themselves are well known in the field of Internet and, more generally, computer network programming.

If the privacy bank server determines that the user computer or browser does not have a valid cookie, it implies that the user has not yet logged into the privacy bank service. If so, control goes to step **212** where the privacy bank server

retrieves a login sequence code. This code will trigger a login sequence and enable the user to log in to or register with the privacy bank service at a later step in the process, as described in greater detail below. At step **214**, the privacy bank server forms a completed package of shippable code containing the retrieved login sequence code, such that the login sequence will be triggered at a later step in the process. At step **222**, the browser retrieves this completed package of shippable code from the privacy bank server. The shippable code is then stored in the browser residing on the user's computer, and is executable upon a user trigger, which is described in greater detail below.

If the privacy bank server determines that the user/browser making contact by downloading the electronic form and executing the external link has a valid cookie, control goes to step **216** where the privacy bank server gets and reads the user's cookie. In this context, having a valid cookie indicates that the user has already gone through the login sequence recently, for example during the existing Internet session, and thus it is not necessary for the user to go through the login sequence again. By reading the user's cookie, the privacy bank server can determine who the user is and thus can retrieve the user's raw data stored by privacy bank. The contents and format of this raw personal data is described in greater detail in FIGS. **8**A, **8**B, and **8**C below. At step **218**, the privacy bank server retrieves the user data for the user identified by the valid cookie. The privacy bank server couples this user data and an identifier, such as a URL (uniform resource locator), to determine how the electronic form document should be filled. At step **220**, the privacy bank server forms a completed package of shippable code (item **124** in FIG. **1**A) containing the user data that will be used to fill out the form document. In the described embodiment, this shippable code, referred to as a profile, is in the form of a JavaScript program. This shippable code is formed from information in the privacy bank memory that will enable the form document to be filled out automatically at a step later in the process. At step **222** the browser receives the shippable code, or profile, from the privacy bank server, and now has access to it on the user computer, if desired by the user. This profile is stored in the browser residing on the user's computer, and is executable upon a user trigger.

Assuming the user wants to have the electronic form automatically filled out using privacy bank, he or she executes a user trigger. In the described embodiment, this trigger occurs when the user clicks on an "autofill" button contained in the form and associated with privacy bank at step **224**. By clicking on the autofill button, the user allows the browser to execute the shippable code or profile stored thereon. At step **226**, the shippable code determines whether it contains user data which would permit it to fill out the form document. If user data is contained within the shippable code residing on the browser, control goes to step **234** where the browser utilizes the shippable code and user data to fill out the electronic form document. Of course, user data being present in the shippable code is dependent upon the browser having a pre-existing valid cookie when the form document was initially retrieved, as described above.

If, however, user data is not contained within the shippable code residing on the browser, control goes to step **228** where the login sequence is initiated in order to identify the presently unknown user. The shippable code utilized by the browser in this step contains the login sequence code, which is a result of the browser not having a pre-existing valid cookie when the form document was initially retrieved, as described above. Once the user completes the login sequence at step **228**, the privacy bank server assigns a cookie to the user/browser thereby enabling it to recognize the user and messages from the user's browser in subsequent transactions. At step **230**, the privacy bank server retrieves the user data for the identified user, couples this user data and an identifier, such as a URL (uniform resource locator), to determine how the electronic form document should be filled, and forms a completed package of shippable code containing the user data that will be used to fill out the form document. This step is substantially similar to steps **218** and **220**, as described above. At step **228**, the browser receives the shippable code, or profile, from the privacy bank server, and now has access to it on the user computer. This shippable code now contains user data that allows the form document to be filled out automatically. At this stage, control proceeds to step **234**, where the browser utilizes the shippable code and user data to fill out the electronic form document. Further input from the user, such as re-clicking on the "autofill" button, is not required. In other words, once the user properly completes the login sequence, the form is then filled out automatically, and it is not necessary for the user to click on the "autofill" button again.

At step **236**, the user visually examines the filled out form and the privacy features offered by the Web site and decides whether the form is acceptable. If the user finds that the form needs further adjustment, the user adjusts the document at step **238**. This may be done manually, or through any supplemental automated process, such as a client-based macro. This can involve filling in fields that could not be filled in by the profile sent by the privacy bank server (in other words, fields that could not be filled out from the raw data). Such fields can include, for example, which items being purchased and the quantity of items. It can also include updated personal information such as a new address or credit card number. In this case, the user simply types over the information already in the fields. Control then returns to step **236**, which is satisfied presumably after going through step **238** once. At step **240** the browser submits the filled out electronic form eventually sending it to the merchant's Web server once the user clicks on a Submit form button in the browser window. In the described embodiment, the filled out form is first sent to the privacy bank server unbeknownst to the user or at least transparent to the user. The completed form is received and examined by the privacy bank server which updates its raw data repository to reflect any changes the user may have made to his or her personal information. The privacy bank server then posts a message back to the user computer (according to HTTP protocol the server must send a message back to the user computer when it receives an HTML document from it). In the described embodiment, the message it sends back or posts to the user's browser is similar to a "Click Here To Continue" type screen to the user. Hidden behind this message is the completed form that was sent to the privacy bank server. Presumably, the user will click to continue and by doing so transmits the hidden completed form to the merchant's Web server. In other preferred embodiments, the completed form is sent to both the privacy bank server and the merchant's Web server at the same time. In yet another preferred embodiment, the completed form is posted automatically from the privacy bank server directly to the merchant's site without any additional input from the user. At this stage the automatic form filling process is complete.

FIGS. **3**A, **3**B, and **3**C are high-level table diagrams showing how fields containing the raw data and preferences for a user are organized on the privacy bank server in accordance with one embodiment of the present invention. A top-level User table **302** has four columns: User **304**,

Category **306**, Type **308**, and Short display name **310**. User Table **302** has four areas of data under column User **304** represented by four rows: Home **312**, Work **314**, Billing **316**, and Shipping **318**. In the described embodiment, the user is presented with these four areas of data when registering with the privacy bank service and enters information by going through each of these data areas. Skipping Category **306** for the moment, column Type **308** takes the raw data tree down one level from the top level represented by table **302**. For example, the Type for data area Home **312** is Info. This performs as a pointer or link to an Info table **320**. The first column **322** of table **320** is labeled Info but the other three columns are the same as shown in table **302**; that is, Category **306**, Type **308**, and Short display name **310**.

At table **320**, the user begins entering data that will be used for her home information and for Shipping since data area **318** for Shipping in table **302** also has an Info in its Type column **308**. A Name row **322** has in its Type column **308** a reference to yet another table PersonName, shown as table **324**. Similar to table **302** and **320**, PersonName table **324** has a first column labeled PersonName and the same three columns as the other tables. All five data areas in PersonName table **324**: Prefix, First, Middle, Last, and Suffix have as a Type a primitive type referred to as Text in the described embodiment. Text represents a data string that is the actual data item stored in the privacy bank server. By examining the Type column **308** of each of the data areas, a user enters all the raw personal data. An actual data item is entered at each Type box containing Text, indicating a primitive type, or a leaf node when viewed as a tree structure. If the Type column does not contain "Text," another table exists that refines the data area further.

To follow another example, under the data area Billing **316** shown in table **302**, its Type **308** indicates BillInfo and not Text. A table BillInfo has six further data areas, none of which have a Text Type, so no actual data values can be found at this level. Taking the CreditCard data area as an example, its Type indicates "CreditCard." Table CreditCard, shown in FIG. **3**C, has four data areas: Type, Number, ExpMonth, and ExpYear, all of which are of Type Text, which contain actual data values.

Short display name column **310** contains a string that is displayed to the user through a user registration graphical user interface of the described embodiment. The user follows the data tree via a user interface using the Short display name strings as field names or guides to entering the data. The data areas that have primitive Types, which in the described embodiment is Text, are the privacy bank field names that are mapped with the legacy field names in the electronic forms registered with the service. In the described embodiment, the privacy bank names include (in abbreviated form):

| | | |
|---|---|---|
| PersonName.Prefix | Address.Street1 | PhoneNum.AreaCode |
| PersonName.First | Address.Street2 | PhoneNum.Number |
| PersonName.Last | Address.City | PhoneNum.Extension |
| PersonName.Suffix | Address.StateProv | |
| | Address.PostalCode | |
| | Address.Country | |
| Internet.Email | Employment.Employer | |
| Internet.HomePage | Employment.Department | |
| | Employment.JobTitle | |
| CreditCard.Type | | |
| CreditCard.Number | | |
| CreditCard.ExpMonth | | |
| CreditCard.ExpYear | | |

Category column **306** is related to privacy settings set by the user and are tied to the preferences set by a user and defined in terms of the conditions as described above. The conditions or use thresholds in the described embodiment are marketing (targeted), system administration, personalization, research and development, and completion of activity (i.e. ordering). The Categories available in the described embodiment and as shown in the tables of FIGS. **3**A, **3**B, and **3**C, are Physical Contact Information, Online Contact Information, Demographic Data, and Financial Data. The relationship between the Categories and the conditions of the described embodiment can be described as a table five-row, four-column table (a 20 cell table) where each condition is one row in the table and each Category is one column in the table.

The present invention is an extension to a Form AutoFill Server using Personal Information sharing between Individuals to fill in electronic forms that are a part of the Form AutoFill and/or Gift Shopping service (the Service). The Form AutoFill Server is used to dispatch JavaScript code to the Web Browser, which enables the form to be filled. The Form AutoFill Server is a use of a Light Code Server, which serves Shippable Code Segments that are executed on the Web Browser's machine. By allowing Individuals to share their information with other Individuals, the Form AutoFill Server can provide data elements from two or more Individuals during a Privacy Negotiation (see Privacy Negotiation).

The essence of Gift Shopping is that more than one Persona is used to fill a form. A Persona is defined as a data repository containing an Individual's personal information along with the privacy preferences that indicate how the Individual wants his or her data treated. Users of the Service may have multiple Personae as well as permission to use parts of other Individuals' Personae. There are two kinds of Gift Shopping that need to be covered. The first is Gift Shopping for people who are not necessarily subscribers/members of the Service. The second is Gift Shopping for people who are subscribers/members of the Service. In the latter case, we have to cover the mechanism for releasing permission to use a Persona of an Individual by another Individual for Gift Shopping purposes.

FIG. **4** is a flow diagram of a process of an Individual (Gift Giver), who is Gift Shopping online and purchases a product from a Product Vendor that subscribes to the privacy bank service. They would like to buy a Product **401** that the Vendor is offering through an online form. The Gift Giver corn-ands the browser to request a form from the Vendor **402**. The Vendor returns the document to the browser **403**, which in turn displays the form to the Gift Giver **404**. The Gift Giver clicks the 'Gift Shop' button **405**, which is embedded in the HTML form at the Vendor's web site. The 'Gift Shop' button is the trigger that requests the Gift Recipient Selection form from the Service **406**. Since the intended Recipient is not a member of the Service, the Gift Giver may elect to create a new Persona or use a Persona that they have created in the past for Gift Shopping **409**. The Gift Giver must fill in shipping information and any information related to the Product for a new Persona. During the selection of the Gift Recipient, a session parameter is set to identify which Persona to use for a Gift Recipient **410** when the Privacy Negotiation is to be conducted. After completing the Recipient creation, the browser is sent a document **411** that automatically requests the HTML form from the Vendor **412**. The HTML form is returned to the browser **413**, which again displays the form to the Gift Giver **414**. Each time the form is loaded, it makes a request to the Form AutoFill

Server, which conducts a Privacy Negotiation (see Privacy Negotiation) between electronic agents representing the Vendor, the Gift Giver, and the Gift Recipient if the Gift Giver is logged into the Service. JavaScript code is returned to the browser and executed there **415**, filling the form with the results from the Privacy Negotiation. The Gift Giver then submits the form by clicking a 'Submit' button **416**, which commands the browser to post the submission to the Service **417**. After processing the submission, the browser receives a document **418**, which commands the browser to submit the information to the Vendor's Web Server **419**.

A Gift Giver, who is Gift Shopping online, visits a Product Vendor that subscribes to the Service. The Gift Giver would like to buy a Product the Vendor is offering **401**. The browser requests an HTML form from the Vendor **402**. The HTML form is returned to the browser **403**, which is then displayed to the Gift Giver **404**. The Gift Giver clicks the 'Gift Shop' button **405**, which makes the request for the Gift Recipient Selection form from the Service **406**. The 'Gift Shop' button is embedded in the HTML form at the Vendor's web site. The Gift Recipient Selection Page is returned to browser **407**, which is displayed to the Gift Giver **408**. The Gift Giver may select a Recipient's Persona **409** that has been made accessible to the Gift Giver by the Gift Recipient (see Sharing Personae). The browser posts the Gift Recipient Selection to the Service **410**. The browser is sent a document **411** that automatically requests the HTML form from the Vendor **412**. The HTML form is returned to the browser **413**, which again displays the form to the Gift Giver **414**. Each time the form is loaded, it makes a request to the Service, which conducts a Privacy Negotiation (see Privacy Negotiation) between electronic agents representing the Vendor, the Gift Giver, and the Gift Recipient if the Gift Giver is logged into the Service. JavaScript code is returned to the browser and executed there **415**, filling the form with the results from the Privacy Negotiation. The Gift Giver then submits the form by clicking a 'Submit' button **416**, which commands the browser to post the submission to the Service **417**. After processing the submission, the browser receives a document **418**, which commands the browser to submit the information to the Vendor's Web Server **419**.

A Privacy Negotiation is the process of determining if a Vendor's stated Privacy Practices meet the requirements of an Individual's Privacy Preferences. A standard Privacy Negotiation is conducted between a single Information Buyer (Vendor's agent) and a single Information Seller (Individual's agent). In the case of Gift Shopping the Information Seller is a composite of Personae, which are separate Information Sellers. This composite Persona is achieved through a networked solution. A Message Router is used to direct BIDs from the Information Buyer to the Information Seller that they apply to. Each Information Seller connected to the Router has a mask assigned which controls which BIDs route to them based on what part of the Service's personal information data schema is being requested. This is the same model as an electronic computer network router, which routes data packets to a given machine based on the routing table of the router. Using this model allows for the individual Personae (Information Sellers) to respond to a BID based on the Privacy Preferences stored in the Persona that the BID gets routed to.

FIG. **5** is a flow diagram of a Privacy Negotiation that begins by requesting if the Information Buyer **501**, which is an agent for the Vendor in the current model, has any more BIDs. If Yes, the Privacy Negotiation records the BID in its transaction history and forwards it to the Information Seller **502**, which is a Message Router in the case of Gift Shopping. The Message Router receives the BID **503**, and determines if it is intended for the Gift Giver's Information Seller or the Gift Recipient's Information Seller based on the mappings that define Gift Shopping **504**. In the instance there is no gift shopping, control from **503** goes straight to **508** where it is determined if the BID meets certain privacy preferences of the information seller. Returning to step **504**, if the BID is intended for the Gift Giver's Information Seller, it receives the BID **505**. If the BID is intended for the Gift Recipient's Information Seller, it receives the BID **506**. The BID is considered by the Information Seller that receives it **507**. The Information Seller determines if the BID meets the Privacy Preferences stored inside of it **508**. If the BID is accepted, an ACCEPT message is sent as the reply **509**. If the BID is rejected, a DENY message is sent as the reply **510**. The Message router receives the response from the Information Seller it sent the BID to and forwards the response to the Privacy Negotiation **511**. The Privacy Negotiation records the response in its transaction history in step **512** and returns to step **501**. If the Information Buyer has no more BIDs, the Privacy Negotiation is complete.

In order for an Individual (Gift Giver) to use another Individual's (Gift Recipient) Persona, the Gift Recipient must explicitly grant access to the Gift Giver. A Gift Giver may request access from a Gift Recipient, after which the Recipient may grant or deny access. A Gift Recipient may also add a Gift Giver without receiving a request. Once access is granted, the Gift Recipient is added to the Gift Giver's list of Gift Recipients for use while Gift Shopping.

FIG. **6** is a block diagram showing the various parties and possible message passing between the parties in accordance with one embodiment of the present invention. The parties shown are the vendor or store merchant, a gift giver (information requester) and gift recipient (information granter). In between the parties is a message router that is part of the privacy bank server. A vendor sends out a BIDS which is routed by the message router. The BIDS billing portion is sent to the gift giver and the BIDS shipping information is sent to the gift receiver. Both the gift receiver and gift giver reply with either an Accept or Deny to the BIDS request. The Accept or Deny messages from the parties are then sent to the Vendor. If the gift receiver sends a Deny message, he is indicating that he does not want to share his information with the gift giver. Although it is possible for the gift giver to deny the BIDS shipping request, it is unlikely since he is typically the one requesting the information from the gift receiver. Once the vendor receives the messages, it acts accordingly by either shipping out the goods or sending a message to the gift giver that the BIDS shipping information request was denied.

Although the foregoing invention has been described in some detail for purposes of clarity of understanding, it will be apparent that certain changes and modifications may be practiced within the scope of the appended claims. Furthermore, it should be noted that there are alternative ways of implementing both the process and apparatus of the present invention. Accordingly, the present embodiments are to be considered as illustrative and not restrictive, and the invention is not to be limited to the details given herein, but may be modified within the scope and equivalents of the appended claims.

What is claimed is:

**1**. A method for facilitating sharing of information in a computer network in which the information is used to at least partially complete an online form, the method comprising:

accessing, at a host computer, a first data profile containing a non-filtered set of data corresponding to a first user;

creating, at the host computer, a filtered first data profile containing a filtered set of data, wherein the filtered set of data is taken from the first data profile;

coalescing, at the host computer, data from the filtered first data profile and data from a second data profile to construct a third data set, wherein the third data set is converted to shippable code;

transmitting the shippable code including the third data set to a client computer, wherein the third data set is used to complete the online form such that certain data items required by the online form relating to the first user are taken from the filtered first data profile portion of the third data set; and,

receiving, at the host computer, a completed online form when the online form contains a modified data item, wherein the first data profile is updated with the modified data item, and wherein the completed online form includes viewable profile data populated from the filtered first data profile portion of the third data set.

**2**. The method of claim **1**, wherein the step of creating the filtered first data profile further comprises selecting particular data items from the first data profile that the first user intends to share with a computer network user.

**3**. The method of claim **1**, wherein the step of creating the filtered first data profile further comprises creating the filtered first data profile for a specific computer network user.

**4**. The method of claim **3**, wherein the specific computer network user is a gift giver and the first user is a gift receiver.

**5**. The method of claim **1**, wherein the filtered first data profile inherits privacy preferences from data items in the first data profile.

**6**. The method of claim **5**, wherein privacy preferences attached to the filtered first data profile determine how the filtered first data profile will be used.

**7**. The method of claim **1**, wherein the step of coalescing data from the filtered first data profile and data from the second data profile further comprises extracting data from the filtered first data profile relating to shipping and specific characteristics of the first user and extracting data from the second data profile relating to billing.

**8**. The method of claim **1** further comprising automatically filling in the online form with data from the third data set once the first user has been selected by a second user.

**9**. The method of claim **8** further comprising requesting access to use the second data profile in response to a notification to fill in the online form.

**10**. The method of claim **9** further comprising granting access to the second data profile thereby enabling a computer network user to fill in the online form.

**11**. A method of allowing an information requester to access data from an information provider in order to complete an online merchant form, the method comprising:

creating, at a host computer, a filtered data set containing data that the information provider is willing to share with particular third-party users, including the information requester;

retrieving, at the host computer, the online merchant form upon request by the information requester, the online merchant form having a plurality of fields;

inserting, at the host computer, data from the information requester into a first subset of the plurality of fields;

constructing, at said host computer, a shippable code including the filtered data set;

transmitting the shippable code including the filtered data set to a client computer, wherein the filtered data set is inserted into a second subset of the plurality of fields, wherein the online merchant form is from an online merchant not affiliated with any other online merchant; and,

receiving, at the host computer, a completed online merchant form directly from a the client computer upon submission of the completed online form, when the online merchant form contains a modified data item, wherein a first data profile is updated with the modified data item, and wherein the completed online merchant form includes viewable profile data populated from at least one of the data from the information requester and the data from the filtered data set.

**12**. The method of claim **11**, wherein the online merchant is not associated with at least one of a network and a group of other online merchants.

**13**. The method of claim **11**, further comprising:

dynamically updating the filtered data set with updated information from the information provider such that the information requester has access to only the updated information.

**14**. The method of claim **13**, wherein the filtered data set is updated by editing an underlying unfiltered data set under the control of the information provider.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

# CERTIFICATE OF CORRECTION

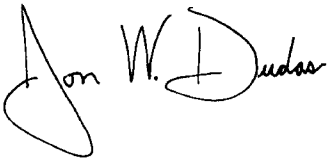
PATENT NO. : 7,334,184 B1 
APPLICATION NO. : 09/523410
DATED : February 19, 2008
INVENTOR(S) : Geoffrey W. Simons

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In Column 14, line 28, please delete “a”.

Signed and Sealed this

Second Day of September, 2008



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