(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification[7]: **G08B 13/14**

(21) International Application Number: PCT/US01/17112

(22) International Filing Date: 26 May 2001 (26.05.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/833,273 12 April 2001 (12.04.2001) US
09/847,913 2 May 2001 (02.05.2001) US

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(81) **Designated States** *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) **Designated States** *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *with amended claims*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) **Title:** LOST AND FOUND SYSTEM AND METHOD WITH OPTIONAL PRODUCT WARRANTY REGISTRATION

(57) **Abstract:** A method and computer system for facilitating return of lost products, optionally obtaining warranty registration of products, and expediting warranty service on defective products comprising providing a unique identifier on or within each product; comprising marking each product with return instructions and a reward offer to any person who finds said product after it has been lost; and offering to return each product to a registered owner in the event said product is lost and returned by said person who finds it if said owner provides data comprising owner identification and date said product was purchased at retail; optionally providing said data to a manufacturer or other warrantor in order to register said warranty. The reward offer preferably instructs the finder to return the object to a courier service which can automatically obtain the owner's identity and location, can ship the object to the owner, and automatically charge the owner's credit card for the reward and the shipping service.

LOST AND FOUND SYSTEM AND METHOD WITH OPTIONAL PRODUCT WARRANTY REGISTRATION

The present invention relates automated systems and methods for retrieving lost objects, registering and managing warranty information for consumer products, and for providing warranty service to consumers.

It is common for an identification card or reply post card to be included in products to request data to help register and link the product's serial number with warranty and ownership data. Such ownership data includes the owners name, address, date of purchase or installation of the product, name of dealer or store, and may also include installer's name, age, income range, reason for purchase, and other demographic information. The data is usually supplied on a postcard ("warranty card") or at a warranty registration web site. Most purchasers of such products do not complete and mail in these warranty cards or go online to bother to register the warranty, which is very undesirable for the manufacturers for a number of reasons. The manufacturer desires to know the date the product went into service so as to be able to calculate the expiration date of the warranty and avoid disputes about warranty claims on expired warranties.

Manufacturers of consumer products have attempted to improve the rate at which consumers register the warranties on products for several reasons. These reasons include the desire to track the demographics of the purchasers, to be able to notify consumers of improvements or recalls, and to track the date the product was put in service or purchased in order to determine when the warranty has expired and to avoid having to provide warranty service after the termination of the warranty. For example, see LoVasco, et al., U.S. Pat. 6,208,853, of March 27, 2001 which relates to an automated cell phone product warranty registration system.

However, in spite of expensive campaigns and other efforts of manufacturers of consumer products, it is well known that less than 10% of product warranty cards are returned to the manufacturers and only a small percentage of purchasers bother to go online to register their warranties.

When a product which is under warranty has a defect or problem which requires returning it to a service location for repair, an owner must first verify with the manufacturer that the product is still under warranty, then the owner must determine the service location, and then the owner must package the product and send it to the service location. These steps are time consuming and for some owners, very difficult

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to accomplish. This process is also a burden on the manufacturer because the consumer will typically have to call a toll-free manufacturer number to find out the service location and whether the warranty is still in force, as well as details as to how to return the defective product for service.

5   Lewis U.S. Pat. 5,841,116 has proposed using bar code labels bearing pre-identified insignia corresponding to a unique owner, and a system wherein the labels are placed on the owner's objects and the identifying data is stored on a computer at a central location, and if the object is lost and then found by a third party finder, the ownership can be determined by use of a bar code scanner and transmission of a

10   query based on the scanned identifier to the computer at the central location.

Isaacman et al, U.S. Pat. 5,936,527, have proposed a method and apparatus for locating and tracking documents and other objects for office files using radio frequency identification tags on the files for locating tagged documents within shelves and drawers.

15   The present invention comprises in one aspect a system for returning lost objects to their owners comprising RFID tags on which are electronically recorded unique identification codes and visible printed instructions for returning the object, if lost, to a location, an RFID tag reader at the location, and a computer which receives the unique identification code read by the RFID tag reader and provides owner

20   information corresponding to the unique identification code.

In another aspect, the invention comprises a method for obtaining warranty registration of products which also facilitates return of lost products and expedites warranty service on defective products comprising providing a unique identifier on or within each product; providing a lost and found system comprising the steps of

25   marking each product with return instructions and a reward offer to any person who finds said product after it has been lost; and offering to return each product to a registered owner in the event said product is lost and returned by said person who finds it if said owner provides data comprising owner identification and date said product was purchased at retail; and providing said data to a manufacturer or other

30   warrantor in order to register said warranty.

According to the preferred method, a person who finds a lost article which is registered under this system will see the return instructions and reward offer and will deliver the product to a return location where a return agent can automatically access the unique identifier, preferably by use of an RFID reader apparatus and accessing an

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online database, thereby facilitating identification of the owner and owner address whereupon the lost product can be returned by the return agent. The return agent is preferably a courier service, which ordinarily makes deliveries of packages and overnight letters, and is already equipped to pack and deliver packages to many

5   locations.

The unique identifier is preferably supplied in an RFID, which is embedded in the label which describes the reward and provides the return instructions. For example, the label containing the RFID may say a reward of $10 will be provided, and that the product should be returned to any Federal Express location where it will

10   be packed and shipped to the owner. One method is to automatically charge the owner for the reward and the return delivery charges by using the owner's previously supplied credit card or other billing information. The product can be an electronic product such as a cell phone, lap top computer, hand held game computer or personal digital assistant such as sold under the Palm or Blueberry brands, which has an

15   electronic display screen. The return instructions and a reward offer can be automatically displayed on the screen when such electronic product is powered on.

The consumer purchaser or owner identification information and date and place the product was purchased can be provided at the point of purchase at retail, and that point of purchase can automatically provide such information online to a

20   database, where it is accessible by the manufacturer for warranty purposes, and by the courier service for return purposes. In other words, in one step the warranty can be registered automatically, without any effort by the purchaser, and the purchaser can elect to provide return insurance by allowing the seller to apply the label containing the return instructions and the RFID, in a preferred embodiment. The label can be

25   provided at no cost, with a disclosure that only in the event that the product is lost and then found will there be any cost to the purchaser. At the time the product is found and returned to a return location, the purchaser enrolls in the return-when-lost service by agreeing, in such preferred embodiment, to allow the reward and return courier charges to be charged to the purchaser's account such as a credit card or other prepaid

30   shipping account number.

The enrollment may be free, and the only charges would be if and when the product is lost and then found, and when the product has a defect and must be returned to a service location. In the latter case, the owner preferably is instructed to merely bring the article to any courier service, i.e., Federal Express in this example, at

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which time the courier service will assist with packing, ship, and reaffirm that the warranty is in force and the location where the manufacturer wants the product to be delivered for service. When service is complete at the service location, the courier service is notified to pick up the article for return to the owner. The cost of the

5   courier service can be on the manufacturer or the owner.

Preferably, owner information and related warranty coverage is maintained by an operator of the return service in a computer server which is accessible from client computers over the Internet, and when an product is returned, the product is identified by the unique identifier on or within the product, the server is queried with the

10   identifier, and arrangements are made for return of the product to the owner and payment of a reward to the finder. The owner information preferably comprises the owner name, home address or travel itinerary, and billing authorization, which is maintained by an operator of the return service in a computer server which is accessible from client computers over the Internet, and when an product is returned, it

15   is identified by the unique identifier on or within the product, the server is queried with the identifier, and arrangements are made for return of the product to the owner, payment of a reward to the finder, and charging the amount of the reward plus a service fee to the owner, using the billing authorization.

In some embodiments, the method comprises a) encoding a RFID signal into

20   an automated data capture file location pointer into a radio frequency readable identification (ID) code number; b) rendering said radio frequency-readable code number within a data carrier; c) transposing an input data string from said radio frequency-readable ID code number with a computer input device coupled to said client computer; d) parsing said input data string to determine said file location

25   pointer; and e) utilizing said file location pointer to request the computer file designated thereby.

The invention also includes a computer system comprising: a) a client computer and b) a computer input device coupled to said client computer adapted to read a RFID readable code from a data carrier and transmit to said client computer an

30   input data string; wherein said client computer comprises processing means for transposing said input data string to a plurality of constituent fields, said fields comprising at least a file location pointer; means for utilizing said file location pointer to it request the computer file designated thereby.

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The invention preferably utilizes automatic identification and data capture technologies embedded into a smart label or tag with a printed surface, referred to herein as an intelligent label or tag since it stores information used to automatically access the information. The radio frequency-readable identification (ID) comprises

5   encoded source data, wherein the source data comprises application launch information as well as file location information. The source data is encoded and printed, and then distributed by the vendor by any logical means to the end user. The end user then reads the ID code via appropriate radio frequency-reader device equipment, decodes the raw decoded data, and the file location information is then

10   used to access the appropriate file. In a preferred embodiment, a Web browser program is launched, and the URL of the vendor's Web site is accessed through the Internet. Local file retrieval may also be implemented on the client computer itself, as well as over an Intranet or LAN environment

In particular, the present invention is a method and system for a computer,

15   such as a client computer in a networked computer system, to retrieve a computer file in which a symbol data string comprising a file location pointer is encoded into a radio frequency tag such as an RFID silicon tag, and the radio frequency ID is rendered within a data carrier (e.g. printed on an intelligent document). A computer input device such as a RFID reader device (handheld or fixed) is coupled to the client

20   computer and transposes an input data string from the RFID tag. The computer parses the input data string to determine the file location pointer, and the file location pointer is then utilized pointer to request the computer file designated thereby.

The target server computer may then utilize the source identifier data string received as part of the file transfer request word to access a lookup table which is

25   either be stored locally on the target server computer, or it may be stored remotely on a secondary server computer.

The automatic identification and data capture technologies, specifically an RFID label or tag, may also have encoded therein an executable command to launch a software utility resident on the client computer, and the software utility is then

30   automatically launched after the radio frequency readable ID is transposed. For example, the software utility may be an Internet browser program or launch a URL to a website designed to help track and recover the missing item. In addition, specific functions may also be encoded in the smart label or tag along with the application

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launch command, such as a command to execute a print job of the retrieved computer identification and related instructions file.

The system comprises an intelligent tag or label generation system, which encodes, assembles and prints an intelligent tag or label for subsequent radio
5   frequency-reading in conjunction with a client computer.

In operation, a vendor who wishes to provide an intelligent ID label or tag programs certain parameters into a data string which will be encoded within a radio frequency-readable code and printed on the tag along with text or graphics. The document may be an ID label informing the finder what do if the item is found or
10   located by someone other than its owner.

RFID have several advantages over bar code labels in that there are no optical considerations and therefore the RFID tags will read through nonmetallic coatings of dirt, dust, paint, etc., without a decrease in performance. RFID eliminates common problems associated with bar code such as ability to change data, and read/write RFID
15   provides the benefit of the ability to change data.

Inductive RFID tags consist of silicon, a coiled, etched, or stamped antenna, a capacitor, a substrate, and may include a protective covering as well as an encapsulating sealant. Recently, thin, planar inductive tags have been introduced by Motorola under the "BiStatix" brand featuring wire, printed silver, etched, or stamped
20   metal antennae on flexible substrates.

BiStatix works on a capacitive coupling principle. Electric fields are capacitively coupled to and from a reader and tag. As in an inductive system, a BiStatix reader/writer generates an excitation field which serves as both the tag's source of power and its master clock. The tag cyclically modulates its data contents
25   and transmits them to the reader's receiver circuit. The reader demodulates and decodes the data signal and provides a formatted data packet to a host computer for further processing.

Unlike conventional inductive systems, BiStatix provides an elegantly simple and cost effective tag design, suitable for high volume or disposable applications.
30   Capacitive coupling enables the elimination of costly coils, capacitors, lead-frames, low resistance interconnects, and inflexible substrates. BiStatix tags are comprised of a silicon chip attached to printed carbon ink electrodes on the back side of a paper label on which there may be printed instructions such as a request to return the object in the case of this invention.

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Tags are printable by a label converter using standard industry methods. Electrodes can assume virtually any size and shape, enabling the adaptability of BiStatix type RFID devices to applications using existing label stock. The RFID silicon is simply attached to the printed substrate. Motorola's tag-to-chip interconnect

5 is facilitated by either direct chip attachment or by using an "interposer." An interposer is an intermediate attachment mechanism, a miniature tag itself. It is a small (typically 1/2" by 1/2"; square), self-adhering, paper label with printed ink electrode "stems" connected to the RFID silicon. Supplied in roll-form, interposers allow simple in-line integration with existing high speed label manufacturing

10 processes with minimal impact to existing equipment.

Conventional RFID uses costly wire wound coils. BiStatix replaces the wire wound coils with inexpensive carbon ink applied by virtually all known printing techniques (e.g., flexographic, flat screen, rotary screen, pad print, gravure, spray, and brush). BiStatix enables low cost materials to be used for antenna substrates,

15 including paper, plastic, fabric, etc. Additionally, BiStatix uses manufacturing processes that are commonly used in conventional web printing and converting used to make labels. This eliminates complex coil-winding and metal-deposition procedures and instead uses a simple flip-chip direct die attachment manufacturing process with common, available materials. This is used to create either "interposers"

20 which can be attached to the user's printed electrode extensions, or the die can be directly attached to the tag electrodes.

BiStatix silicon can be extremely thin. The actual chip is less than 250 microns thin. The chip is also relatively small. Its entire surface area is less than 3 mm. The benefit is that BiStatix can be easily applied in places where its presence should be

25 undetectable, or at least unobtrusive. An example would be for ID dispensing tags or label where a roll of preprinted, BiStatix enabled, smart ID tags or labels would be programmed and dispensed from a printer. BiStatix could easily be fitted into the ID tag stock because of its low profile and ability to withstand flexing over rollers. Because the chip is small, and the antenna is thin (i.e., a layer of printed ink), BiStatix

30 tags are extremely flat and most suitable as ID tags or labels.

BiStatix can be adapted to work in conjunction with existing bar code systems. A typical application is to put the BiStatix silicon and printed electrodes on the reverse side of a paper label with human readable and/or bar code information on the obverse side. BiStatix will take advantage of Motorola's patented dual technology

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readers. Dual technology reading will enable legacy bar code systems to be mixed with newer, BiStatix-enhanced bar coded labels, and BiStatix-only labels.

Parameters to be included within the radio frequency-readable code depend upon the application desired by the vendor. Fields of the symbol data string, may

5   comprise a file location pointer, a launch command, a user identification field, a source identifier, an encryption key, and/or a code type field. For example, if the vendor wants the end-user to be able to access the vendor's Web site automatically upon reading the radio frequency ID information, then the parameters included in the radio frequency-readable tag may include the launch command to launch an Internet

10   browser application, such as a Uniform Resource Location (URL) code into the file location pointer, such as http://www.etagit.com. A printer then utilizes the encoded data and desired text and graphics to print an intelligent document. The symbol data string may also be obfuscated for security purposes, which will be described in detail below.

15   The intelligent document is disseminated to the end user in accordance with the methods desired by the vendor. The vendor may be the seller of the tag or may be a seller of the object itself, in which case the tag may be affixed to the object before, at, or after it is sold to the owner, and the unique identification number can be pre-programmed. The serve can be updated at the time of sale with the owner's name,

20   address, account information, phone, and the like. The account information can comprise credit card, bank account, package delivery service account information, debit card information, and the like.

When the object is lost, found, and returned to a designated location, a person at the location, after reading the text and graphics in the document, can access the

25   Web site of the vendor by utilizing a Browser program such as NETSCAPE or by connection with a radio frequency-reader device in conjunction with his client computer, programmed with appropriate software in accordance with the invention. That is, the user will read the code with radio frequency-reader device. Alternatively, a back-up optical scanner sufficient to scan bar code symbols and the like is disclosed

30   in U.S. Pat. No. 5,448,050, which is incorporated herein by reference, may be used as a back-up reader device. The device disclosed in the '050 patent is housed within a mouse type device, thus also including circuitry useful in point-and-click applications popular in personal computer platforms today.

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After the radio frequency data is received by the tag reading device, a decoder is used to decode the raw data into usable commands and data. The decoder is typically a software program executed by the microprocessor of the computer, and provides thereby to an Internet browser the URL which had been encoded by the vendor into the symbol. The browser application is then loaded (if not already running on the computer) by the launch command, and the URL is used to access the Web site of the vendor accordingly at the target server computer via the Internet. As a result, the user may automatically access the vendor's Web site to obtain a computer file therein without having to enter the URL by a keyboard, thus eliminating all chances of error due to manual data input. The requested file is obtained from file storage and generation means, and sent to the client computer via the Internet for display to the user on the browser.

The above scenario is useful when a vendor prints and distributes such intelligent documents on a mass scale. That is, the symbol distributed is the same for each user. In an alternative embodiment, specific identification information is included with the code to provide for personalized operation as follows. This scenario is useful when the vendor makes individual return shipment labels (i.e., Airbill number) keyed to individual users, such as when preprinted express shipment or courier labels are printed for inclusion on an envelope or box surrounding the located missing   object.

In this case, the vendor may include in the user identification field personal data such as the user's name, location, phone number, and other appropriate return and identification information.

The code may also include security information useful in completing secure transfers across the Internet. For example, an encryption key appropriate in a public or private key system may be embedded within the symbol. An appropriate software routine in the user's computer utilizes the key after decoding it in order to encrypt certain data being sent across the Internet. For example, the encryption of credit card information is desired in order to thwart would-be intruders from misappropriating the information. The system of the present invention could be used to allow the user to order an item advertised in the brochure by taking the credit card number, already resident in the user's computer memory, and encrypting it with the key decoded from the code. When the user desires to purchase the item, he reads the associated radio frequency code, and the credit card number is encrypted and transmitted as the Web

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site is accessed. The target server computer can match the source identifier string sent with the transmission with the appropriate decryption key stored in a lookup table at the target server or on an external computer, and decrypt the credit card number accordingly. The system of the present invention has additional embodiments that

5   allow quick and easy retrieval of a data file on an intranet or Local Area Network (LAN). Thus, a distributor or manufacturer of a product may distribute fliers regarding registering and enrolling in a service that provides smart ID tags or labels that encode appropriate document access information in accordance with the teachings of the invention. The user may obtain further information by reading the

10   radio frequency ID information on the smart tag or label, which then causes his computer to access his network, file server. etc. Prior to being encoded, the identification data string may optionally be obfuscated in order to improve the security aspects of the system. The identification data string is input into a checksum computing means, which then computes the checksum of the symbol data string in

15   accordance with teachings well known in the prior art. The computed checksum is then used as a key in an encryption scheme which may be one of several well known encryption methodologies known in the prior art. The key is assembled in the clear (i.e., unencrypted) along with the encrypted symbol data string into by the encoding function. After this encrypted data string and cleared checksum data is encoded, it is

20   rendered by the printer in accordance with methods well known in the art and the intelligent document is thereby generated.

After the intelligent document is distributed to the user, the radio frequency readable ID is received by a receiving reader device, and processed as follows. The radio frequency ID data is decoded by means well known in the art in accordance

25   with the particular symbology implemented to encode the symbol. Once the symbol data has been decoded, it is deobfuscated (if the original symbol data had been obfuscated as described above) by deobfuscation function. First, the clear checksum is utilized as a key to decryption function to decrypt the encrypted string. The decryption function which was preloaded onto the client computer as part of an

30   initialization process with the system is a corollary to the encryption function. By passing the checksum in the clear and utilizing it as the key, it enables the client computer and document generation computing means to be synchronous with respect to the encryption methodology. After the decryption function produces the clear data string comprising the original file location pointer, launch command, user

demographics, source ID, key and code type, then the checksum computing means operates to compute a checksum of those fields. That computed checksum is then compared by comparison block with the received clear checksum that was decoded by the decoding process. If the comparison process indicates that the computed

5   checksum equals the received clear checksum, then go/no go signal indicates that the data transmission and decryption process was successful. If, however, the checksums are not favorably compared, then the go/no go signal will indicate an unsuccessful transmission and decryption process. If this is unsuccessful, then further processing is aborted.

10   Once the symbol data is deobfuscated, it is then parsed by parsing block in order to utilize the constituent fields as follows. The file location pointer and source identifier string are assembled into a register that will comprise the file transfer request. The file transfer request register is also loaded with a client version taken from local memory on the client computer. The user demographic string is optionally

15   fed into an encryption block which is then used with encryption key to encrypt that data and put the results as encrypted user information into the file transfer request string. Optionally, the encryption function may utilize certain local user data that had been stored on the memory of the client computer. This local user data may comprise sensitive information, such as the user's credit card number. Advantageously by

20   encrypting this information the user will have a higher level of confidence that this sensitive information can be transmitted over the Internet for applications such as electronic commerce. Thus, the file transfer request register will comprise the file location pointer, the client version, certain encrypted user information and the source identifier.

25   The code type string is compared by block to the internally stored code type. If the comparison is unsuccessful, then further processing is aborted. This process is useful to enable certain versions of the client software to be distributed such as on a demonstration or trial basis, and this trial software will only work with certain documents generated by corresponding document generation software modules. Thus,

30   a user having a trial version will not be able to fully utilize the system until it purchases by license or otherwise the production version. Utilization of this type of code type matching also enables the system vendor to control expired memberships in a 'lost and found' retrieval service, etc.

Once the file transfer request has been successfully assembled, it is then sent to the appropriate interface in order to obtain the requested file. In the preferred embodiment, the file transfer request will take the form of a uniform resource locator (URL) which will be sent to the Internet browser software that is resident and on the

5   client computer. Optionally, if the file transfer request string indicates that the file is located on a Local Area Network such as LAN, then the file transfer request will be transmitted through the LAN interface of the client computer in order to obtain the correct file. Further optionally as described above, the file transfer request may seek to obtain a file stored in local memory, such as on the user's hard drive.

10   When the file transfer request indicates that the file to be retrieved is located on an Internet file server, then the file location pointer will comprise a URL, which comprises an IP address (Internet Protocol), as well as a file identifier. The IP address, as is well known in the art, is the address of the target server computer on the Internet. The Web server program that is running on the target server computer receives the

15   URL over the Internet and strips out certain parameters contained therein. The source identifier is used to access a look up table which comprises a plurality of source identifier strings and their associated decryption keys. This decryption key that is obtained from the key table is then used by decryption block to decrypt the encrypted user information received in the file transfer request. Decryption function is corollary

20   to the encryption function performed at the client computer. Thus, the secure information transferred with the file transfer request is decrypted and user information file may be stored in user log, along with the date and time stamp to indicate when the particular request was received. This information is quite valuable to the vendor, since it enables it to determine the name and other useful information relating to users who

25   have accessed its Web site. This information may also be utilized by file generation and storage means to dynamically determine the file or files to be sent back to the client computer. For example, if the identification data indicates that the user would prefer the file returned back in a language other than English, that file can be accessed or generated appropriately. Thus, in addition to retrieving a static page stored in the

30   target server computer, the system of the present invention allows dynamic generation and return of computer files in accordance with user's preferences indicated in the transfer request. In addition, as described herein, if the user has allowed his credit card number to be encrypted and sent with the file transfer request, then the target server computer can decrypt the credit card number and utilize it to perform a secure

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on-line transaction. In the alternative to having a file resident on the target server computer, it may be required for the target server computer to access an auxiliary file server to get the external file and return it back to the client computer. The auxiliary file server may be accessed directly, through a dial up modem connection, or through

5   the Internet. In addition, an external key server is accessible by the target server computer if it is desired by the system designer to keep the key table remote from the target server computer, rather than local therein. By keeping a key table at a central server location, the system provider can keep track of server requests to decrypt user information and charge a fee accordingly. Thus, a vendor utilizing this system may

10   have the option of paying a "per click" fee to determine the user demographics of each user that accesses his server or may just provide files back to the user without obtaining that knowledge on a less costly basis.

When the file is returned back to the client computer through the Internet, it may be displayed in a manner well known in the art on the Internet browser. Thus, the

15   system of the present invention has provided an easy and error proof way for a user to obtain a computer file from an Internet server computer by simply reading the radio frequency ID code provided on an intelligent tag or label and having the client automatically process the code, request the file wherein the file is then returned by the target server computer and displayed to the user.

20   The data string comprises the file location pointer, launch command, user demographics, source identifier, key and code type. The data string is utilized to generate an intelligent ID tag or label which is also distributed to the end users. The radio frequency tag is read, and the data is decoded and processed and the file request is assembled. The file request is transmitted over the Internet and the target server

25   fetches and/or generates the computer file requested. Finally, the file is transmitted to the client computer and displayed on the browser to the user.

The data string is used to compute a checksum. The checksum is used to encrypt the data string and the checksum and encrypted data string are assembled. The radio frequency-readable code is encoded and the radio frequency smart tag or label is

30   printed with optional text and graphics onto the intelligent document.

The radio frequency ID code is read and the input data string is parsed in order to derive the checksum and it is then decrypted with the checksum as the key. The decrypted string is used to computer a checksum and the received checksum is compared with the computed checksum. If the checksums are not equal, an invalid

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condition is declared and the process exits. If data is indicated valid, then the stored code type is fetched from the client's memory. A comparison of the code type from the client memory with the received code type is compared. If an invalid data condition is indicated in this test, then the process exits and if the code types match,

5   then the process continues with an unpacking of the decrypted string.

The system will encrypt the user data file from the client memory and optionally the user demographics received from the bar code to generate an encrypted user file. The encrypted user file is assembled into the file transfer request. The file location pointer comprising the IP address and file ID and the source ID are also

10   assembled into the file transfer request and, the client version is fetched from local memory and assembled into the file transfer request. The browser is provided with the file transfer request and is optionally started by the launch command in the received string. The file transfer request is transmitted to the target server, preferably in the preferred embodiment over the Internet in order to obtain the requested file.

15   The target server computer receives the file transfer request, and the Web server program running on the target server computer uses the received source identifier to fetch the associated decryption key which may be internal or externally located. The user file is decrypted and the user data is stored in a log. If the static page has been requested by the user, then the file location is looked up as a function of the

20   file identifier. The file is fetched from that location and returned to the client computer via the Internet. If the static page was not requested, then a dynamic page is generated which typically will be a function of the file identifier and/or the user data that had been received and decrypted. Again, the file is then returned to the client computer by the Internet and displayed on the user's browser.

25   RFID tags are programmed with unique identification codes and printed with a standard visible return request and instructions to return the object if found to any specified package delivery service or return location. The package delivery service can be a specific brand such as Federal Express, UPS, Airborne Express, US Postal Service, other government postal service, and the like, and a return location can be

30   any location where there is an RFID tag reader. For example a chain of stores such as Radio Shack or Sears may provide RFID readers at each location and may work in conjunction with the provider of RFID tags. In some embodiments the chain of stores may provide the tags on the objects it sells.

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Owner information is cross referenced to the ID code in a computer system such as a computer server. The owner information can include name, address, contact instructions such as phone, fax, email, or wireless information. The owner information should also include billing account information such as credit card,

5   package delivery service, account numbers, or debit card information. The billing account information will be used later if the object is lost and then returned through the system of the invention.

The RFID tag may be affixed to the object by the owner after the object is purchased or may be pre-affixed by the manufacturer or seller. If the object is lost by

10   the owner and then found, the finder is requested by the printed label to return the object to, for example, a package delivery service or a return location such as the aforementioned stores.

Upon receipt of the object at the package deliver service or return location, the RFID tag is read with a RFID reader and the code is sent as a query over, for example

15   a client server computer architecture to a computer system comprising a server. The computer system provides owner address information and charges the owner a return fee using the billing account information. The system may also direct a telephone call or e-mail to the owner and may print address labels or overnight package delivery service labels, or provide other automated features to expedite return of the object to

20   the owner.

The invention provides a method of inducing purchasers of products to register the warranty with the manufacturer ("manufacturer" is used herein to mean any warrantor, whether it is the manufacturer, importer, distributor, or any party to whom traditional warranty registration cards are normally returned). At the same

25   time, the purchaser who provides warranty registration data (usually the purchaser's name, physical mailing and/or electronic contact addresses, date of purchase, and place of purchase) receives a bonus in the form of registration under a lost product return service wherein instructions on the product (usually in a label) offer a reward to any person who finds the product if it becomes lost and returns it to a designated

30   return location. The return location is preferably a courier, package delivery service or retail store location. A preferred service can be identified, e.g., Federal Express, U.S. Postal Service, UPS, commercial airline or a competitive service. The service preferably has contracted with the return service to return products to the owner. The owner is identified by the service by communicating the unique product identification

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information, preferably automatically by reading embedded RFID information or a bar code in or on the label itself, and communicating it to a central location such as by computer assisted communication to a central computer server. After the owner is identified, the owner is automatically notified and the service returns the object to the

5   owner. Preferably the owner has previously provided charge information such as a credit card, and the card is charged a service charge for returning the object as well as a reward to the finder.

The warranty aspect of the invention is not limited to the use of RFID tags to provide the unique identifier. Bar coded unique identifiers (excluding the encoded 2D

10   PDF47 barcode specification developed by Symbol Technologies, Inc.) or other emerging RFID technologies such as (i.e., "Bluetooth" specification) can be used on the return instruction tag, for example. The invention also uses the unique product identification, which is preferably embedded in the RFID device in the label to facilitate warranty service. The label preferably contains instructions to the

15   consumer, i.e., owner of the product, to return the product to any location of the service, or for an additional charge the service will pick up the product from the owner in the same manner as it usually picks up packages, and will read the product identification information, e.g., using an RFID reader, and will communicate that information to a remote computer, which will respond with confirmation that the

20   warranty is in force, an authorized location where the defective product should be delivered for service, and at the same time the computer system will notify the manufacturer to expect delivery of the defective product. In that way the manufacturer can more efficiently plan for the receipt of defective products and specified repair locations.

25   For manufacturers, the invention offers a new way to gather product ownership and warranty data and provide a cost efficient and timesaving solution for warranty repair and return using the resources of package delivery and drop-off services such as those offered by FedEx. Customers may soon no longer need to wait for special boxes to wrap their products or even wait in line at the post office to

30   complete warranty service repairs. The invention offers a new range of drop-off or pick-up convenience solutions to save time and money for both end customers and manufacturers of devices protected by warranty programs. Such programs are especially beneficial to speed repair and customer service time and cost for critical business computing or portable industrial devices such as notebook PCs, Palm

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devices, tablet computers medical devices, and field computing or communication devices.

The invention network works with a self-adhesive ID label that integrates a flat RFID chip and antenna into the label itself. The digital ID inside each RFID chip 5   determines who the item's owner is and instructions for warranty and/or other returns processing, according to rules set by the item's owner or manufacturer, as it is sent on its way to a database, which routes it. Those rules can be used to set priorities for certain kinds of data or individual customers with a database lookup. .

The ID number and return instructions are also visibly pre-printed on the 10   labels so the system can work without a wireless RFID network just by using a toll free hotline number and/or e-mail or other web address information printed on the labels. It is also possible to print a simple and personalized bar code on the labels themselves, should a RFID reader not yet be installed at a specific delivery location.

A typical RFID label carries a unique customer ID number embedded in a 15   computer chip. It's scanned by a reader, which is linked to a customer's database information and a credit or debit account.

The unique design allows RFID labels (e.g., Motorola BiStatix chips) to be affixed to virtually any non-conductive paper or plastic-based carrier. The invention uses these attributes to manufacture self-adhesive labels to conform to the shape of 20   virtually any product, such as a cell phone, laptop PC, PDA or key ring, or even the product itself.

BiStatix technology combined with the proposed system enables a true 'lost & found' and warranty returns system and method—incorporating reliable identification and return receipt coordinated by a delivery service with integrated communication, 25   labeling, billing, tracking and shipment combined with the Internet—all triggered and communicated via a smart label. The system creates a method to remotely interrogate smart materials embedded in objects to determine their identity and facilitate their return through a tracking and delivery network, utilizing wireless and Internet communications.

30   Alternatively, the RFID tag or label could be hidden inside the product or inside the tag or label (i.e., placed within the battery compartment of a cell phone). The instructions printed on the tag might be as simple as printing an indicia to "bring this item to XYZ Package Place for immediate return/reward, etc."

The parcel organization(s) reads the information on the intelligent RFID tag or label that can be linked to a database complete with web site URL, owner ID number, product serial number or other instructional data from the label's ID code. This information is then integrated into the parcel services systems and network(s) that are

5   connected to e-mail notification, online tracking, and other processing and return processing capabilities through the Internet.

The invention uses both wireless and Internet technologies to make it easier to handle returns integration.

One aspect of the invention is a computer-assisted method for manipulating

10   warranty registration information. The method includes the steps of acquiring product registration information from one or more database sources, identifying one or more portions of the acquired warranty or product ownership information as relating to a particular product, and creating a computer-readable file having the identified portions.

15   In one embodiment, access is provided to the computer-readable file over a computer communications link. In another embodiment, the acquiring step comprises acquiring the warranty information a wireless link using RFID technologies. In another embodiment, a file is created that contains a warranty record of the particular product. In another embodiment, the identifying step includes identifying the effective

20   date of the compliance information, identifying an amended compliance information item that the warranty information is amending and determining an effective date of the warranty coverage information from the effective date of the amended compliance information item.

The system for providing product registration and access to product warranty

25   registration information includes a subsystem for acquiring warranty registration information from one or more database sources. The system extracts owner information and coverage dates from the acquired warranty information that is related to a particular product. The system also includes a subsystem for providing access to the computer-readable compliance information files over a computer communications

30   link that uses the Internet to help update or append the database with new information, such as travel destination contact addresses (i.e., from flight or travel booking itinerary), or purchase of an extended warranty coverage protection.

The approach automates to the greatest degree possible, in a unified and synergistic fashion and using best proven business practices, the various aspects of

managing a successful and simplified warranty registration and related product warranty return shipment system and method. The effect of such integration on the warranty returns process is profound, allowing the return of virtually anything with an RFID label to be drastically streamlined.

5   In accordance with the teachings of the present invention, a sticker transponder adapted to be affixed to a product surface, such the back of a notebook PC, Palm Pilot or cell phone, includes an RFID transponder enabling the storage and retrieval of product related data.

More particularly, the sticker transponder comprises a flexible circuit substrate
10   having an antenna formed thereon and a transponder circuit disposed on the substrate and coupled to the antenna. An adhesive layer is coupled to a first surface of the flexible circuit substrate. An indicia layer is coupled to a second surface of the flexible circuit opposite from the first surface. The indicia layer comprises a space permitting indicia to be printed thereon. The transponder circuit further includes a
15   memory having a read-only portion and a re-writable portion.

The sticker transponder may be used to store various types of data, such as data pertaining to a product (e.g., product brand/model and unique serial number) or product's owner. For example, the read-only portion of the memory may be preprogrammed with data that cannot be altered, such as a product identification
20   number. Other types of data, such as product registration data, may be stored in the re-writable portion of the memory or linked by online database and periodically updated.

A more complete understanding of the sticker transponder will be afforded to those skilled in the art, as well as a realization of additional advantages and objects thereof, by a consideration of the following detailed description of the preferred
25   embodiment. Reference will be made to the appended sheet of drawings that will first be described briefly.

A preferred method of the invention may be initiated when a consumer purchases an article from a retailer which offers the consumer return service. The retailer offers the purchaser the consumer return service. The retailer may explain the
30   return service at that time. If the consumer accepts the return service, the retailer can affix a return service label to, on, or in the article. The label contains an RFID device with a unique identifier. The retailer then may scan the label to read the unique identifier, and may automatically enter the identifier along with the purchaser's name and address into an online computer system. Assuming the consumer charges the

article to a credit card, the same credit card information may be automatically transmitted to the return service computer system. In some embodiments, the credit card company may provide the return service, in which case the credit card owner information is already stored in the credit card company's computer system.

5   If the article is lost by the owner/purchaser, and then found by someone who reads the label and follows the instructions for obtaining a reward, the article is returned to a courier service, e.g., Federal Express, which has RFID readers at each location. The Federal Express location then reads the RFID and obtains the owner's name and address online, and determines owner's credit card validity, and then

10   follows a return procedure which includes first charging the owner's credit card for a reward and for packaging and returning the article to the owner, and then the courier service pays the reward to the finder, e.g., $10 as indicated on the return label, packages the article, and returns the article to the owner.

If the article needs repair, the owner may request that Federal Express pick up

15   the article or may bring the article to any Federal Express authorized drop off location, at which point the RFID is read and the unique identifier is automatically sent online to determine whether the warranty is in force and the service location where the manufacturer has designated for repair. The courier service then charges the credit card for packaging and delivering to the service location. In some

20   embodiments the manufacturer or the credit card company, or an insurer, are charged for the packaging and delivery service to the service location. When the article is repaired, the service location confirms that fact online and the courier service is notified to pick up the article from the service location to the owner location.

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CLAIMS

What is claimed is:

1. A method for returning lost objects to their owners comprising providing a radio frequency identification (RFID) tag to the owner for application to the owner's object or supplying the object with the tag preaffixed, the tag having a unique identification code number electronically recorded within the tag and a visible printed request to any finder to contact a package delivery service; storing the unique identification code number and corresponding owner information, including owner address information and owner billing account information, in a computer system which is accessible over the Internet by the package delivery service; providing RFID tag readers at the package delivery services; upon return of any lost object to a package delivery service, reading the RFID tag identification code number, accessing the corresponding owner information over the Internet from the computer system, returning the object to the owner, and using the owner's billing account information to charge the owner for the return of the object to the owner.

2. Method of claim 1 wherein the printed instructions include a promise of a reward if the finder returns the object to the package delivery service.

3. Method of claim 1 further including automatically notifying the owner that the object has been found, that it is being returned to the owner's address recorded in the computer system, and that the owner's credit card is being charged for the return delivery and any reward paid by the package delivery service to the finder of the lost object.

4. Method of claim 7 wherein the tag identification read by the RFID reading device is sent by the package delivery service as a query to a remote computer system over the Internet and the remote computer system answers the query by providing owner identification information, and the package delivery service in turn uses the owner information to return the object to the owner.

5. A method for obtaining warranty registration of products, facilitating return of lost products, and expediting warranty service on defective products comprising providing a unique identifier on or within each product; providing a lost and found system comprising the steps of marking each product with return instructions and a reward offer to any person who finds said product after it has been lost; and offering to return each product to a registered owner in the event said product is lost and returned by said person who finds it if said owner provides data comprising owner

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identification and date said product was purchased at retail; and providing said data to a manufacturer or other warrantor in order to register said warranty.

6. Method of claim 6 wherein upon said product being lost and then returned to a return location by any said person who finds said product, said data is accessible at said return location or by a return agent, thereby facilitating identification of said owner and owner address, whereupon said product can be returned by said return agent.

7. Method of claim 6 wherein said return instructions and reward offer to any person who finds said product after it has been lost are contained in a label which includes an RFID, and said unique identifier on or within each product sold by said manufacturer is electronically recorded in said RFID.

8. Method of claim 6 wherein said consumer purchaser or owner identification information and date said product was purchased at retail are provided by said consumer purchaser at said point of purchase at retail.

9. Method of claim 6 wherein said consumer purchaser or owner identification information and date said product was purchased at retail are provided at said point of purchase at retail by automatically accessing customer identification information provided to said retail seller in connection with said purchase and said date of purchase.

10. Method of claim 6 wherein said owner information is maintained by an operator of said return service in a computer server which is accessible from client computers over the Internet, and when an product is returned, said product is identified by said unique identifier on or within said product, said server is queried with said identifier, and arrangements are made for return of said product to said owner and payment of a reward to said finder.

11. Method of claim 6 wherein said owner information which comprises owner name, address and billing authorization is maintained by an operator of said return service in a computer server which is accessible from client computers over the Internet, and when an product is returned, it is identified by said unique identifier on or within said product, said server is queried with said identifier, and arrangements are made for return of said product to said owner, payment of a reward to said finder, and charging said amount of said reward plus a service fee to said owner, using said billing authorization.

12. Method of claim 6 wherein said return instructions and a reward offer to any person who finds said product after it has been lost are contained in a label which includes a sticker transponder adapted to be affixed to a product surface, comprising a flexible circuit substrate having an antenna formed thereon and a transponder circuit disposed on said substrate and coupled to said antenna.

13. Method of claim 13 wherein said sticker transponder comprises an adhesive layer coupled to a first surface of said flexible circuit substrate.

14. Method of claim 14 wherein said sticker transponder comprises a release liner affixed to said adhesive layer, said release liner being selectively removable to permit said sticker to be affixed to said product.

15. Method of claim 15 wherein said sticker transponder comprises an indicia layer coupled to a second surface of said flexible circuit substrate opposite from said first surface, said indicia layer comprising a space permitting indicia to be printed thereon.

16. Method of claim 16 wherein said transponder circuit further includes a memory.

17. Method of claim 6 wherein said product is an electronic product which has an electronic display screen and said return instructions and a reward offer are automatically displayed on said screen when said electronic product is powered on.

18. Method of claim 6 wherein a product is delivered for repair to a package delivery or overnight courier service which has means to access to said warranty registration data which is stored on a remote computer storage medium by reading said unique identifier on or within said product, and wherein said service thereby determines whether said warranty is in force and a warranty service location to which to deliver said defective product.

19. Method of claim 6 wherein said unique identifier on or within each product sold by said manufacturer is electronically recorded in an RFID device embedded within a label on which are printed return instructions which identify a package delivery or courier service which is equipped to read said RFID device, wherein said package or courier service has means to access owner identification, owner address, and warranty information corresponding to said unique identifier, and wherein said service thereby returns lost products to their owners and delivers defective products to an authorized warranty service location.

SUBSTITUTE SHEET (RULE 26)

AMENDED CLAIMS

**[Received by the International Bureau on 03 January 2002 (03.01.02):
original claims 1-19 replaced by amended claims 1-19]**

CLAIMS

1. A method for returning lost objects to their owners comprising providing a radio frequency identification (RFID) tag to the owner for application to the owner's object or supplying the object with the tag preaffixed, the tag having a unique identification code number electronically recorded within the tag and a visible printed request to any finder to contact a package delivery service; storing the unique identification code number and corresponding owner information, including owner address information and owner billing account information, in a computer system which is accessible over the Internet by the package delivery service; providing RFID tag readers at the package delivery services; upon return of any lost object to a package delivery service, reading the RFID tag identification code number, accessing the corresponding owner information over the Internet from the computer system, returning the object to the owner, and using the owner's billing account information to charge the owner for the return of the object to the owner.

2. Method of claim 1 wherein the printed instructions include a promise of a reward if the finder returns the object to the package delivery service.

3. Method of claim 1 further including automatically notifying the owner that the object has been found, that it is being returned to the owner's address recorded in the computer system, and that the owner's credit card is being charged for the return delivery and any reward paid by the package delivery service to the finder of the lost object.

4. Method of claim 1 wherein the tag identification read by the RFID reading device is sent by the package delivery service as a query to a remote computer system over the Internet and the remote computer system answers the query by providing owner identification information, and the package delivery service in turn uses the owner information to return the object to the owner.

5. A method for obtaining warranty registration of products, facilitating return of lost products, and expediting warranty service on defective products comprising providing a unique identifier on or within each product; providing a lost and found system comprising the steps of marking each product with return instructions and a reward offer to any person who finds said product after it has been lost; and offering to return each product to a registered owner in the event said product is lost and returned by said person who finds it if said owner provides data comprising owner identification and date said product was purchased at retail; and providing said data to a manufacturer or other warrantor in order to register said warranty.

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AMENDED SHEET (ARTICLE 19)

6. Method of claim 5 wherein upon said product being lost and then returned to a return location by any said person who finds said product, said data is accessible at said return location or by a return agent, thereby facilitating identification of said owner and owner address, whereupon said product can be returned by said return agent.

7. Method of claim 5 wherein said return instructions and reward offer to any person who finds said product after it has been lost are contained in a label which includes an RFID, and said unique identifier on or within each product sold by said manufacturer is electronically recorded in said RFID.

8. Method of claim 5 wherein said consumer purchaser or owner identification information and date said product was purchased at retail are provided by said consumer purchaser at said point of purchase at retail.

9. Method of claim 5 wherein said consumer purchaser or owner identification information and date said product was purchased at retail are provided at said point of purchase at retail by automatically accessing customer identification information provided to said retail seller in connection with said purchase and said date of purchase.

10. Method of claim 5 wherein said owner information is maintained by an operator of said return service in a computer server which is accessible from client computers over the Internet, and when an product is returned, said product is identified by said unique identifier on or within said product, said server is queried with said identifier, and arrangements are made for return of said product to said owner and payment of a reward to said finder.

11. Method of claim 5 wherein said owner information which comprises owner name, address and billing authorization is maintained by an operator of said return service in a computer server which is accessible from client computers over the Internet, and when an product is returned, it is identified by said unique identifier on or within said product, said server is queried with said identifier, and arrangements are made for return of said product to said owner, payment of a reward to said finder, and charging said amount of said reward plus a service fee to said owner, using said billing authorization.

12. Method of claim 5 wherein said return instructions and a reward offer to any person who finds said product after it has been lost are contained in a label which includes a sticker transponder adapted to be affixed to a product surface, comprising a flexible circuit substrate having an antenna formed thereon and a transponder circuit disposed on said substrate and coupled to said antenna.

AMENDED SHEET (ARTICLE 19)

13. Method of claim 12 wherein said sticker transponder comprises an adhesive layer coupled to a first surface of said flexible circuit substrate.

14. Method of claim 13 wherein said sticker transponder comprises a release liner affixed to said adhesive layer, said release liner being selectively removable to permit said sticker to be affixed to said product.

15. Method of claim 14 wherein said sticker transponder comprises an indicia layer coupled to a second surface of said flexible circuit substrate opposite from said first surface, said indicia layer comprising a space permitting indicia to be printed thereon.

16. Method of claim 15 wherein said transponder circuit further includes a memory.

17. Method of claim 5 wherein said product is an electronic product which has an electronic display screen and said return instructions and a reward offer are automatically displayed on said screen when said electronic product is powered on.

18. Method of claim 5 wherein a product is delivered for repair to a package delivery or overnight courier service which has means to access to said warranty registration data which is stored on a remote computer storage medium by reading said unique identifier on or within said product, and wherein said service thereby determines whether said warranty is in force and a warranty service location to which to deliver said defective product.

19. Method of claim 5 wherein said unique identifier on or within each product sold by said manufacturer is electronically recorded in an RFID device embedded within a label on which are printed return instructions which identify a package delivery or courier service which is equipped to read said RFID device, wherein said package or courier service has means to access owner identification, owner address, and warranty information corresponding to said unique identifier, and wherein said service thereby returns lost products to their owners and delivers defective products to an authorized warranty service location.

AMENDED SHEET (ARTICLE 19)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/17112

A.   CLASSIFICATION OF SUBJECT MATTER

IPC(7)   :   G08B 13/14

US CL   :   340/572.3

According to International Patent Classification (IPC) or to both national classification and IPC

B.   FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/28; 705/29; 340/447; 342/30; 342/42

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

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

Please See Continuation Sheet

C.   DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,025,780 A (BOWERS et al.) 15 February 2000 (15.02.2000).	1-3,6-18
Y	US 5,499,017 A (BEIGEL) 12 March 1996 (12.03.1996).	1-3,6-18
Y	US 6,154,738 A (CALL) 28 November 2000 (28.11.2000).	1-3,6-18
Y	Radio Frequency Identification Tag Application: Identifying/Charging car Renters and/or Bus Passengers. IBM Technical Disclosure Bulletin. March 1997, vol. 40. No. 3. Page 183.	1-3,6-18

☐ Further documents are listed in the continuation of Box C.	☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 September 2001 (10.09.2001)	05 NOV 2001
Name and mailing address of the ISA/US	Authorized officer
Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	James P. Trammell Telephone No. (703) 305-3900

Form PCT/ISA/210 (second sheet) (July 1998)

Continuation of B. FIELDS SEARCHED Item 3:
USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM TDB Search terms: radio frequency identification tag, warranty registration, warranty service□□□□

INTERNATIONAL SEARCH REPORT

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claim Nos.: 4 and 5
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
   Claim 4 is missing or claims are misnumbered.
   Claim 5 references claim 7 which comes AFTER claim 5.

3. ☐ Claim Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet(1)) (July 1998)