

**FILED**

**JAN 02 2004**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION**

**DOCKETED**

**JAN 05 2004**

**MICHAEL W. DOBBINS**  
**CLERK, U.S. DISTRICT COURT**  
NEOMEDIA TECHNOLOGIES, INC.,  
a Delaware corporation,

Plaintiff,

v.

VIRGIN ENTERTAINMENT GROUP,  
INC., a California corporation, VIRGIN  
MEGASTORE ONLINE (US), INC., a  
Delaware corporation, and VIRGIN  
MEGASTORE, a Delaware corporation.  
Defendants.

Civil Action No. **04C 0021**

Judge

**JUDGE MANNING**

**MAGISTRATE JUDGE BOBRICK**

**COMPLAINT FOR PATENT INFRINGEMENT AND DAMAGES**

Plaintiff NeoMedia Technologies, Inc., by and through its attorneys, complains and alleges against Virgin Entertainment Group, Inc., Virgin Megastore Online (US), Inc., and Virgin Megastore (hereinafter collectively "Virgin") as follows:

**PARTIES**

1. Plaintiff NeoMedia Technologies, Inc. ("NeoMedia") is an entity organized and existing under the laws of the State of Delaware and having a place of business at 2150 Western Court, Lisle, IL 60532.
2. Defendant Virgin Entertainment Group, Inc. (hereinafter "Virgin Entertainment") is a corporation organized and existing under the laws of the State of California and having a place of business at 5757 Wilshire Boulevard, Suite 300, Los Angeles, California 90036. NeoMedia is advised and believes, and on that basis alleges, that Virgin Entertainment is registered to transact and, in fact, does transact business within the State of Illinois and in this

District, and has committed acts of patent infringement as hereinafter set forth within the State of Illinois and in this District.

3. Defendant Virgin Megastore Online (US), Inc. (hereinafter "Virgin Online") is a corporation organized and existing under the laws of the State of Delaware and having a place of business at 5757 Wilshire Boulevard, Suite 300, Los Angeles, California 90036.

NeoMedia is advised and believes, and on that basis alleges, that Virgin Online is registered to transact and, in fact, does transact business within the State of Illinois and in this District, and has committed acts of patent infringement as hereinafter set forth within the State of Illinois and in this District.

4. On information and belief, Defendant Virgin Megastore (hereinafter "Virgin Megastore") is a corporation organized and existing under the laws of the State of Delaware and having a place of business at 540 North Michigan Avenue, Chicago, Illinois 60611. NeoMedia is advised and believes, and on that basis alleges, that Virgin Megastore is registered to transact and, in fact, does transact business within the State of Illinois and in this District, and has committed acts of patent infringement as hereinafter set forth within the State of Illinois and in this District.

#### **NATURE OF THE ACTION, JURISDICTION AND VENUE**

5. This is a civil action for patent infringement arising under the Patent Laws of the United States, and more specifically, under Title 35, United States Code § 1 *et seq.*

6. This Court has jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338, and 35 U.S.C. §§ 271, 281, 283, 284 and 285. Venue is proper in this District pursuant to 28 U.S.C. §§ 1391(b) and (c) and 28 U.S.C. § 1400(b).

**THE PATENTS-IN-SUIT**

7. On August 3, 1999, United States Patent No. 5,933,829 ("the '829 patent"), entitled "Automatic Access of Electronic Information Through Secure Machine-Readable Codes on Printed Documents," was duly and legally issued by the United States Patent and Trademark Office. A copy of the '829 patent is attached hereto as Exhibit A.

8. On November 2, 1999, United States Patent No. 5,978,773 ("the '773 patent"), entitled "System and Method For Using an Ordinary Article of Commerce to Access a Remote Computer," was duly and legally issued by the United States Patent and Trademark Office. A copy of the '773 patent is attached hereto as Exhibit B.

9. On August 22, 2000, United States Patent No. 6,108,656 ("the '656 patent"), entitled "Automatic Access of Electronic Information Through Machine-Readable Codes on Printed Documents," was duly and legally issued by the United States Patent and Trademark Office. A copy of the '656 patent" is attached hereto as Exhibit C.

10. On March 6, 2001, United States Patent No. 6,199,048 B1 ("the '048 patent"), entitled "System and Method For Automatic Access of A Remote Computer Over a Network," was duly and legally issued by the United States Patent and Trademark Office. A copy of the '048 patent is attached hereto as Exhibit D.

11. The '829 patent, the '773 patent, the '656 patent, and the '048 patent (hereinafter collectively "the patents in suit") are valid and subsisting and are owned by NeoMedia.

**PATENT INFRINGEMENT**

12. NeoMedia repeats and realleges each of the allegations of paragraphs 1 through 11 as if set forth fully herein.

13. Virgin has manufactured, or has had manufactured for it, and has used, or actively induced others to use in its stores, a Virgin Megaplay Station with Megascan

technology that allows customers to use a built-in UPC bar code scanner to scan individual in-store items and access product information, such as music and movie previews, album and video cover art, notes and reviews about the particular CD or DVD.

14. Virgin has infringed and is infringing, within this district and elsewhere within the United States, one or more claims of the patents-in-suit in violation of 35 U.S.C. § 271 through the manufacture and use of the Virgin Megaplay Stations. Infringement is direct, as well as contributory, and by actively inducing infringement by others.

15. Virgin Entertainment had actual notice of the patents-in-suit. On December 20, 2002, NeoMedia notified Virgin Entertainment of its infringing activities. Virgin Entertainment has failed to cease and desist its acts of infringement, and continue with such acts of infringement.

16. Upon information and belief, Virgin Online and Virgin Megastore had actual and constructive notice of the existence of the patents-in-suit, and despite such notice, have continued to engage in acts of infringement of the patents in suit. Virgin's continued acts of infringement has been, and will continue to be, wanton and willful.

17. Virgin's infringing activities have damaged and continue to damage NeoMedia. Upon information and belief, Virgin will continue to infringe upon the patents-in-suit causing harm to NeoMedia's business, market, reputation and goodwill unless Virgin's infringing activities complained of herein are preliminarily and permanently enjoined by this Court.

#### **PRAYER FOR RELIEF**

WHEREFORE, plaintiff NeoMedia prays for relief against the Defendant as follows:

A. That U.S. Patent Nos. 5,933,829, 5,978,773, 6,108,656 and 6,199,048 be adjudged infringed by Virgin, and that the infringement be held to be willful;

B. That NeoMedia be awarded compensatory damages for past infringement by Virgin in an amount no less than a reasonable royalty, in a sum to be determined at trial, and that said damages be trebled in view of the willful and deliberate nature of the infringement;

C. That Virgin, their officers, agents, servants, employees and attorneys, and other persons in active concert or participation with Virgin be preliminarily and permanently enjoined from further infringement of the patents in suit;

D. That Virgin be ordered to deliver to NeoMedia for destruction all infringing products and systems in their possession, including the Virgin Megaplay Stations;

E. That this case be declared an exceptional case under 35 U.S.C. § 285, and that NeoMedia be awarded its attorney fees incurred in this action;

F. For an award to NeoMedia of costs of this action, interest on the award and other charges to the maximum extent permitted; and

G. For such other further relief as the Court deems just and proper under the circumstances.

**JURY DEMAND**

Plaintiff hereby demands a trial by jury on all issues so triable.

Date: \_\_\_\_\_

1/2/04

Respectfully submitted,

NEOMEDIA TECHNOLOGIES, INC.



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Attorneys for Plaintiff

NeoMedia Technologies, Inc.

**A**



US005933829A

**United States Patent** [19][11] **Patent Number:** 5,933,829**Durst et al.**[45] **Date of Patent:** Aug. 3, 1999

[54] **AUTOMATIC ACCESS OF ELECTRONIC INFORMATION THROUGH SECURE MACHINE-READABLE CODES ON PRINTED DOCUMENTS**

WO98/24050 6/1998 WIPO.  
WO98/40823 9/1998 WIPO.  
WO98/49813 11/1998 WIPO.

[75] **Inventors:** Robert T. Durst; Kevin Hunter, both of Fort Myers, Fla.

*Primary Examiner*—Wayne Amsbury  
*Assistant Examiner*—Thuy Pardo  
*Attorney, Agent, or Firm*—Anthony R. Barkume, P.C.

[73] **Assignee:** NeoMedia Technologies, Inc., Fort Myers, Fla.

[57] **ABSTRACT**

[21] **Appl. No.:** 08/967,383

[22] **Filed:** Nov. 8, 1997

**Related U.S. Application Data**

[60] **Provisional application No.** 60/030,166, Nov. 8, 1996.

[51] **Int. Cl.<sup>6</sup>** ..... G06F 17/00

[52] **U.S. Cl.** ..... 707/10; 707/3

[58] **Field of Search** ..... 707/10, 514; 705/26, 705/3; 235/462; 380/25; 463/41; 395/200.3, 766

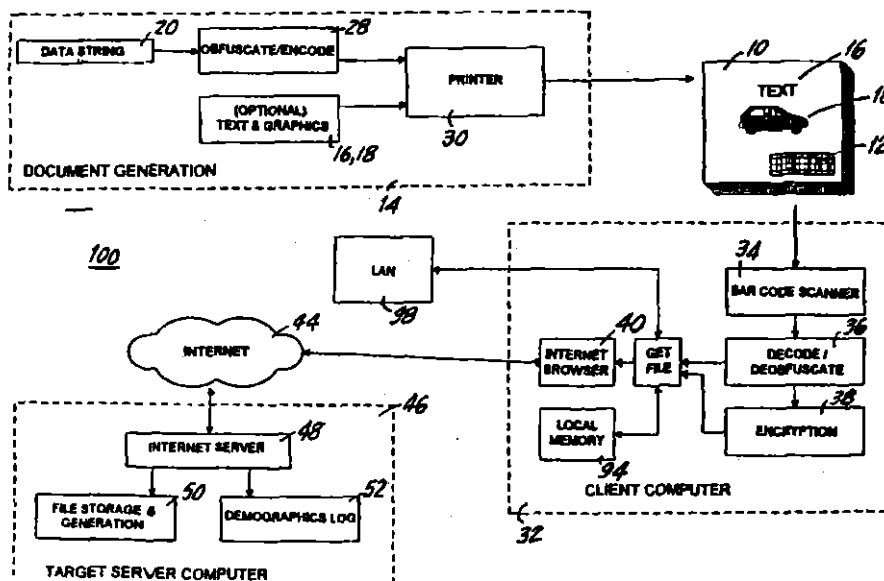
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WO98/24036 6/1998 WIPO.

58 Claims, 10 Drawing Sheets

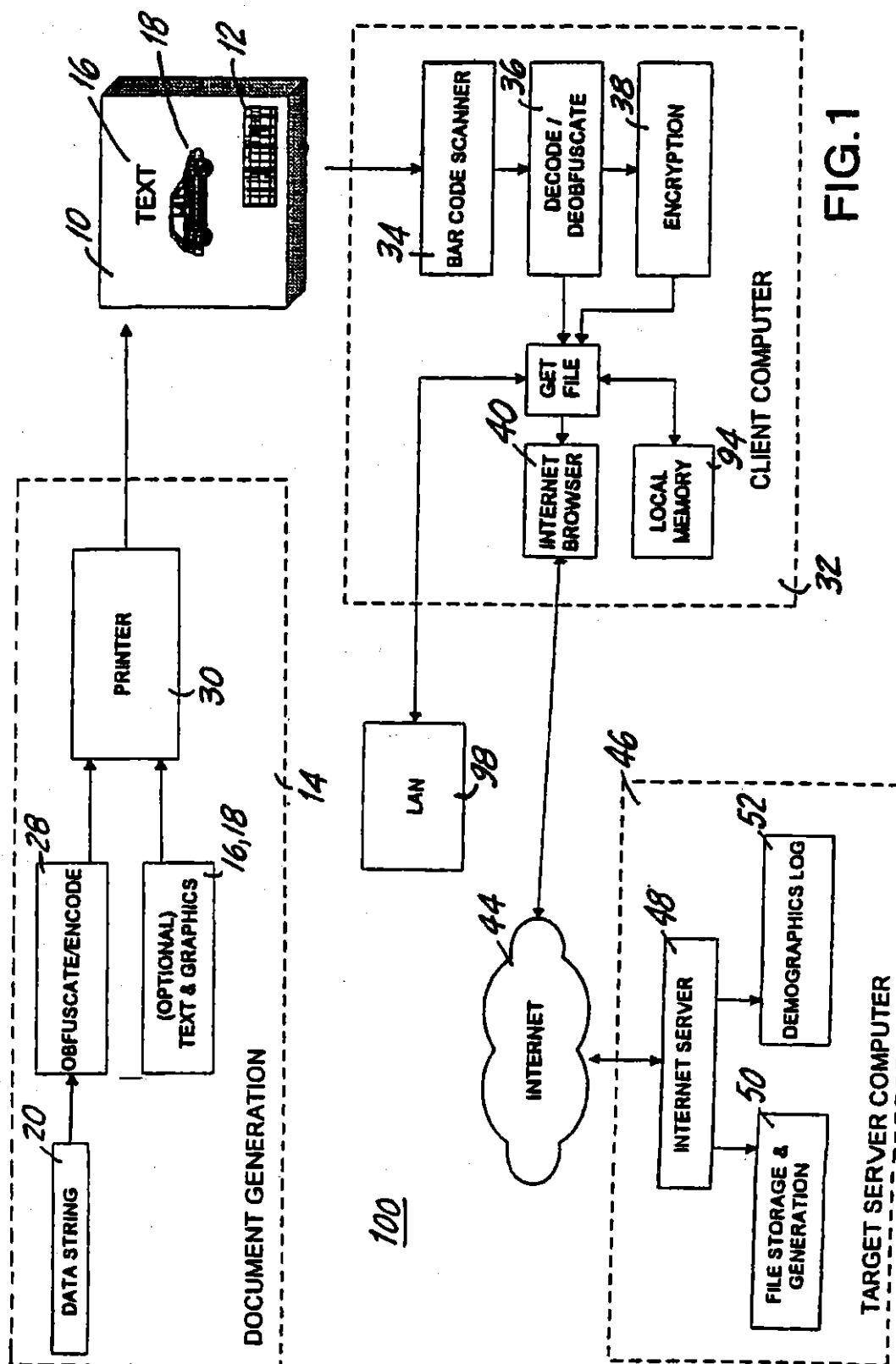


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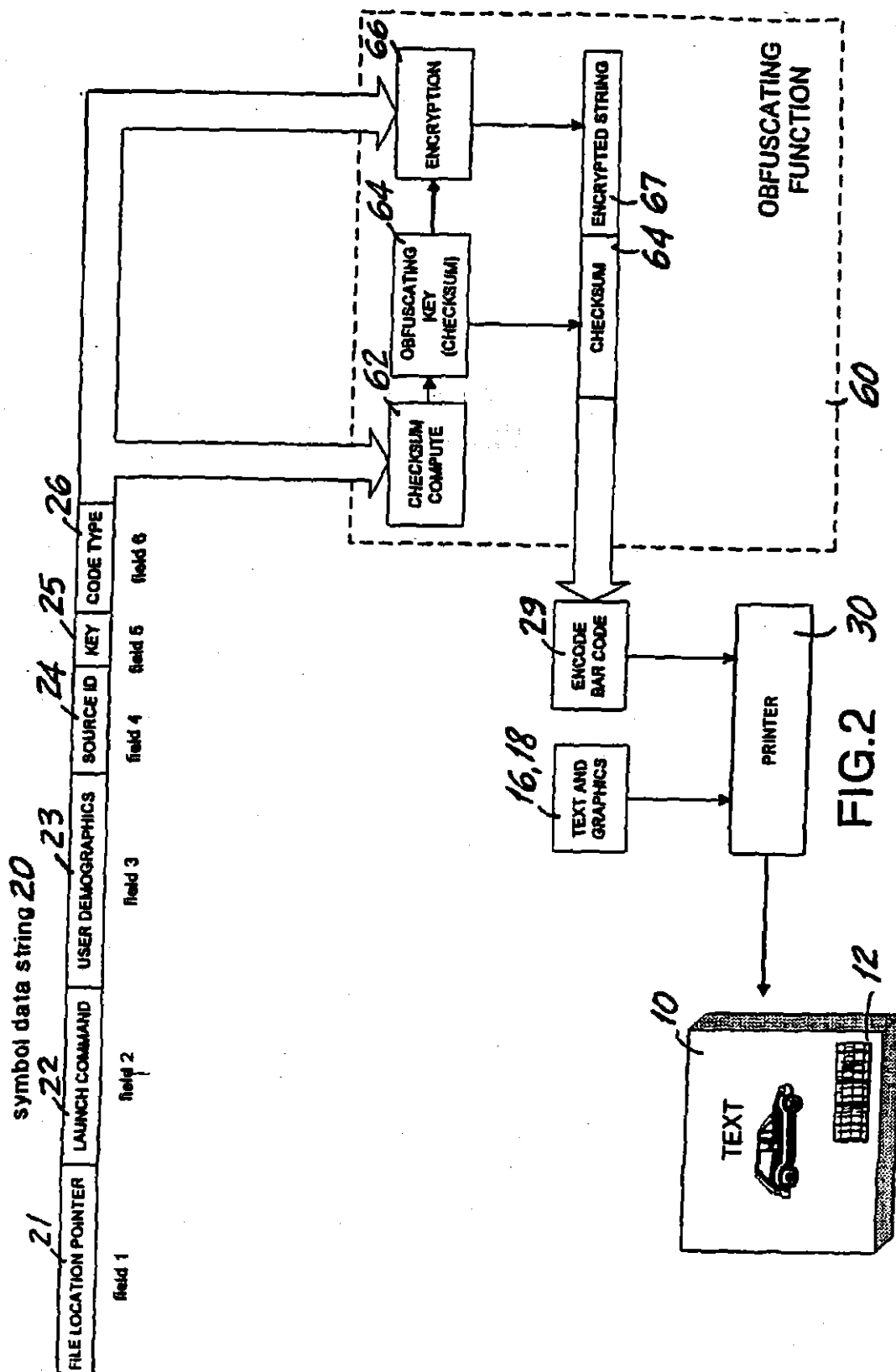


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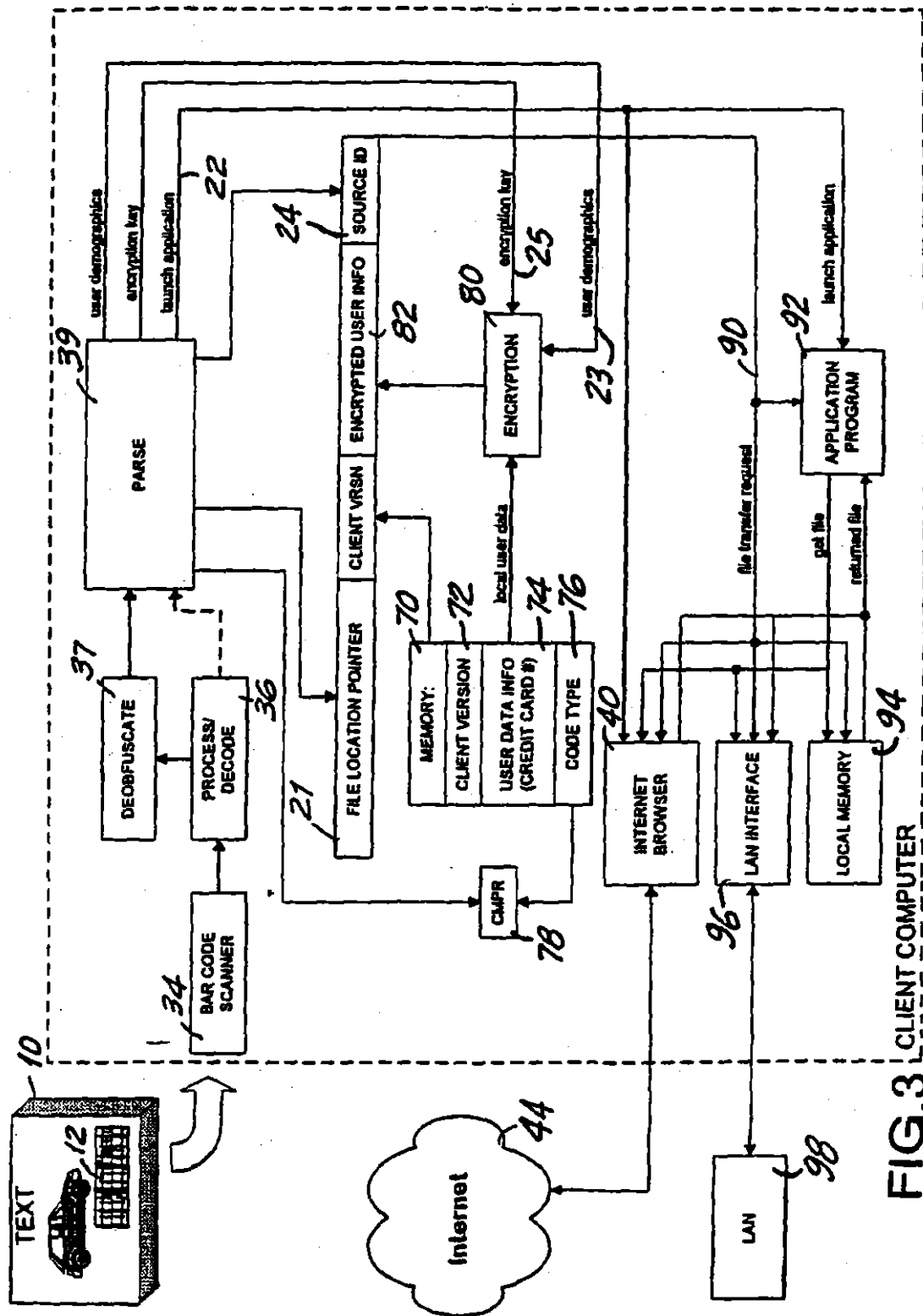


FIG. 3 CLIENT COMPUTER

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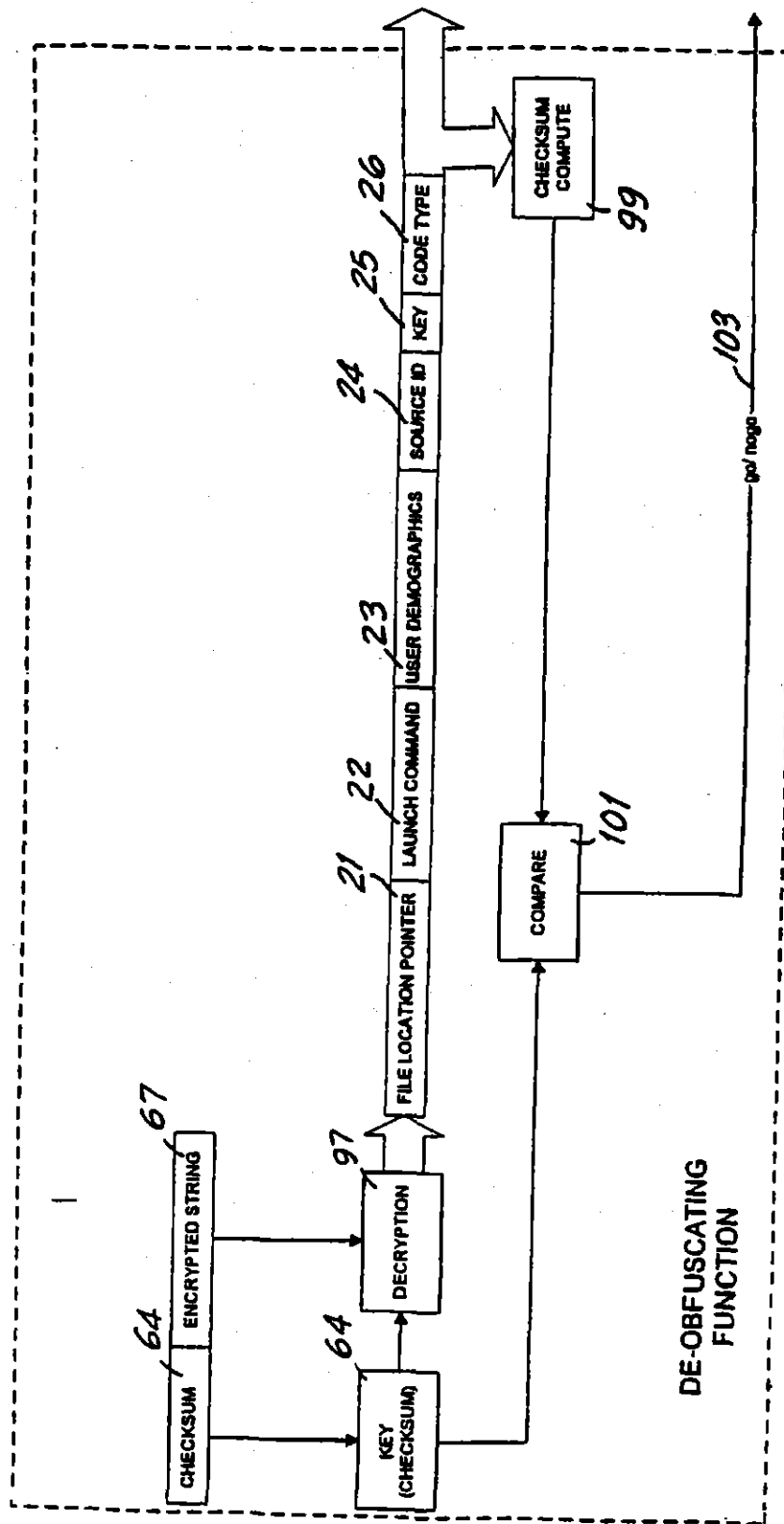


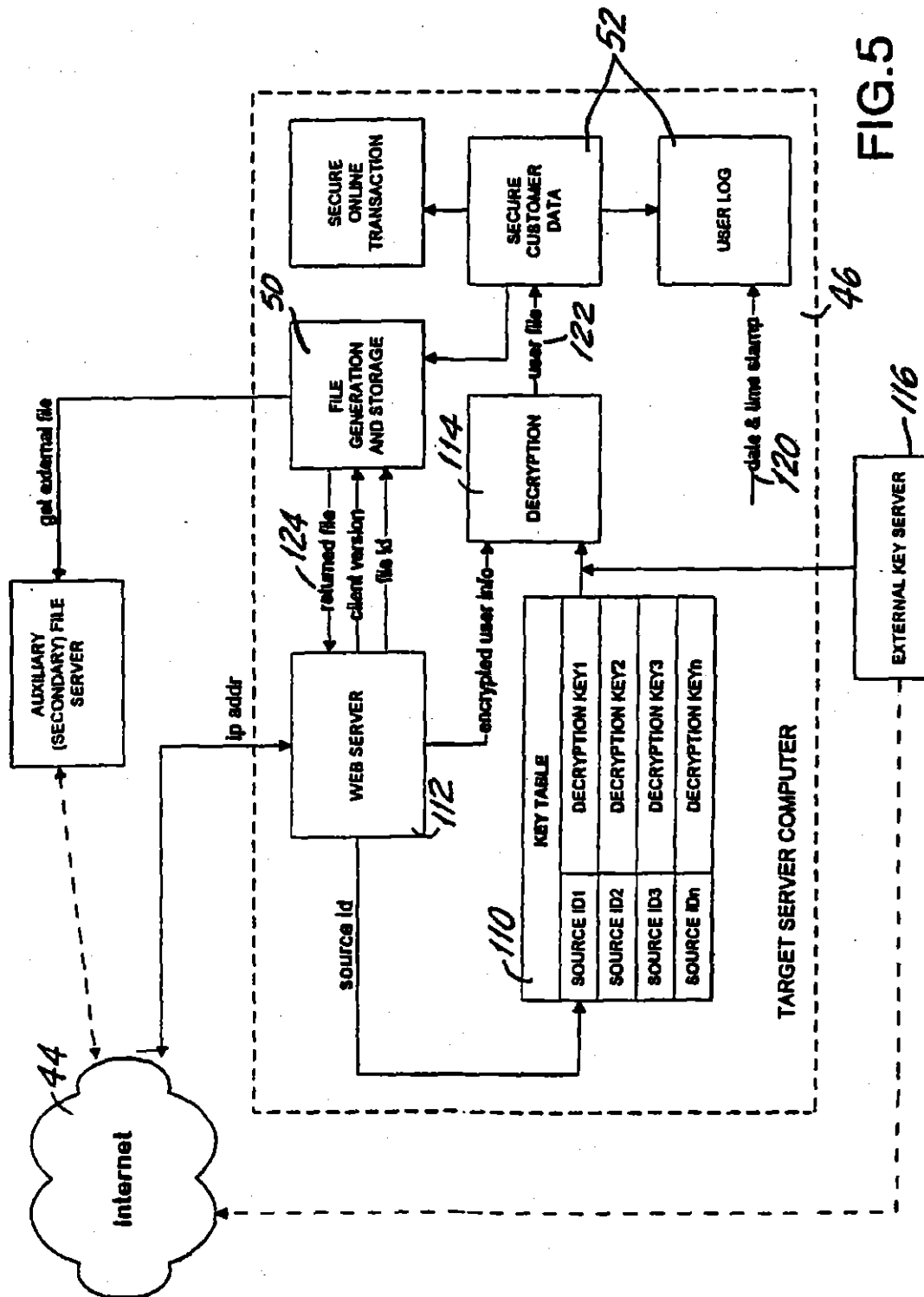
FIG. 4

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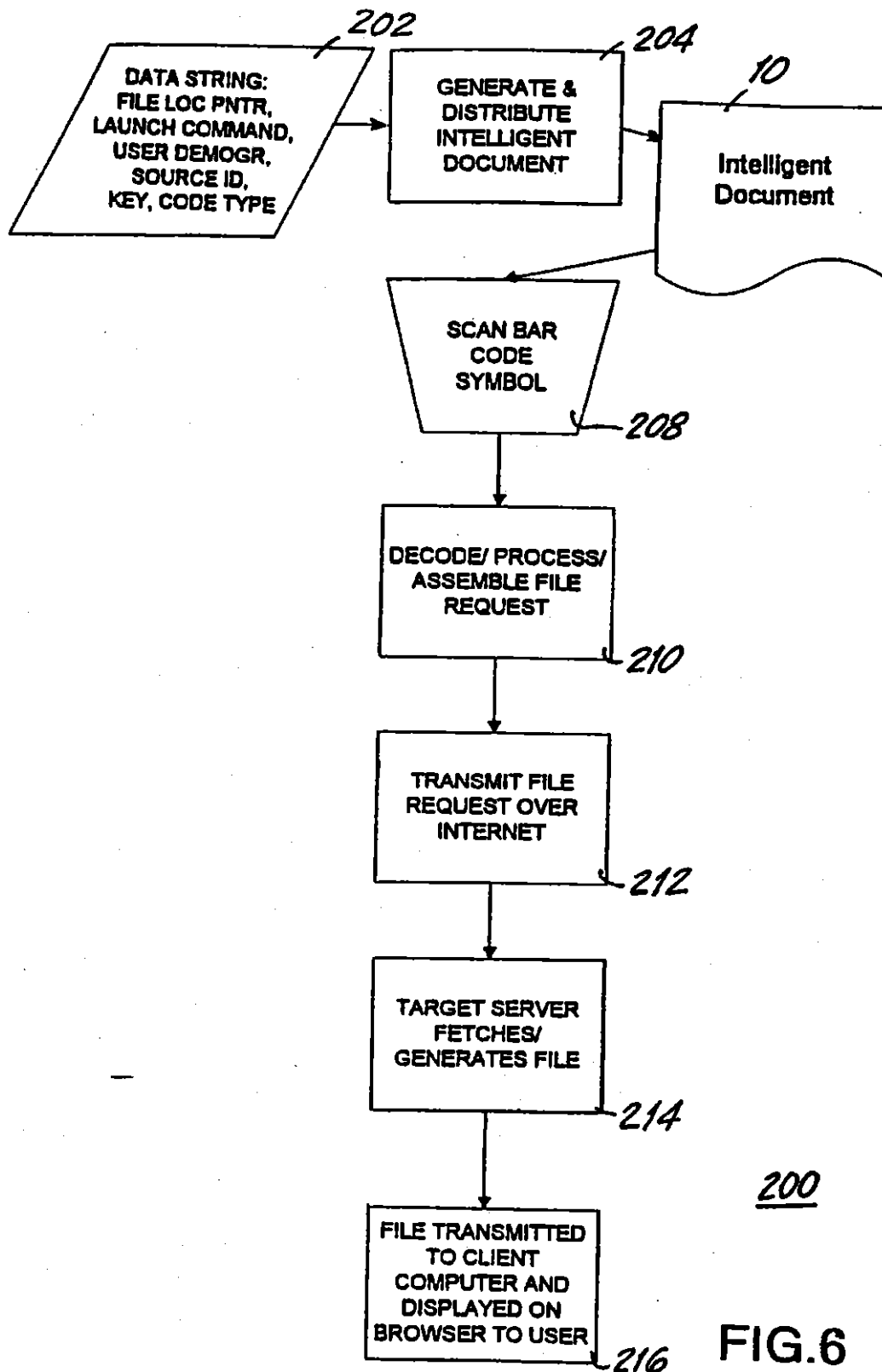


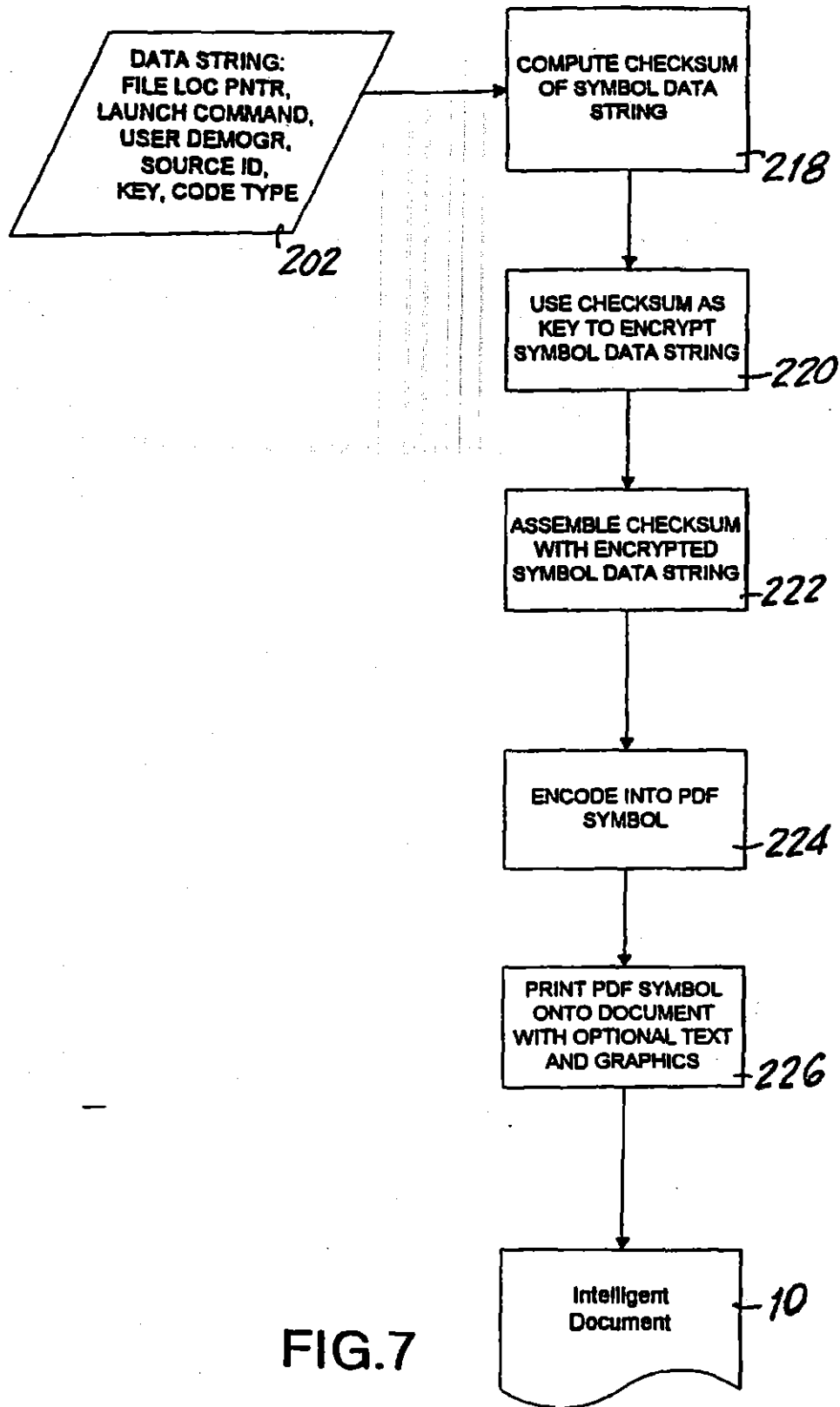
FIG. 6

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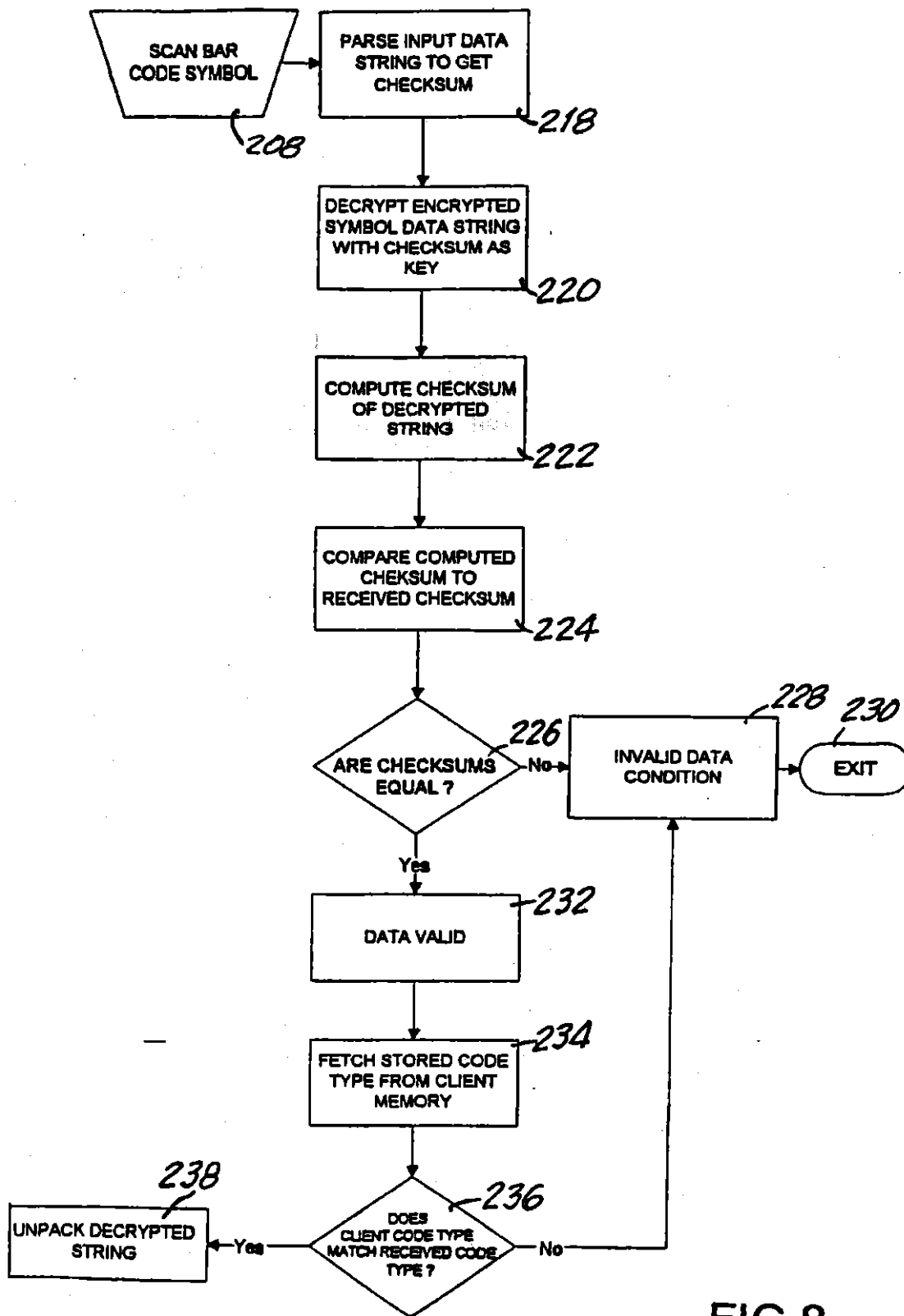


FIG.8

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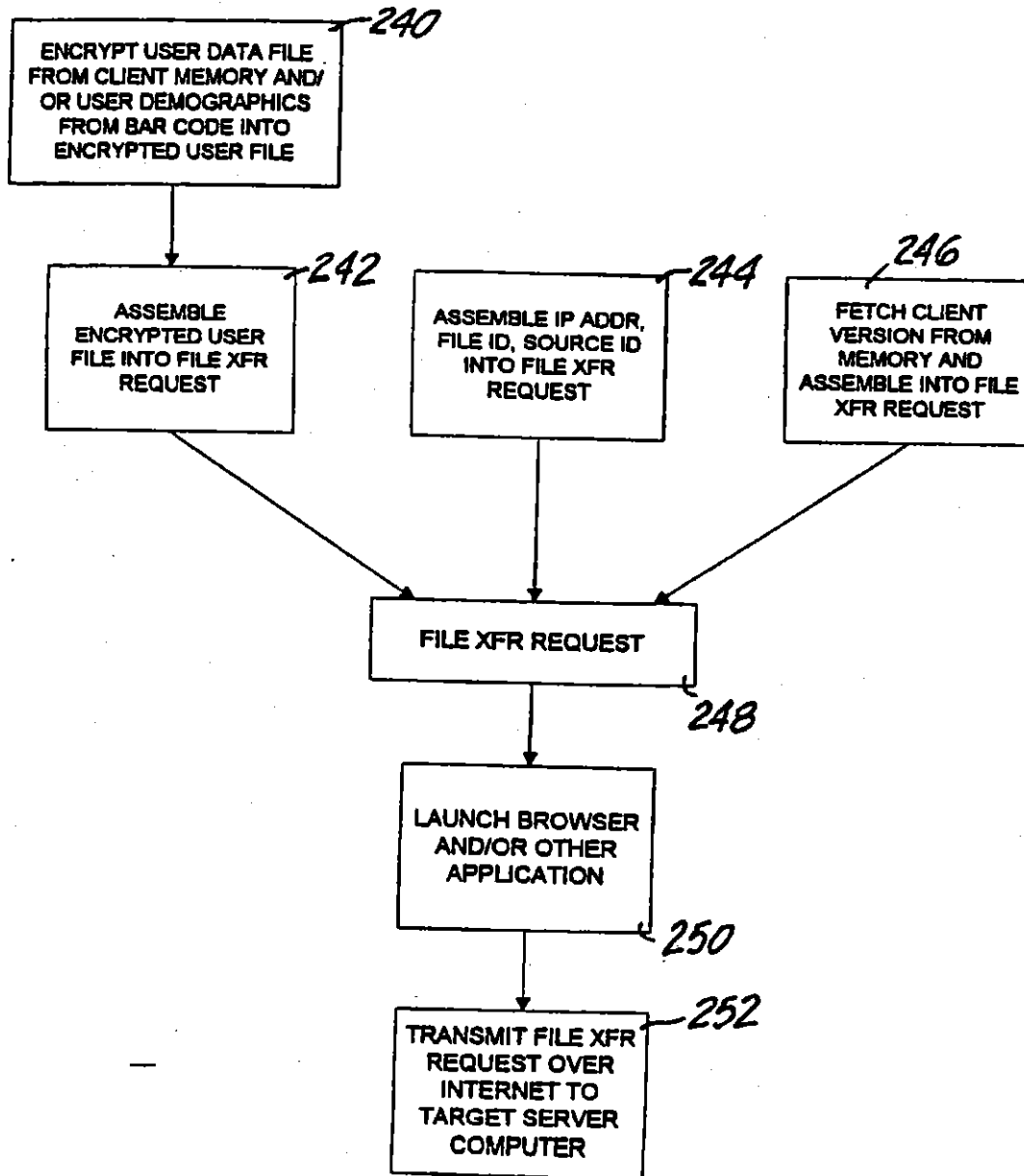


FIG.9



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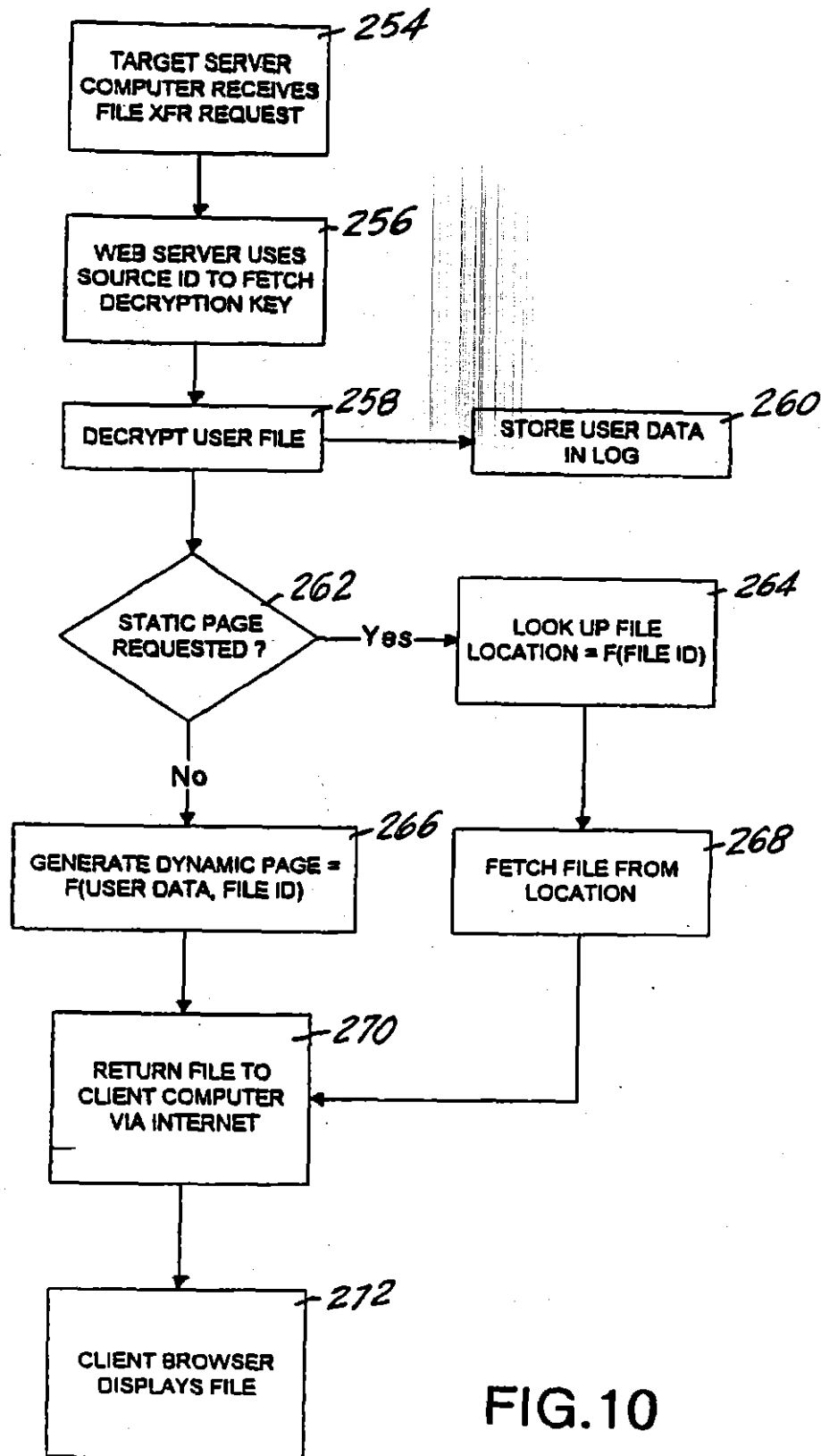


FIG. 10

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# **AUTOMATIC ACCESS OF ELECTRONIC INFORMATION THROUGH SECURE MACHINE-READABLE CODES ON PRINTED DOCUMENTS**

## **CROSS-REFERENCE TO RELATED APPLICATION**

This application is based on and claims the priority of co-pending provisional patent application filed in the United States Patent and Trademark Office on Nov. 8, 1996 and assigned Ser. No. 60/030,166.

## **BACKGROUND OF THE INVENTION**

Electronic data sources, such as conventional databases, the Internet (i.e., the World Wide Web ("WWW")) are a rich and important means of information retrieval and distribution and, increasingly, electronic commerce. However, there are problems finding the information desired in this increasingly complex and changing network of data sources. Recently introduced Internet "search engines", such as YAHOO, help by allowing a user to search on-line indices of information sources, and even full source text, for relevant key words and phrases related to their topic of interest, but even carefully structured queries by experienced users often results in hundreds and even thousands of possible "hits" which are not sufficiently specific to preclude further manual search which is both data resource inefficient and time consuming.

Because of these inefficiencies, as well as general lack of familiarity with search engines and their syntax, users often rely on human readable print and broadcast media advertising to identify source addresses (e.g., Uniform Resource Locators ("URLs")) for Web sites and other online information of interest. Print media is particularly effective since: (1) it is the most ubiquitous method of communication and advertising in the modern world; and (2) a printed document can serve as a persistent reference to be saved and used during a subsequent on-line session.

However, human readable printed source addresses, and especially URL's, are particularly difficult to manually enter in software programs, such as web browsers, due to their length and use of complex and unfamiliar symbols. If the characters in a URL are not entered exactly, retrieval is prevented or, in a limited number of cases, a legal but incorrect source is accessed. This is especially true when URLs incorporate foreign languages and/or complex query instructions to on-line databases, as is increasingly frequent in most Web sites. In addition, the inability to type or otherwise manually enter symbolic address information due to either disability or lack of training complicates use of on-line information resources such as the Internet for millions of individuals.

Finally, it is widely anticipated that Internet access will increasingly be provided through interactive cable television via Web-ready television receivers and set-top boxes used in conjunction with conventional television receivers. In this home entertainment environment, it is difficult to use keyboards for address entry due to both lack of typing skill and the cumbersome placement of these components. Another method which would eliminate typing and allow users to directly link printed addresses and query scripts to electronic information sources would be highly desirable.

Companies that host Web sites for the purpose of providing information such as advertising, often want to know the identity and other related information of the users who visit their sites (i.e., download files therefrom). It would be quite

advantageous to provide such companies or vendors with this information as part of a specific file transfer request, e.g., as part of a CGI parameters string included in a URL. Additionally, it would be desirable to be able to effect a secure manner of transferring this information, so that a user would have confidence in the system and thus send sensitive information such as a credit card number or the like with the file transfer request. This would enable electronic commerce to flourish well beyond the point it exists today.

## **SUMMARY OF THE INVENTION**

The present invention is a system and method for providing automated access to electronic information stored in a database in either a local or remote location. The system utilizes a machine-readable code printed on a document, referred to herein as an intelligent document since it stores information used to automatically access the information. The machine-readable symbol comprises 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 scans the code via appropriate code scanning (e.g. bar code scanning) equipment, decodes the raw decoded data, and the file location information is then 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. Additional user-specific demographic data such as the user's name and address may also be encoded in the machine-readable code when the document is specifically tailored for individual targeting, such as mailing labels. This demographic information is uploaded to the WWW site for use by the vendor. In addition, the present invention encodes security data, such as an encryption key, for use in secure data transmissions such as electronic commerce over the Internet.

In particular, the present invention is a method and system for a computer, 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 machine readable symbol such as a two-dimensional bar code symbol, and the machine readable symbol is rendered within a data carrier (e.g. printed on an intelligent document). A computer input device such as a two-dimensional bar code scanner is coupled to the client computer and transposes an input data string from the machine readable symbol. 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 file location pointer may be utilized to request the computer file by either passing it to an application program on the client computer suitable for processing the corresponding computer file, and then the application program retrieving the computer file from the specified file location. Alternatively, the file location pointer may be utilized to request the computer file by retrieving a copy of the computer file from the specified file location, and then invoking an application program on the client computer suitable for processing the corresponding computer file.

The client computer assembles a computer file transfer request word including the file location pointer and transmits the request word to a target server computer over a computer network system, which may be a wide area network such as

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the Internet or a local area network (LAN) or intranet. The file location pointer may alternatively specify the location of a computer file stored in a local memory resident in the client computer rather than on a target server computer. When the computer file to be retrieved is on a target server computer on a network, then the file location pointer is a network address associated with the target server computer and a file identifier correlated to the computer file requested by said client computer. In particular, when utilizing the Internet, the file location pointer may be in the form of a uniform resource locator (URL). In any type of networked environment, the target server computer receives the computer file transfer request word and transmits a computer file to the client computer in response thereto.

In addition to the file location pointer, the present invention takes advantage of the information density of the two-dimensional symbology by encoding a source identifier data string within the machine readable symbol. The source identifier data string is used to denote the particular source of the data carrier such as a particular magazine or ad, or can be used to denote an expected user or targeted group of users of the data carrier. The source identifier string is then transposed by the client computer, assembled within the computer file transfer request word, and transmitted to the target server computer. The target server computer stores the source identifier data string received from the client computer in the computer file transfer request word.

Additionally, the machine readable symbol also has encoded therein an encryption key associated with the source identifier data string, which is also transposed by the computer input device. The encryption key is used by the client computer to encrypt information specific to a user of the client computer, and the encrypted user information is assembled within the computer file transfer request word and transmitted to the target server computer. The information specific to a user may be obtained, prior to encryption, from a user information data file stored on the client computer, or it may be obtained from user demographics data correlated to a targeted user of the data carrier that had been previously encoded within and transposed from the machine readable symbol.

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 to determine a decryption key, and then decrypt the encrypted user information received said client computer in the file transfer request word. The lookup table may either be stored locally on the target server computer, or it may be stored remotely on a secondary server computer.

The decrypted user information may comprise sensitive user information such as a credit card number associated with the user of said client computer, thus enabling an online electronic commercial transaction by utilizing the credit card number. The user demographics data may be used by the target server computer to determine the file to transmit to the client computer; i.e. certain files may be targeted to specific users of the system.

The machine-readable symbol may also have encoded therein an executable command to launch a software utility resident on the client computer, and the software utility is then automatically launched after the machine readable symbol is transposed. For example, the software utility may be an Internet browser program or a word processing program. In addition, specific functions may also be encoded in the machine readable symbol along with the application launch command, such as a command to execute a print job of the retrieved computer file.

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The symbol data string may optionally be obfuscated prior to being encoded into the machine readable symbol, in which case the input string transposed must likewise be de-obfuscated by the client computer. The obfuscation may be by computing a checksum of the symbol data string, encrypting the symbol data string by utilizing the checksum as an encryption key, and assembling the checksum with the encrypted symbol data string prior to encoding into the machine readable symbol. The de-obfuscation would then be accomplished by parsing the input data string to determine the checksum, decrypting the encrypted symbol data string with the checksum as a decryption key, computing a checksum of the decrypted symbol data string, and comparing the computed checksum with the checksum from said input data string. A valid data condition would be indicated when the comparison step is successful; and an invalid data condition would be indicated when the comparison step is unsuccessful.

#### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a diagram of the system of the present invention.

FIG. 2 is a diagram of the document generation function of FIG. 1.

FIG. 3 is a diagram of the client computer functions of FIG. 1.

FIG. 4 is a diagram of the deobfuscating function carried out by the client computer of FIG. 3.

FIG. 5 is a diagram of the target server computer of FIG. 1.

FIG. 6 is a top level flowchart of the method of the present invention.

FIG. 7 is a flowchart of the document generation of the present invention.

FIGS. 8 and 9 are a flowchart of the scanning and processing by the client computer of the present invention; and

FIG. 10 is a flowchart of method used by the target server computer of the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The system 100 of the present invention for generating and reading an intelligent document 10 is illustrated in block diagram form in FIG. 1. The system 100 comprises an intelligent document generation system 14, which encodes, assembles and prints an intelligent document 10 for subsequent scanning at a client computer.

The system operates as follows: A vendor who wishes to provide an intelligent document 10 programs certain parameters into a data string 20 which will be encoded within a machine-readable code 12 and printed on the document along with text 16 or graphics 18. The document may be an advertisement in the form of a magazine insert or page, a brochure, a label for an envelope, a memorandum, and the like.

Parameters to be included within the machine-readable code depend upon the application desired by the vendor. FIG. 2 illustrates fields 1-6 of the symbol data string 20, which may comprise a file location pointer 21, a launch command 22, a user demographics field 23, a source identifier 24, an encryption key 25, and/or a code type field 26. For example, if the vendor wants the end-user to be able to access the vendor's Web site automatically upon scanning the symbol 12, then the parameters included in the machine-

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readable symbol may include the launch command 22 to launch an Internet browser application, such as NETSCAPE, and a Uniform Resource Location (URL) code into the file location pointer 21, such as <http://www.xyzcorp.com>. This information is encoded in accordance with the particular type of machine code being used. For example, one type of code which may be used by the present invention is a PDF417 symbol, which is described in detail in U.S. Pat. No. 5,304,786, which is incorporated by reference herein. The PDF417 symbol, known as a two-dimensional bar code symbol, has enough storage information to encode the browser launch command as well as the full URL.

A printer 30 then utilizes the encoded data and desired text and graphics to print an intelligent document 10 as shown in the Figures. The symbol data string 20 may also be obfuscated for security purposes, which will be described in detail below.

The intelligent document 10 is disseminated to the end user in accordance with the methods desired by the vendor. For example, if the intelligent document 10 is a magazine advertisement, then the user will obtain the magazine by conventional means such as purchase at a retail outlet, the mail, etc.

The user, after reading the text and graphics in the document, can access the Web site of the vendor by utilizing a scanner 34 in conjunction with his client computer 32, programmed with appropriate software in accordance with the invention. That is, the user will optically scan the code 12 with an optical scanner. An optical scanner sufficient to scan bar code symbols and the like is disclosed in U.S. Pat. No. 5,448,050, which is incorporated herein by reference. 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.

After the two-dimensional bar code data is scanned by the scanner 34, a decoder 36 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 40 the URL which had been encoded by the vendor into the symbol 12. The browser 40 application is then loaded (if not already running on the computer 32) by the launch command, and the URL is used to access the Web site of the vendor accordingly at the target server computer 46 via the Internet 44. 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 50, and sent to the client computer via the Internet for display to the user on the browser 40.

The above scenario is useful when a vendor prints and distributes such intelligent documents on a mass scale. That is, the symbol 12 distributed is the same for each user. In an alternative embodiment, specific demographic information is included with the code to provide for personalized operation as follows. This scenario is useful when the vendor makes individual printings keyed to individual users, such as when mailing labels are printed for inclusion on an envelope surrounding a magazine or the like.

In this case, the vendor may include in the user demographics field 23 personal data such as the user's name, location, phone number, and other appropriate demographic information. When the user scans the document and accesses the Web site, the personal data is uploaded to the target

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server, thus providing the vendor with useful demographic data as to which user's have actually utilized the intelligent document scanning service.

The code may also include security information useful in completing secure transfers across the Internet. For example, an encryption key 25 appropriate in a public or private key system may be embedded within the symbol 12. 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 scans the associated code, and the credit card number is encrypted and transmitted as the Web site is accessed. The target server computer can match the source identifier string 24 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 10 of the present invention has additional embodiments which allow quick and easy retrieval of a data file on an intranet or Local Area Network (LAN). Thus, a department of a company may distribute fliers regarding certain events, new products, etc., and encode appropriate document access information in accordance with the teachings of the invention. The user may obtain further information by scanning the code on the document, which then causes his computer to access his network, file server, etc.

This embodiment is also useful in a small office environment, where a user prints out documents such as letters or memos that may need to be revised at a later date. It is common practice to manually type in the drive location of the document in the lower corner of the document to allow the user to easily access the document at a later date, without searching through massive amounts of files. Thus, a user may type in the text "c:\user\files\smith\clients\letters\xyzcorp\jonesl\dec12" to indicate its location on his drive. When he desires to edit or otherwise access the document, he would, in the prior art, have to type in the entire location after launching the proper application (e.g. word processor). In accordance with the teachings of the present invention, a machine readable code may be encoded with this information as the file location pointer (as well as a command to launch the application) and printed on the document. When the user later desires to edit the document, he scans the code. The code is decoded, the application is launched, and the file is fetched from the location specified in the code.

The invention will now be described in further detail.

FIG. 2 is an illustration of the obfuscation function of the present invention. Prior to being encoded, the symbol data string may optionally be obfuscated in order to improve the security aspects of the system. The symbol data string is input into a checksum computing means 62, which then computes the checksum of the symbol data string in accordance with teachings well known in the prior art. The computed checksum is then used as a key in an encryption scheme 66 which may be one of several well known encryption methodologies known in the prior art. The key 64 is assembled in the clear (i.e., unencrypted) along with the encrypted symbol data string into by the encoding function 29. After this encrypted data string and cleared checksum

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data is encoded, it is rendered by the printer 30 in accordance with methods well known in the art and the intelligent document is thereby generated.

After the intelligent document 10 is distributed to the user, the bar code symbol 12 is scanned by bar code scanner 34 and processed as follows. The scanned symbol data is decoded by means well known in the art in accordance with the particular symbology implemented to encode the symbol 12. Once the symbol data has been decoded, it is deobfuscated (if the original symbol data had been obfuscated as described above) by deobfuscation function 37 which is illustrated in detail in FIG. 4. First, the clear checksum 64 is utilized as a key to decryption function 97 to decrypt the encrypted string 67. The decryption function 97 which was preloaded onto the client computer as part of an initialization process with the system is a corollary to the encryption function 66. By passing the checksum 64 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 97 produces the clear data string comprising the original file location pointer 21, launch command 22, user demographics 23, source ID 24, key 25 and code type 26, then the checksum computing means 99 operates to compute a checksum of those fields. That computed checksum is then compared by comparison block 101 with the received clear checksum 64 that was decoded by the decoding process 36. If the comparison process 101 indicates that the computed checksum equals the received clear checksum, then go/no go signal 103 indicates that the data transmission and decryption process was successful. If, however, the checksums are not favorably compared, then the go/no go signal 103 will indicate an unsuccessful transmission and decryption process. If this is unsuccessful, then further processing is aborted.

Once the symbol data is deobfuscated, it is then parsed by parsing block 39 in order to utilize the constituent fields as follows. The file location pointer 21 and source identifier string 24 are assembled into a register that will comprise the file transfer request. The file transfer request register is also loaded with a client version 72 taken from local memory 70 on the client computer. The user demographic string 23 is optionally fed into an encryption block 80 which is then used with encryption key 25 to encrypt that data and put the results as encrypted user information 82 into the file transfer request string 90. Optionally, the encryption function 80 may utilize certain local user data 74 that had been stored on the memory 70 of the client computer. This local user data may comprise sensitive information, such as the user's credit card number. Advantageously by 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 90 will comprise the file location pointer 21, the client version 72, certain encrypted user information 82 and the source identifier 22.

The code type string 26 is compared by block 78 to the internally stored code type 76. 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, 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 licenses, etc.

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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 40 that is resident and on the client computer. Optionally, if the file transfer request string indicates that the file is located on a Local Area Network such as LAN 98, then the file transfer request will be transmitted through the LAN interface 96 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 94.

Referring to FIG. 5, the operation of the target server computer will now be described in detail. When the file transfer request 90 indicates that the file to be retrieved is located on an Internet file server, then the file location pointer 21 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 112 that is running on the target server computer 46 receives the URL over the Internet 44 and strips out certain parameters contained therein. The source identifier 24 is used to access a look up table 110 which comprises a plurality of source identifier strings and their associated decryption keys. This decryption key that is obtained from the key table 110 is then used by decryption block 114 to decrypt the encrypted user information received in the file transfer request. Decryption function 114 is corollary to the encryption function 80 performed at the client computer. Thus, the secure information transferred with the file transfer request is decrypted and user information file 122 may be stored in user log 52, along with the date and time stamp 120 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 have accessed its Web site. This information may also be utilized by file generation and storage means 50 to dynamically determine the file or files to be sent back to the client computer. For example, if the demographics 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 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 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 118 to get the external file and return it back to the client computer. The auxiliary file server 118 may be accessed directly, through a dial up modem connection, or through the Internet. In addition, an external key server 116 is accessible by the target server computer if it is desired by the system designer to keep the key table 110 remote from the target server computer, rather than local therein. By keeping a key table 110 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 have the option of paying a "per click" fee to

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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 44, it may be displayed in a manner well known in the art on the Internet browser 40. Thus, the 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 scanning a code provided on an intelligent document 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.

FIGS. 6 through 10 illustrate the flowcharts of the methodologies employed by the present invention. FIG. 6 is an overall flowchart wherein step 202 illustrates the data string comprising the file location pointer, launch command, user demographics, source identifier, key and code type. At block 204, the data string is utilized to generate an intelligent document 10 which is also distributed to the end users. At step 208, the bar code symbol is scanned, and at step 210 the data is decoded and processed and the file request is assembled. At step 212 the file request is transmitted over the Internet and at step 214 the target server fetches and/or generates the computer file requested. Finally, at step 216 the file is transmitted to the client computer and displayed on the browser to the user.

FIG. 7 is a more detailed flowchart of the document generation procedure. The data string at 202 is used to compute a checksum at step 218. At step 220, the checksum is used to encrypt the data string and at step 222 the checksum and encrypted data string are assembled. At step 224 the bar code symbol is encoded and at step 226 the bar code symbol is printed with optional text and graphics onto the intelligent document 10.

FIGS. 8 and 9 illustrate the detailed operation of the client computer. At step 208 in FIG. 8, the bar code symbol is scanned. At step 218 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 compute a checksum and the received checksum is compared with the computed checksum. If the checksums are not equal, an invalid condition is declared and the process exits at step 230. If data is indicated valid at step 232, then the stored code type is fetched from the client's memory at step 234. A comparison of the code type from the client memory with the received code type is compared at step 230. If an invalid data condition is indicated in this test, then the process exits at step 230 and if the code types match, then the process continues with an unpacking of the decrypted string at step 238. —

Referring now to FIG. 9, the step 240 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. At step 242, the encrypted user file is assembled into the file transfer request 248. At step 244, the file location pointer comprising the IP address and file ID and the source ID are also assembled into the file transfer request and at step 246, the client version is fetched from local memory and assembled into the file transfer request. At step 250, the browser is provided with the file transfer request and is optionally started by the launch command in the received string. At step 252, 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.

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FIG. 10 illustrates the details of the methodologies employed by the target server computer. At step 254, the target server computer receives the file transfer request, and at step 256 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. At step 258, 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 file identifier. At step 264, the file is fetched from that location at step 268 and returned to the client computer via the Internet at step 270. If the static page was not requested at block 262, then a dynamic page is generated at step 266 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 at step 272.

We claim:

1. A method for a client computer to retrieve a computer file comprising the steps of:

- a) encoding a symbol data string comprising a file location pointer into a machine readable symbol;
- b) rendering said machine readable symbol within a data carrier;
- c) transposing an input data string from said machine readable symbol with a computer input device coupled to said client computer;
- d) parsing said input data string to determine said file location pointer; and
- e) utilizing said file location pointer to request the computer file designated thereby.

2. The method of claim 1 wherein said utilization step comprises the steps of:

- passing said file location pointer to an application program on said client computer suitable for processing the corresponding computer file; and
- the application program retrieving the computer file from the specified file location.

3. The method of claim 1 wherein said utilization step comprises the steps of:

- retrieving a copy of the computer file from the specified file location; and
- invoking an application program on said client computer suitable for processing the corresponding computer file.

4. The method of claim 1 wherein said file location pointer specifies the location of a computer file stored in a local memory resident in said client computer, and wherein said computer file is obtained from said local memory.

5. The method of claim 1 wherein said utilization step further comprises the steps of:

- f) assembling a computer file transfer request word comprising said file location pointer, and
- g) transmitting said computer file transfer request word to a target server computer via a computer network system.

6. The method of claim 5 wherein said computer network system is an Internet, and wherein said computer file transfer request word is directed towards a target server computer in communication with the Internet.

7. The method of claim 6 wherein said file location pointer comprises a uniform resource locator (URL) for specifying a file on the target server computer in communication with the Internet.

8. The method of claim 5 wherein said computer network system is a local area network, and wherein said computer

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file transfer request word is directed towards a target server computer in communication with said local area network.

9. The method of claim 5 further comprising the steps of  
h) said target server computer receiving said computer file transfer request word and

i) said target server computer transmitting a computer file to said client computer in response thereto.

10. The method of claim 9 wherein said file location pointer comprises a network address associated with said target server computer and a file identifier correlated to the computer file requested by said client computer.

11. The method of claim 9 wherein said machine readable symbol also has encoded therein a source identifier data string, said source identifier data string comprising data correlated to an expected user of said data carrier, and wherein said source identifier data string is transposed by said computer input device.

12. The method of claim 11 wherein said source transposed source identifier data string is assembled within said computer file transfer request word and transmitted to said target server computer.

13. The method of claim 12 wherein said target server computer stores said source identifier data string received from said client computer in said computer file transfer request word.

14. The method of claim 12 wherein

said machine readable symbol also has encoded therein an encryption key associated with said source identifier data string,

said encryption key is transposed by said computer input device,

said transposed encryption key is used by said client computer to encrypt information specific to a user associated with said client computer, and

said encrypted user information is assembled within said computer file transfer request word and transmitted to said target server computer.

15. The method of claim 14 wherein said information specific to a user is obtained, prior to encryption thereof, from a user information data file stored on said client computer.

16. The method of claim 14 wherein

said machine readable symbol also has encoded therein user demographics data,

said user demographics data correlated to a targeted user of said data carrier,

said user demographics data is transposed by said computer input device, and wherein

said information specific to a user is obtained, prior to encryption thereof, from said transposed user demographics data. —

17. The method of claim 14 wherein

said target server computer utilizes said source identifier data string to access a lookup table to determine a decryption key associated with said encryption key, and said target server decrypts said encrypted user information received from said client computer.

18. The method of claim 17 wherein said lookup table is stored locally on said target server computer.

19. The method of claim 17 wherein said lookup table is stored remotely on a secondary server computer.

20. The method of claim 17 wherein said user information comprises a credit card number associated with said user of said client computer, and wherein on online electronic commercial transaction is accomplished by utilizing said credit card number.

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21. The method of claim 9 wherein said machine readable symbol also has encoded therein user demographics data, said user demographics data correlated to a targeted user of said data carrier, and wherein said user demographics data is transposed by said computer input device.

22. The method of claim 21 wherein said user demographics data is included in said file transfer request word transmitted to said target computer, and wherein said user demographics data is stored in said target server computer.

23. The method of claim 22 wherein said computer file transmitted by said target server computer to said client computer is at least partially determined by at least part of said user demographics data.

24. The method of claim 1 wherein said machine readable symbol also has encoded therein an executable command to launch a software utility resident on said client computer, and wherein said software utility is automatically launched after said machine readable symbol is transposed.

25. The method of claim 24 wherein said software utility is an Internet browser program.

26. The method of claim 24 wherein said software utility is a word processing program.

27. The method of claim 26 wherein said word processing program is caused to execute a print command of a computer file.

28. The method of claim 1 wherein

said data carrier is a document,

said machine readable symbol is a bar code symbol, and said computer input device is a bar code scanning device.

29. The method of claim 28 wherein said bar code symbol is a two-dimensional bar code symbol encoded in the PDF417 symbology.

30. A computer system comprising:

a) a client computer and

b) a computer input device coupled to said client computer, adapted to read a machine readable symbol from a data carrier and transmit to said client computer an 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 request the computer file designated thereby.

31. The computer system of claim 30 wherein said file location pointer utilization means comprises

means for passing said file location pointer to an application program on said client computer suitable for processing the corresponding computer file; and means for the application program to retrieve the computer file from the specified file location.

32. The computer system of claim 30 wherein said file location pointer utilization means comprises

means for retrieving a copy of the computer file from the specified file location; and means for invoking an application program on said client computer suitable for processing the corresponding computer file.

33. The computer system of claim 30 wherein said file location pointer utilization means comprises means for obtaining, as a function of said file location pointer, a computer file from local memory resident in said client computer file is obtained from said local memory.

34. The computer system of claim 30 wherein said client computer is interconnected to a computer network compris-

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ing a target server computer associated therewith, and wherein said file location pointer utilization means comprises:

means for assembling a computer file transfer request word comprising said file location pointer, and

means for transmitting said computer file transfer request word to said target server computer via said network.

35. The computer system of claim 34 wherein said computer network is an Internet, and wherein said computer file transfer request word is directed towards a target server computer in communication with the Internet.

36. The computer system of claim 35 wherein said file location pointer comprises a uniform resource locator (URL) for specifying a file on the target server computer in communication with the Internet.

37. The computer system of claim 34 wherein said computer network is a local area network, and wherein said computer file transfer request word is directed towards a target server computer in communication with said local area network.

38. The computer system of claim 34 wherein said target server computer comprises:

means for receiving said computer file transfer request word; and

means for transmitting a computer file to said client computer in response to said computer file transfer request word.

39. The system of claim 38 wherein said file location pointer comprises a network address associated with said target server computer and a file identifier correlated to the computer file requested by said client computer.

40. The computer system of claim 38 wherein said input data string fields also comprise a source identifier data string, said source identifier data string comprising data correlated to an expected user of said data carrier.

41. The system of claim 40 wherein said assembling means also assembles said source identifier data string within said computer file transfer request word.

42. The computer system of claim 44 wherein said target server computer further comprises means for storing said source identifier data string received from said client computer in said computer file transfer request word.

43. The computer system of claim 41 wherein said input data string fields also comprise an encryption key associated with said source identifier data string, and wherein said client computer further comprises

means for encrypting with said encryption key a user information data file stored on said client computer, said user information data file comprising information regarding the user associated with said client computer, and

wherein said encrypted user information data file is assembled within said computer file transfer request word and transmitted to said target server computer.

44. The computer system of claim 43 wherein said client computer comprises memory means for storing a user information data file, and wherein said information specific to a

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user is obtained, prior to encryption thereof, from said user information data file.

45. The computer system of claim 43 wherein said input data string fields also comprise user demographics data correlated to a targeted user of said data carrier, and wherein said information specific to a user is obtained, prior to encryption thereof, from said user demographics data.

46. The computer system of claim 45 wherein said target server computer comprises:

means for accessing a lookup table, said lookup table for storing a decryption key associated with said source identifier data string, to obtain said decryption key associated with said source identifier data string, and

means for decrypting, utilizing said decryption key, said encrypted user information received from said client computer.

47. The computer system of claim 46 wherein said lookup table is stored locally on said target server computer.

48. The computer system of claim 46 wherein said lookup table is stored remotely on a secondary server computer.

49. The computer system of claim 46 wherein said user information comprises a credit card number associated with said user of said client computer, and wherein said client computer further comprises means for executing an online electronic commercial transaction by utilizing said credit card number.

50. The computer system of claim 38 wherein said input data string fields also comprise user demographics data correlated to a targeted user of said data carrier.

51. The computer system of claim 50 wherein said user demographics data is included in said file transfer request word transmitted to said target computer, and wherein said target server computer comprises means for storing said user demographics data.

52. The computer system of claim 51 wherein said target server computer comprises means for utilizing said user demographics data to at least partially determine the computer file transmitted by said target server computer to said client computer.

53. The computer system of claim 30 wherein said input data string fields also comprise an executable command to launch a software utility resident on said client computer, and wherein said software utility is automatically launched after said machine readable symbol is transposed.

54. The computer system of claim 53 wherein said software utility is an Internet browser program.

55. The computer system of claim 53 wherein said software utility is a word processing program.

56. The computer system of claim 55 wherein said word processing program is caused to execute a print command of a computer file.

57. The computer system of claim 30 wherein said computer input device is a bar code scanning device.

58. The computer system of claim 57 wherein bar code scanning device is suitable for scanning a two-dimensional bar code symbol.

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US005978773A

**United States Patent** [19]

Hudetz et al.

[11] **Patent Number:** 5,978,773[45] **Date of Patent:** \*Nov. 2, 1999

[54] **SYSTEM AND METHOD FOR USING AN ORDINARY ARTICLE OF COMMERCE TO ACCESS A REMOTE COMPUTER**

[75] **Inventors:** Frank C. Hudetz, Lisle; Peter R. Hudetz, Plainfield, both of Ill.

[73] **Assignee:** NeoMedia Technologies, Inc., Fort Myers, Fla.

[\*] **Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] **Appl. No.:** 08/538,365

[22] **Filed:** Oct. 3, 1995

**Related U.S. Application Data**

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[51] **Int. Cl.<sup>6</sup>** G06F 3/06; G06F 13/20

[52] **U.S. Cl.** 705/23; 709/219; 707/523

[58] **Field of Search** 395/800, 200.1, 395/201, 829, 200.03, 114, 117, 200.57, 200.61, 200.33; 358/440; 235/383, 380, 375, 462, 385, 432, 466; 364/464.18, DIG. 1, DIG. 2; 382/313, 317; 705/14, 23; 709/219, 217, 220; 707/523

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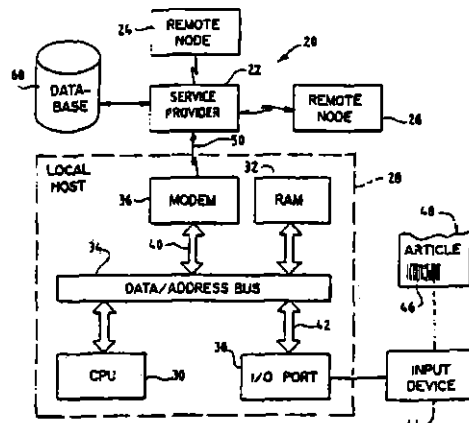
*Primary Examiner*—Daniel H. Pan

*Attorney, Agent, or Firm*—Anthony R. Barkume, P.C.

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**ABSTRACT**

A system and method for using identification codes found on ordinary articles of commerce to access remote computers on a network. In accordance with one embodiment of the invention, a computer is provided having a database that relates Uniform Product Code ("UPC") numbers to Internet network addresses (or "URLs"). To access an Internet resource relating to a particular product, a user enters the product's UPC symbol manually, by swiping a bar code reader over the UPC symbol, or via other suitable input means. The database retrieves the URL corresponding to the UPC code. This location information is then used to access the desired resource.

**41 Claims, 5 Drawing Sheets**

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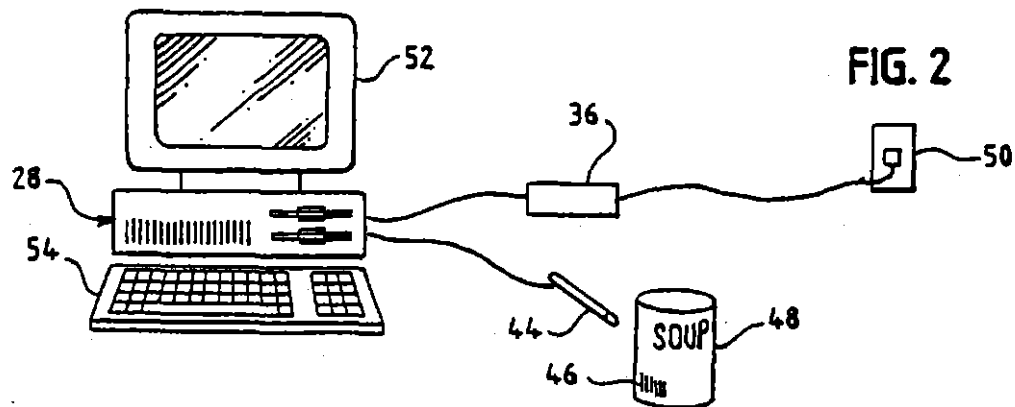
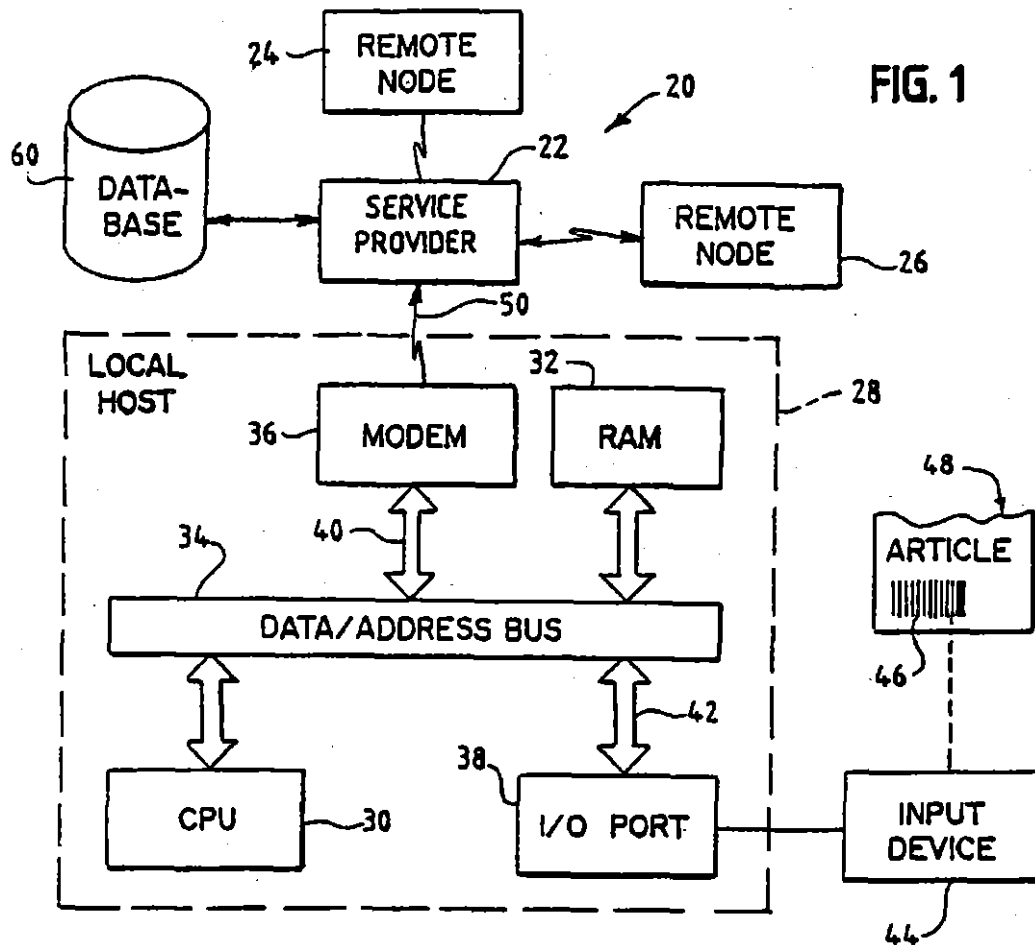
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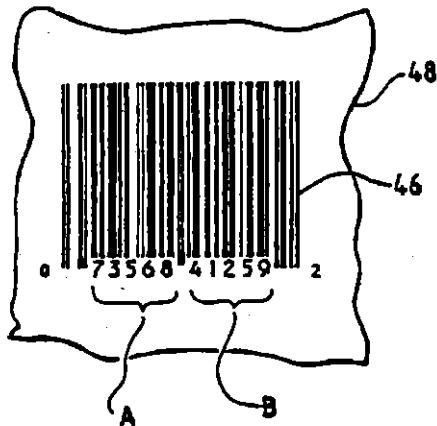
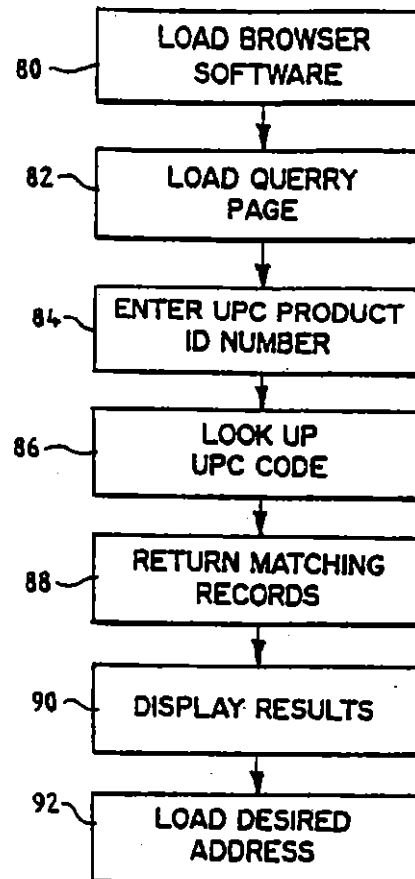
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**5,978,773****FIG. 3****FIG. 5****FIG. 4**

	70	72	60	74	76
62	UPC-A	UPC-B	URL		DESC
	31251	00301	sample.soup.com/subfile/index.html		soup
64	31251	00302	sample.soup.com/promotion/main.html		giveaway
66	31251	00400	test.milk.org		milk
68	4205		cars.com/testdrive/main.html		cars

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FIG. 6

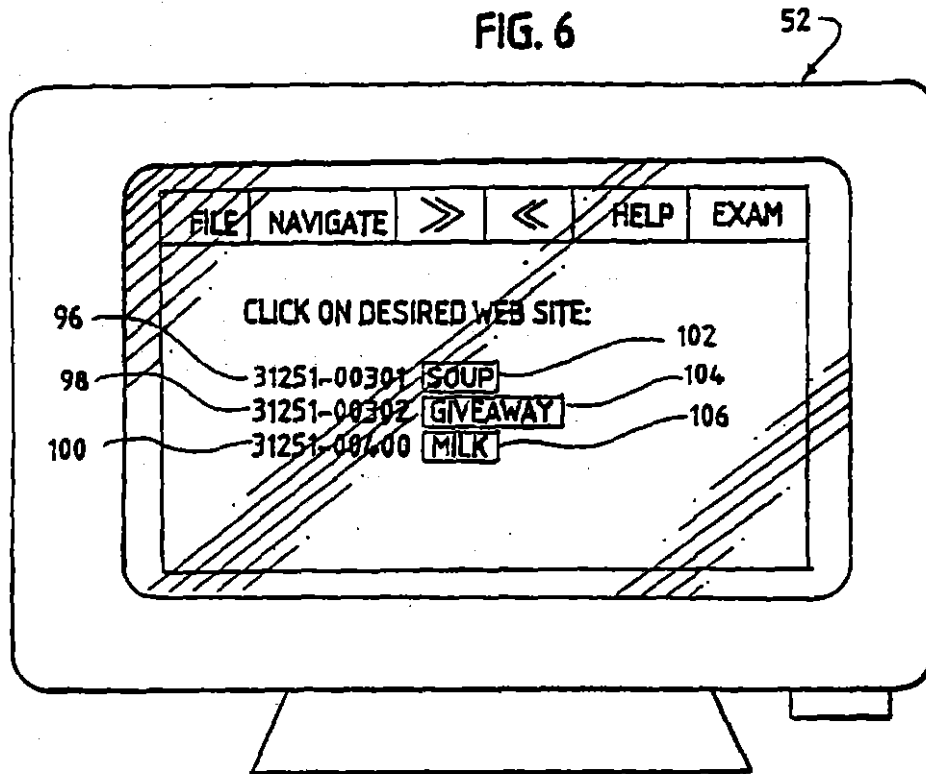
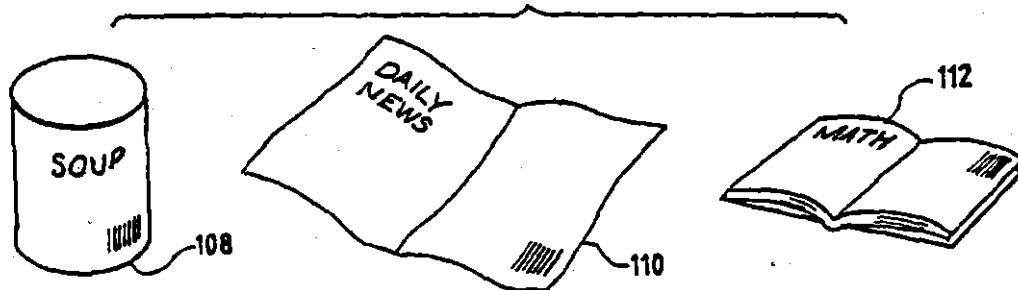


FIG. 7



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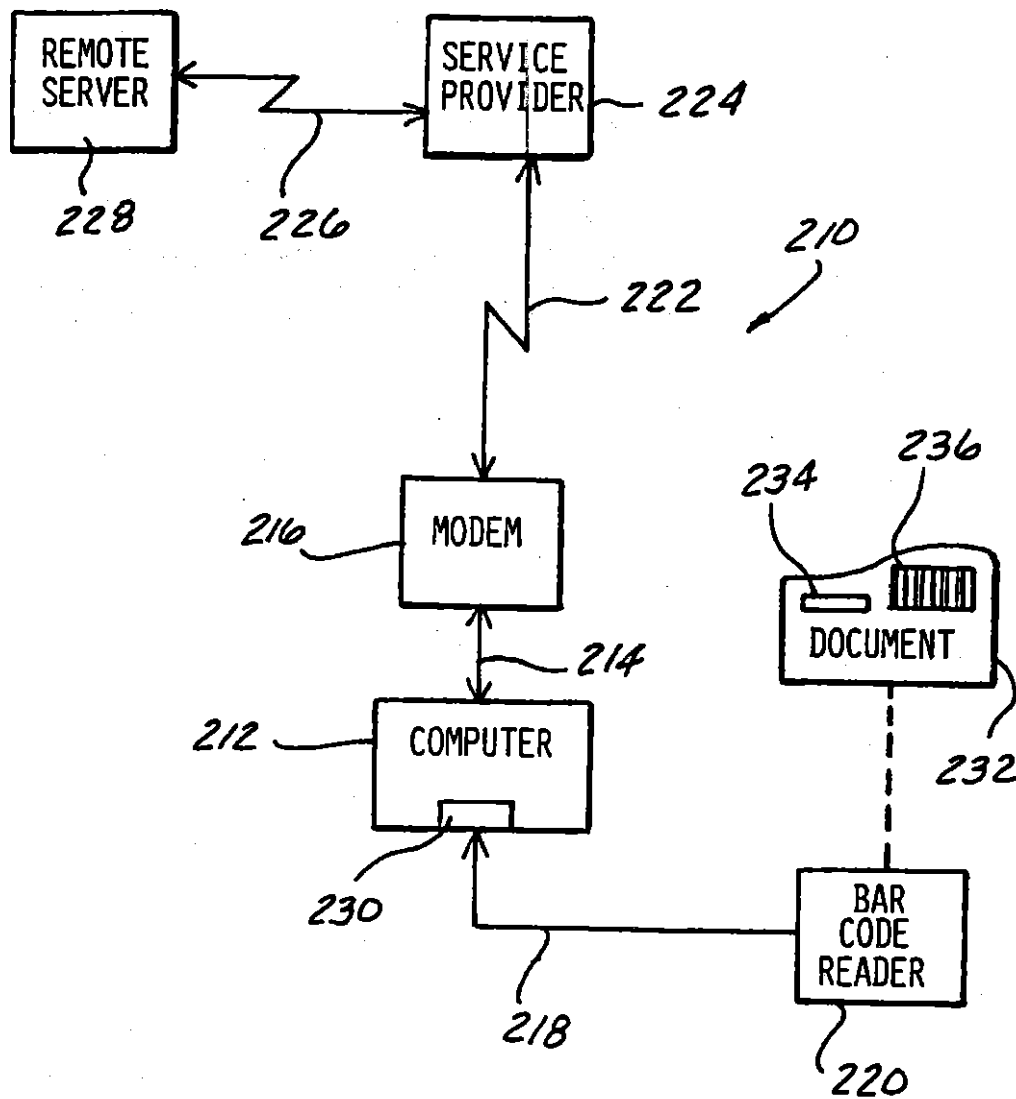


FIG. 8

U.S. Patent

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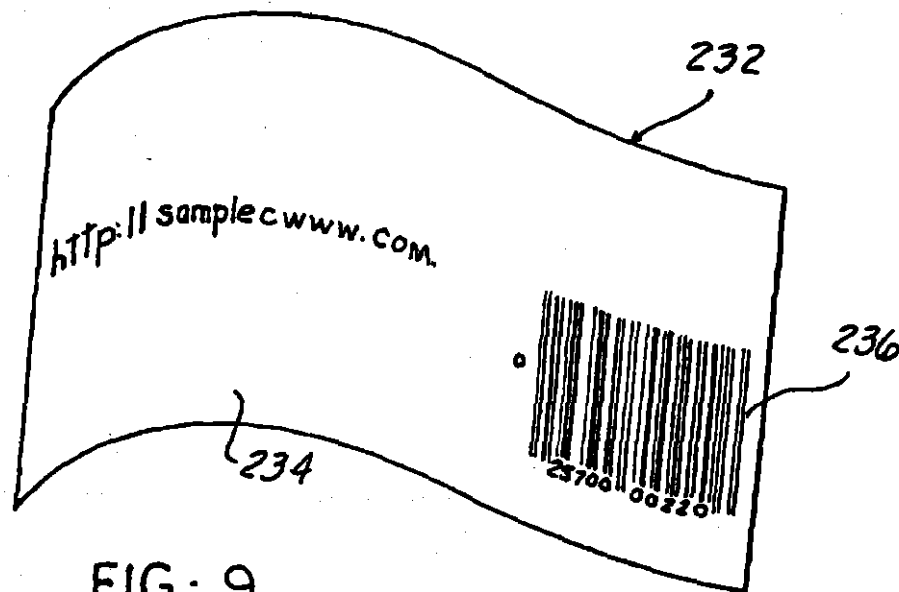


FIG. 9

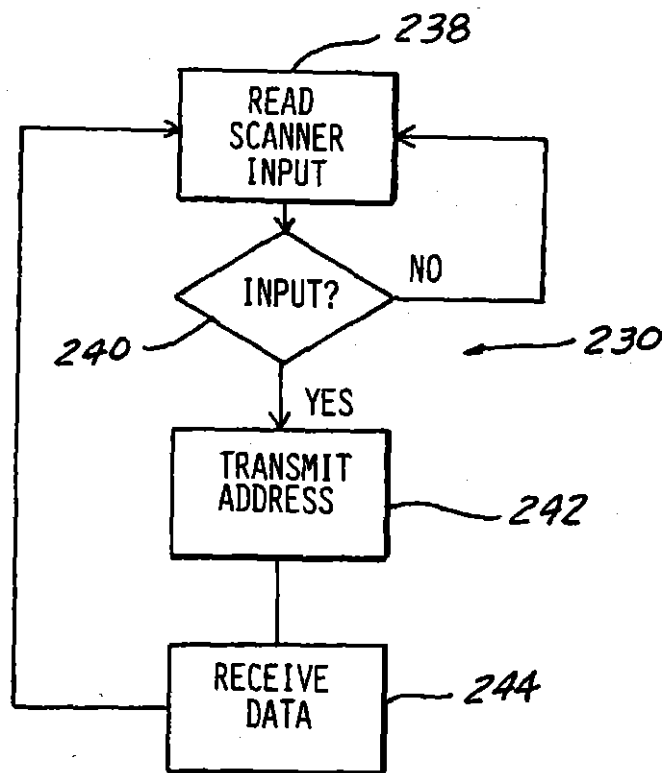


FIG. 10



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# SYSTEM AND METHOD FOR USING AN ORDINARY ARTICLE OF COMMERCE TO ACCESS A REMOTE COMPUTER

## RELATED APPLICATION DATA

A claim of priority is made in this application based on Provisional Application Ser. No. 60/000,442, filed on Jun. 20, 1995, and entitled "Method and Apparatus for Interfacing with Remote Computers" (hereinafter, "our copending application"), the disclosure of which is hereby incorporated by reference in its entirety.

## FIELD OF THE INVENTION

This invention relates to computer communications generally, and more specifically to techniques for giving users convenient access to information located on computer networks such as the Internet.

## BACKGROUND OF THE INVENTION

A computer network is a set of computers (or "hosts") which are able to communicate electronically. In logical terms, the network can be viewed as a set of nodes or "sites", with each computer on the network being home for one or more nodes. Generally speaking, each host is assigned a numeric address, which the network uses to route information to that particular host. To facilitate human use of networks, addresses are often given alphanumeric codes (or "mnemonics"), which are easier for people to remember. For example, the numeric address 200.98.322.56 may be assigned the mnemonic "sample.com."

At the present time, the world's most important network is the Internet. The Internet is a massive worldwide collection of computer resources, connected together in network fashion by a series of communication protocols known as TCP/IP. Many sites on the Internet can be accessed in accordance with popular standard protocols or formats such as Gopher and Hypertext Transport Protocol ("HTTP"). These sites act as remote servers, providing information to users' computers (or "clients") in accordance with a particular format or protocol. The client system (often an individual's personal computer) must have the necessary software to handle the server's particular protocol.

For example, sites set up in accordance with HTTP are nicknamed "Web sites". If a user wants to access Web sites, she must have a computer connected to the Internet and equipped with software for communicating in accordance with the HTTP protocol. Such software is often called a "browser," because it allows users to browse (or, in the parlance of the enthusiasts, "surf") from Web site to Web site, much the way one might browse through a library. This process is facilitated by the fact that most Web sites have hypertext links to other Web sites, which the user can activate by clicking a mouse on a highlighted portion of the screen.

Typical browser software also maintains a list of sites the user has visited, which the user can recall using commands such as "back" and "forward." These commands, coupled with the hypertext links between Web sites, give users the sensation of "navigating" through a seemingly infinite realm of information, which is popularly referred to as "cyberspace" or the "World Wide Web."

Users can also specify a Web site by manually typing in the site's location as a Uniform Resource Locator ("URL"). The URL specifies the precise location of a particular resource, and has three fields:

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<resource type> <domain name> <path>

Domain name, as explained above, is the alphanumeric network address of the host on which a particular resource resides. The "path" is the specific directory and file on the host where a resource is stored. A typical URL is <http://bongo.cc.utexas.edu/neural/cwsapps.html>.

For example, the command "Go <URL>" would cause browser software to request the information residing at the site specified by the URL. This is called "pointing" the browser to the desired Web site. The Web server at the designated URL processes the browser's request by transferring a copy of the file specified by the URL to the user's local host computer. The transferred file includes embedded commands in the hypertext markup language ("HTML"), which cause the client's browser software to display and handle the transferred file in a desired manner.

Cyberspace is not limited to the World Wide Web or the Internet. Massive amounts of information are also available on networks maintained by on-line service providers under the service marks CompuServe, Prodigy and America Online, for example. Users typically access these on-line services via telephone modem connection. To the end user, these networks appear to be a series of sites or locations or "rooms" offering various types of information. The addresses for these locations are assigned by the on-line service providers. Navigation among these locations is handled by proprietary client software, which runs on the user's personal computer.

Many users learn of resources on the Internet or a proprietary on-line service through magazine articles and advertisements. These articles and advertisements include the necessary URL or other network address to access the desired site. Many publications compile lists of sites they deem particularly worthwhile. When a user sees a listing for a site which looks interesting, he can manually enter the published URL or other mnemonic address into his browser or other software, and access the site.

As explained in our copending application, we realized that published computer addresses—whether URLs or otherwise—were difficult for people to use because they have to be tediously entered into their computers. A good example of an address which may be difficult to enter is the University of Texas address cited above. The problem is particularly acute for persons with a visual or physical disability.

Another problem using the Internet, we realized, is that many users have trouble even finding URLs or other network addresses for desired sites such as Web pages. Accordingly, Web site sponsors publish their Web site URLs in print advertising and on packaging. The difficulty with this approach however is that the URLs are still long, and cumbersome to remember and enter into a computer.

In our copending application, we proposed to resolve these problems by allowing people to access published locations without having to manually enter the published address. In accordance with one embodiment of the invention, disclosed in our court pending application the mnemonic address or verbal description of a network location is published along with the location's numeric address in bar code format. The user's computer is equipped with a bar code reader and browser software. The bar code reader is suitably interfaced to the computer's browser software to allow bar code input to be accepted as address information. When the user sees an interesting published address, he scans the associated bar code using the bar code reader, thereby loading the desired numeric address into the browser. The browser then accesses the Web or other site corresponding to that numeric address.

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We are finding several problems with this and other approaches that have been tried. First, some URLs and other network addresses contain upwards of 20-30 characters, and therefore require very long bar code symbols, which can clutter advertising and packages, and may not be practical from either an esthetic or technical perspective. Second, placing URLs on printed material (whether or not in bar code format) requires manufacturers to redesign products, packaging and/or advertisements, and many manufacturers may be reluctant to do this. Third, previous proposal, if the network address is changed, the package needs to be redesigned, and packages already in the marketplace will have incorrect address information.

### SUMMARY OF THE INVENTION

The present invention offers a better way for consumers and others to access resources on remote computers, particularly Web sites. In accordance with one aspect of the invention, the dissemination and entry of network addresses is accomplished by means of existing identification standards (e.g., bar codes) found on ordinary products like soup or soda, in conjunction with a centralized database of network locations.

One embodiment of the invention is a system in which a bar code or other indicia is associated with a product or other article of commerce. The indicia encodes (in human and/or machine readable form) a UPC or other identification number, which is associated with the article in accordance with an extrinsic standard. A computer database is provided that relates standard UPC codes to Internet URLs or other network addresses. To access a network resource relating to a particular product, the user swipes a bar code reader across the product's UPC symbol. The database then retrieves the URL corresponding to the UPC product data. This location information is then used to access the desired resource on the network.

In accordance with another aspect of the invention, network addresses are directly encoded into bar code format. In this manner, the necessity of manually entering the address is eliminated. Users can more quickly review published lists of Web Sites or other locations. The bar coded address can also be printed on removable stickers or detachable cards, allowing users to readily clip the stickers or cards for future reference.

In accordance with yet another aspect of the invention, navigational commands (in addition to addresses) can be published together in both human-readable and bar code formats. These commands include common commands such as "back" and "forward," as well as more specialized command sequences, such as the commands necessary to access particular services, files, and documents on the Internet or the proprietary on-line services. Rather than manually enter these commands, the user selects a desired command by scanning its associated bar code. The output of the bar code reader is accepted by the browser software as the selected command.

The invention offers a number of important advantages. First, because product identification information is already widely disseminated using standardized and pre-assigned codes, the invention eliminates the need for separately disseminating domain names or other network location data. Further, the invention can be implemented without requiring manufacturers to redesign packaging or other articles, or to develop special bar code indicia. This overcomes a Catch-22 often facing new technologies: manufacturers will not participate until there is widespread consumer interest; con-

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sumers are not interested until there is widespread manufacturer participation. With the invention, mass participation by manufacturers in the technology is automatic.

Second, the invention allows practical use of bar codes and other machine readable media for entry of network location data. As we realized, encoding URL data in bar code format is not practical because the resulting bar codes are too long. By using existing UPC product codes in combination with the database of network locations, users have the benefit of bar code or comparable technology for entering network location data. Thus, the necessity of manually entering the address is eliminated. Users can access a desired site by simply using a bar code reader. The UPC can also be printed on removable stickers or detachable cards, allowing users to readily clip the stickers and cards for future reference. This is particularly useful when the user reads about the location at a time when he does not have access to a computer.

Third, the invention overcomes the problems encountered when network addresses are changed. Network addresses can change as companies reorganize their on-line marketing strategies. Also, Internet addresses are assigned by an independent third party—InterNic—which may in some cases have the authority to unilaterally change a company's address. Finally, unforeseen trademark conflicts (involving for example Internet domain names) may require adoption of new addresses. With the invention, a new address assignment requires only that the database of addresses be updated. Products, packaging, advertisements and the like bearing the standard identification codes need not be redesigned.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a computerized system for interfacing with a computer network in accordance with the invention.

FIG. 2 is a perspective view of the local host computer shown in FIG. 1.

FIG. 3 is an enlarged view of the article of commerce shown in FIG. 1, illustrating in detail the UPC symbol thereupon.

FIG. 4 is a tabular view of the database shown in FIG. 1.

FIG. 5 is a flow chart illustrating the operation of the system of FIG. 1 in accordance with the invention.

FIG. 6 is an idealized view of the CRT screen of the client system of FIG. 1 displaying information in accordance with the invention.

FIG. 7 is a perspective view of articles of commerce which can be used in accordance with the invention to access remote computers.

FIG. 8 is a block diagram of a computerized apparatus for interfacing with a computer network in accordance with a second embodiment of the invention.

FIG. 9 is an idealized perspective of the document of FIG. 8 having a network address in both bar code and human readable formats.

FIG. 10 is a flow chart illustrating the operation of the apparatus of FIG. 8 in accordance with the invention.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

#### 1. Overview

FIG. 1 is a block diagram illustrating one application of the invention, namely the use of an ordinary article of commerce to access sites on the Internet's World Wide Web. As explained below, this embodiment of the invention

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allows a person who desires Internet resources concerning a particular product to access those resources using the product's UPC symbol. The data encoded on the UPC symbol can be entered manually or (for greater convenience) using a bar code reader.

Referring to FIG. 1, the Internet 20, illustrated here in generalized format, includes a service provider 22 and two remote nodes 24 and 26. In this case, service provider 22 is a local Internet access provider. Service provider could also be an online service provider, such as America OnLine®, Compuserve®, Microsoft® Network and Prodigy®. In such cases, local host 28 need not be on Internet 20—that is, need not have a network address.

An end-user (not shown) accesses Internet 20 using local host 28, which in this case is an IBM compatible personal computer including a CPU 30, a random access memory 32 and an address/data bus 34 by operatively connecting CPU 30 and memory 32. Unless otherwise specified, the term "memory" herein includes any storage device, including RAM, ROM, tape or disk drives (or collections or networks of tape or disk drives), and any other device for storing information. A modem 36 and I/O port 38 are attached to bus 34 by a suitable interfaces 40 and 42, respectively. An input device 44 is connected to bus 34 via I/O port 38. Input device 44 is a commercially available wand-style bar code reader reads a Uniform Product Code ("UPC") bar code symbol 46 affixed to an article of commerce 48. Alternatively, input device 44 could be a card reader, optical character or voice recognition system, touch screen, scanner, pen, keyboard or other known input device.

Local host computer 28 need not be a personal computer, and could for example be a mainframe or minicomputer having a terminal by which the user could enter and receive data. In that arrangement, input device 44 would be attached to the terminal.

Modem 36 is adopted for electronic communication via a suitable telephone link 50 with service provider 22. Computer 28 functions as an Internet host because it is connected to service provider 22 using Point to Point Protocol ("PPP") via telephone link 50. Other telecommunications channels may be used, such as ISDN or a connection which incorporates a third party intermediary network such as Tym-Ner™. Alternatively, local host 28 could be connected directly to Internet 20, as is likely to be the case where local host 28 is a larger computer, such as mainframe. FIG. 2 offers a perspective view of local host 28 and article of commerce 48 and also illustrates a CRT monitor 52 and keyboard 54 suitably coupled to bus 34.

In this illustration, local host 28 is used to access Internet resources (or "Web sites") on remote nodes 24 and 26, which are available using the HTTP protocol. HTTP uses a client-server architecture, with remote nodes 24 and 26 acting as servers, and local host 28 acting as a client. Local host is equipped with Netscape Navigator brand Web browser software which enables it to function as an HTTP client.

Remote nodes 24 and 26 have pre-assigned network locations (or "domain names"), and desired resources (such as a particular Web site) are located in specific directories and files (or "paths") resident on a remote nodes 26 and 28. The precise locations of those resources are specified using URL, which, as explained above, includes three fields: <resource type> <domain name> <path>. To access resources of a particular remote node 24 or 26, local host 28 requests those resources from Internet 20 using the appropriate URL. Thus, the URL functions as a more precise kind of network address than a domain name.

The URL required is often supplied by the user. Users learn about the existence of a desired resource (and its

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corresponding URL) through a variety of means, including publication in a printed advertisement. In current practice, the URL acquired from a printed source must be entered using a keyboard. As explained above, this can be tedious. Moreover, in many cases, users may have trouble finding references to desired Web pages.

## 2. Article of Commerce

In accordance with the invention, access to desired resources on remote nodes 24 and 26 is achieved using an article of commerce 48. The term "article of commerce" includes tangible things that are sold or moved through commerce, such as consumer products, packaging, and printed media including books, newspapers, magazines, stickers, fliers, cards, tags and labels. Article 48 bears a standard UPC bar code symbol or indicia 46. Symbol 46 is shown in greater detail in FIG. 3, and may be affixed to article 48 in any suitable manner, including printing directly on the article or its packaging, or applied to labels or tags attached or otherwise affixed to the article. In accordance with UPC standards, symbol 46 encodes a ten-digit number (the "product identification number"). As shown in FIG. 3, the product identification number encoded in UPC symbol 46 consists of two five-digit fields, A and B. Field A is a unique, pre-assigned number signifying a particular manufacturer. Field B is a number identifying one of the manufacturer's products. In the United States, UPC product identification numbers are assigned by the Uniform Code Council, Inc.

UPC symbol 46 provides a machine-readable number that uniquely identifies a particular product and its manufacturer. This is useful at the retail point-of-sale, where purchase of a particular item is recorded by scanning the item's bar code symbol.

There are numerous other formats and systems for assigning product identification numbers to articles of commerce. For example, the International Article Numbering Association ("EAN") assigns its own number to products outside of the U.S. and Canada, and uses a different symbology than used with the UPC. Product identification codes for books are provided by the International Standard Book Numbering System ("ISBN") and are encoded using a symbology specified by that organization. Likewise, magazines and serial publications are assigned product identification codes by the International Standard Serial Numbering System ("ISSN").

These numbering systems share at least three characteristics. First, for purposes of this invention, the identification numbers may be assigned in accordance with an "extrinsic" standard. By extrinsic, it is meant that the assignment of numbers is made a by group or association for the purpose of identifying articles of commerce. It is likely that new types of identification numbers will arise in the future, as will new organizations for assigning and administering those numbers, and the present invention contemplates use of both existing and future extrinsic identification numbers and formats.

Second, the identification numbers may have recognized significance as numbers identifying articles of commerce. The level of recognition may be among the general public, or a defined subset, such as a particular industry or occupation.

Third, the identification numbers may be encoded in a standard, machine readable format—namely, bar codes. Other machine readable formats may also be used for this purpose, including magnetic stripes or optical character recognition ("OCR"), and the present invention could be practiced with product identification numbers encoded in those formats as well.

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### 3. URL/UPC Database

In accordance with the invention, service provider 22 includes a relational database 60, which is shown in more detail in FIG. 4. Database 60 includes records 62-68, which are accessible using a suitable database management system software. Each record 62-68 of database 60 contains four fields 70-76. Fields 70 and 72 contain a UPC product identification number, as explained below. Field 74 holds a URL suitable for locating a resource on the Internet. Depending on the application, other network addresses—either numeric or mnemonic, physical or virtual—may be used. Field 76 holds a narrative description of the resource addressed in field 74. This particular arrangement of fields is but one illustration of how the invention may be practiced. For example, additional fields could be provided, or the UPC product identification number could be held in a single field.

Each record 62-68 of database 60 associates a UPC product identification number (contained in fields 70 and 72) with a particular Internet URL and narrative description (contained in fields 74 and 76, respectively). The association is based on selected criteria. In this case, the criteria is the existence of a Web resource sponsored by the manufacturer of the product identified by the UPC number in fields 70 and 72. (If no such resource exists, then the particular product identifier can be omitted from database 60). Other criteria can be used. For example, the association could be based on the existence of a Web site simply referring to or relating to the product.

As stated, fields 70 and 72 contain a UPC product identification number. Field 70 contains the first five digits of the product identification number (field A of FIG. 3). As explained above, these digits uniquely identify the product's manufacturer. Field 72 contains the second five digits of the product identification number (field B of FIG. 3). These digits identify the manufacturer's particular product. In some cases, a manufacturer may have many products and only one Web site or other Internet resource. In that case, field 72 may be left blank, as shown in cell 78 of record 68. When field 72 is left blank, database 60 associates the Web resource indicated in field 74 with any product identification number whose first five digits match the manufacturer number specified in field 70.

Database 60 itself is accessible via service provider 22, which is equipped with Web server software such as provided by Netscape Communications, Inc. The server software provides access to an HTML document (the "Query Page") resident on service provider 22 at a predetermined URL. The Query Page, when displayed on CRT 52 by local host 28 using a forms-capable browser allows the user to enter a query in the form of a UPC product identification number. Alternatively, database 60 could be resident on local host 28 or another remote computer 24 or 26. The Web server at service provider 22 may have a predetermined URL location. Browser software resident in local host computer 28 may be configured to automatically request that predetermined URL location when the browser software is initially loaded.

Database 60 may be incorporated with a database or search engine of Web sites or other Internet resources (such as the Yahoo or Lycos databases). In that case, the Query Page may give the user the option of entering a UPC number or an alternative search term, such as a portion of the URL or the topic to which the desired resource pertains.

Also, database 60 may be divided into one or more tables, which may be distributed over more than one computer. For example, a first table may contain records associating UPC numbers with names of products or manufacturers. A second

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table associates products and/or manufacturer names with Internet addresses. Thus, the process of using the UPC number to locate a network address may involve one or more steps. For example, database 60 might determine the name of a product corresponding to a UPC number using a first table, and then determine network addresses corresponding to that product name using a second table. Even though multiple steps are involved, the UPC number is still "associated" in computer memory with the network address for purposes of the invention.

### 4. Operation of the Invention

Suppose a user is interested in Internet resources concerning a particular type of product. In accordance with the invention, the user can access those resources by taking an ordinary specimen of the product—a can of soup for example—and entering all or part of the product's UPC product identification number 46. Database 60 uses the entered product identification number to look-up the associated URL, which is returned to the user in the form of a HTML document.

This operation is illustrated in FIG. 5. At a block 80, the user loads his browser software onto local host computer 28. The browser software is programmed to automatically load the "Query Page" which provides access to database 60. The user in this case is a human, but alternatively a program (or "process") running on local host 28 could be the "user" in the sense that it is the process which is requesting information from the Internet and supplying the UPC number.

At a block 82, the Query Page is transmitted to local host computer 28 in the form of an HTML document. Browser software resident on local host 28 displays the Query Page on CRT screen 52. At block 84, the user (or process) enters the first five or all ten digits of the UPC product identification number encoded by symbol 46. Because the UPC product identification number is printed in both machine- and human-readable format (See FIG. 3), this may be done by manual entry using keyboard, voice recognition system or other input device. More preferably, however, entry is accomplished by scanning UPC symbol 46 affixed to article 48. Input device 44 reads UPC symbol 46, and generates an ASCII character string which is read by CPU 30 via I/O port 38. If the UPC number is scanned, then all 10 digits will generally be entered. The UPC product identification number is transmitted to the Web server resident on local service provider 22, which at a block 86 looks up the entered UPC number in database 60.

At block 88, database 60 retrieves all records 62-68 having UPC fields 70 and 72 that match the product identification number entered by the user. The records are conveyed to the user in the form of an HTML document. The criteria at block 88 for whether UPC fields 70 and 72 "match" the product identification number may be based on a "query by example" approach. For example, suppose at block 84 the user only enters the manufacturer portion (e.g. "31251") of a product identification number. It is assumed in this case that the user is interested in any record 62-68 having a field 70 that matches the entered manufacturer portion. (Recall that the database 60 stores the UPC number in two fields—field 70 for the first five digits (corresponding to manufacturer) and field 72 for the second five digits (corresponding to manufacturer's product)). Thus, at block 88, records 61, 64 and 65 are returned to the user, because field 70 in each of those records contains "31251."

If the user entered all ten digits of a UPC product identification number (e.g., "31251-00302"), then only records whose fields 70 and 72 matched "31251" and "00302," respectively, would be retrieved. (In this case, that

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would be record 64). If all ten UPC digits are entered, and no exact match is found, database 60 may be programmed to retrieve records (if any) where at least the manufacturer portion (that is, first five digits) matches field 70.

At block 90, browser software on local host computer 28 displays records retrieved at block 88 on CRT 52. The records are returned in an HTML document, which is displayed by the browser in a screen format 94, as illustrated in FIG. 6. In this example, records 62, 64 and 66 have been retrieved. Screen format 94 displays data from each record in a separate rows 96, 98 and 100, respectively. If no matching records are found at block 88, a message such as "no records found" may be returned instead.

Text from description field 76 of each of records 62, 64 and 66 is displayed as hypertext links 102, 104 and 106, respectively. Link 102 is associated with the URL of record 62, link 104 with the URL of record 64, and link 106 with the URL of record 66. When the user selects one of links 102-106 (by mouse click or otherwise), the browser software loads the URL associated with the selected link to access the resource at the location specified by that URL.

#### 5. Alternative Embodiments

The foregoing embodiment is just one example of the present invention. Many alternatives are possible.

**Other Networks and Protocols.** While the present invention is illustrated with respect to a system for accessing the Internet's World Wide Web, it could be practiced using other Internet protocols (such as Gopher) or other types of wide area networks and systems, including those offered by "on-line service" providers such as America OnLine® of Fairfax, Va. or CompuServe® of Columbus, Ohio or the Microsoft® Network of Redmond, Wash.

In those cases, database 60 could be resident on the on-line service provider's computer. The network address information contained in database 60 could be either Internet URLs, or locations within the on-line service provider's environment. In this case, the protocol used to communicate between local host 28 and service provider 22 need not be HTTP or other Internet protocol. However, service provider 22 can provide a gateway to Internet 20, and access to a desired network location on the Internet can be made using a URL retrieved from database 60.

**Controlled Access.** Database 60 need not be publicly accessible. Access to database 60 can be limited either by placing database 60 on a proprietary network, or, if placed on an open network, using a password or digital signature system to permit access only to authorized persons. Also, records 62-68 may be selectively accessible. For example, each record can contain an additional field indicating whether the URL contained in field 74 points to network location containing material inappropriate for children. In that case, database 60 can be programmed to return URL at block 88 only if the user has supplied a proper password.

**Automatic Jumping to Desired Location.** In the disclosed embodiment, the URL associated with a selected UPC product identification code is returned to the end user in an HTML document at block 88 of FIG. 5. The user can then hypertext link to the site corresponding to the URL. Alternatively, instead of displaying query results at step 90 (of FIG. 5), browser software in local host can automatically load the retrieved URL and point the user to the site corresponding to that URL. An additional field in database 60 can provide a code indicating whether this feature should be enabled or disabled for a particular URL.

**Identification Numbers and Symbolologies.** The invention can be practiced using standard identification numbers and symbolologies other than UPC numbers and formats. For

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example, EAN, ISBN and ISSN numbers and formats discussed above could be used.

**Articles of Commerce.** As shown in FIG. 7, product identification numbers—whether bar coded or otherwise—may be placed all types of items, such as a consumer product 102, newspaper 104 or book 106, as well as coupons, fliers, cards and advertisements (not illustrated). For example, by placing a product's UPC code on an advertisement for the product, the advertiser could, in accordance with the invention, facilitate access to Internet resources concerning the product.

**Machine Reading Technology.** In lieu of a bar coding, the invention could be practiced with product identification information that is encoded using other technologies. For example, product identification information could be encoded on a magnetic strip affixed to a product, card or other article. In place of wand, local host computer could use a magnetic card reader. Alternatively, the number could simply be printed in human-readable format, and an optional optical character recognition system could be used to facilitate entry.

**Direct Coding of Address.** In place of a standard UPC symbol, bar code technology could be used to encode the actual mnemonic or numeric (IP) network address in machine-readable format. While this arrangement does not achieve all the advantages of the invention, it allows the user to easily enter desired address information using a bar-code reader instead of manually typing the address.

An example of the direct coding of network addresses is shown in the embodiment illustrated in FIGS. 8-10. Referring to FIG. 8, a block diagram of the computerized apparatus 10 for interfacing with a computer network in accordance with the invention is illustrated. Apparatus 113 includes a computer 114 which may be an IBM compatible personal computer. Attached to computer 114 by a suitable input/output interface 115 is a modem 116. Also attached to computer 114 via an input/output interface 118 is a bar code reader 120. Bar code reader 120 is designed to read conventional bar codes. Bar code technology is described generally in U.S. Pat. No. 5,115,326 issued May 19, 1992 and entitled "Method of Encoding an E-Mail Address in a Fax Message and Routing the Fax Message to a Destination and Network", and U.S. Pat. No. 5,420,943 issued May 30, 1995 and entitled "Universal Computer Input Device," the disclosures of which are both hereby incorporated by reference.

Modem 116 is adopted for electronic communication via a suitable telephone link 122 with a service provider 124. Service provider 124 may be an Internet service provider or a proprietary on-line service such as Prodigy or America On-Line. Service provider 124 in turn is electronically connected by a suitable communication link 126 to a remote server 128. For purposes of illustration, we assume that remote server's 128 numeric network address is 200.98.154, and that the assigned address mnemonic is <http://sample@www.com>.

Computer 114 is equipped with communication software for establishing and maintaining a communication link with service provider 124 via modem 116 and telephone link 122. Computer 114 is also equipped with software (see FIG. 10) such as Netscape Navigator brand Web browser software (version 1.0) which enables it to request and receive information from remote server 128 via service provider 124. To operate software 130, a user (not shown) enters an alphanumeric address such as [sample@www.com](http://sample@www.com). Browser software 130 sends service provider 124 a request for the information contained at address corresponding to the mnemonic [sample@www.com](http://sample@www.com). As explained above, that mnemonic address belongs to remote server 128.

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Using the address sample@www.com, service provider 124 routes the request to remote server 128 via communication link 126. Remote server 128 responds by sending the desired information via communication link 126 to service provider 124, which relays the information to computer 114 via modem 116 and telephone link 122. Once the information is received by computer 114, browser software 130 displays the information in a useful format for the user.

In accordance with the invention, a document 132 is provided. Document 132 may be magazine article, advertising or other printed matter. As shown in FIG. 9, Document 136 contains human readable information 134 about resources available at a location on a network such as the Internet, including resources provided by remote server 128. In this example, human readable information 134 includes remote server's 128 mnemonic address—http://sample@www.com. A bar code indicia 136 is placed near human readable information 134. Bar code 136 contains remote server's 128 numerical address (200.98.154) in machine readable form.

Alternatively, bar code 136 could contain a machine readable version of the mnemonic address. Under that arrangement, the bar coded digits would correspond to alphanumeric symbols of the mnemonic address. For example, the bar coded number "97" could correspond to the character "a". In that case, however, bar code 136 may have to be exceptionally long.

If the user wants access remote server 128, he or she scans bar code 136 using bar code reader 120. Bar code reader 120 generates a signal on input/output interface 118 corresponding to the numeric address encoded by bar code 136 (which for purposes of illustration we assume to be 25700-00220, as shown in FIG. 9). Browser software 130 on computer 114 reads the numeric address via input/output interface 118, and forwards it to service provider 124, along with a request for information contained at the location corresponding to that address. Service provider 124 determines that the numeric address is that of remote server 128, and routes to there the request for information.

Referring to FIG. 10, the operation of browser software 130 is shown in more detail. In an initial step 138, browser software attempts to read input from bar code reader 120. At a decision block 140, browser software 130 determines whether reader 120 has input. If no input is available, control returns to block 138, where browser software 130 again attempts to read bar code reader 120. If input is available at decision block 140, then control moves to a block 142 where browser software 130 transmits the input read at block 138 to service provider 124. There are other ways to handle input from bar code reader 120, and more sophisticated techniques may be used in actual commercial embodiments of the invention.

Service provider 124 interprets the input as a numeric network address. In this case, we have assumed that the address is that of remote server 128. Service provider 124 forwards a request for data to remote server 128. At a block 144, the requested data contained on remote server 128 is received by browser software 130 via service provider 124. Once received, the data is available for whatever use required by the user. Control then returns to block 138 where the foregoing process is repeated indefinitely.

In effect, the necessity of manually typing in the mnemonic address sample@www.com is eliminated. Instead, the numeric address is obtained from the bar code indicia 136 by use of bar code reader 120. As explained above, bar code 136 could contain the mnemonic as well as numeric address. Browser software could be programmed to accept

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either format (mnemonic or numeric) as input from bar code reader 120, with the default expectation being that the bar coded data is a numeric address unless the user otherwise specifies. Alternatively, the first coded number of bar code 136 could indicate whether the information that follows represents a numeric or mnemonic address. If bar code 136 can contain either mnemonic or numeric addresses, then browser software should include a flag or other indication alerting service provider 124 as to the format of the transmitted data.

The foregoing embodiment is just one example. Many alternatives are possible. For example, in lieu of a bar code scanning device, a card reader could be employed. The card reader would read a magnetic stripe affixed to a card or other printed matter. The card would contain human-readable information about a network resource, and the magnetic strip would contain the resource's numeric or mnemonic address in machine-readable format. Alternatively, a RF data collection scanner or CCD scanning system could be used. Bar code symbol 126 could also be associated with specific commands such as "forward", or "back," or command sequences used to access information.

We claim:

1. An apparatus for using an article of commerce to access a remote computer, comprising:

(a) a machine-readable indicia associated with the article of commerce, said indicia encoding at least one of a plurality of identification numbers, said encoded identification number corresponding to the article in accordance with an extrinsic standard;

(b) an input device generating a signal corresponding to said encoded identification number; and

(c) a database containing a plurality of network addresses and said plurality of identification numbers, each of said identification numbers being associated with at least one of said plurality of network addresses; said database being responsive to said signal for providing one of said network addresses which is associated with said encoded identification number;

further comprising a local host adapted for network communication; and a first network containing a plurality of nodes, each having an assigned network address; said network being operatively coupled to said local host for allowing communication between said local host and that one of said nodes whose assigned network address corresponds to the network address provided by said database.

2. The apparatus of claim 1 where said machine-readable indicia is a bar code, and wherein said input device includes a bar code reader.

3. The apparatus of claim 2 where said identification number is at least a portion of a Universal Product Code.

4. The system of claim 2 wherein said identification number is at least a portion of a EAN code.

5. The apparatus of claim 1 wherein said indicia includes human-readable elements, and wherein said input device includes a keyboard for manually entering said identification number.

6. The apparatus of claim 1 wherein said local host is a multi-user computer with a plurality of user terminals.

7. The apparatus of claim 1 wherein said local host is a single-user computer.

8. The apparatus of claim 1 further comprising a server, wherein said local host computer is remotely connected to said server and wherein said database is resident on said server.

9. The apparatus of claim 8 wherein said communication between said local host and said one of said nodes is carried through said server.

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10. The apparatus of claim 1 wherein said database is resident on said local host.

11. The apparatus of claim 1 wherein said database is resident on one of said nodes that is remote from said local host.

12. An apparatus for using an article of commerce to generate the network address of a computer on a network, comprising:

- (a) means for generating a signal corresponding to an article identification number which is used to identify the article of commerce in accordance with a standard that specifies the length of the identification number;
  - (b) a database having a plurality of identification numbers including said article identification number and a plurality of network addresses, and associating each of said identification numbers with at least one of said network addresses; and
  - (c) control means responsive to said signal and operatively coupled to said database for retrieving from said database at least one of said network addresses which correspond to said article identification number;
- further comprising a local host in communication with said database to receive the network address provided by said database;
- further comprising a network including a plurality of nodes, each associated with one of said plurality of network addresses; wherein said local host is adapted for communicating with one of said nodes using said network address generated by said database.

13. The apparatus of claim 12 wherein said identification numbers are Universal Product Codes.

14. The apparatus of claim 12 wherein said network addresses are Uniform Resource Locators.

15. The apparatus of claim 12 further comprising a remote host adapted for network communication, wherein said reader for generating said signal is resident on said local host, and said database is resident on said remote host.

16. The apparatus of claim 12 wherein said identification numbers are EAN codes.

17. The apparatus of claim 12 wherein said means for generating said signal includes a bar code scanner.

18. The apparatus of claim 12 wherein said means for generating said signal includes a keyboard.

19. The apparatus of claim 12 wherein said local host is a multi-user computer.

20. The apparatus of claim 12 wherein said local host is a single-user computer.

21. The apparatus of claim 12 wherein said means for generating said signal is coupled to said local host so that said signal is communicated to said database through said local host.

22. In an apparatus comprising means for generating a signal corresponding to a product identification number which is used to identify the article of commerce bearing an indicia on which said product identification number is encoded in accordance with an extrinsic standard that specifies the length of the identification number; a computer database having a plurality of identification numbers including said product identification number, and a plurality of network addresses, and associating each of said product identification numbers with at least one of said network addresses; and control means responsive to said signal and operatively coupled to said database for retrieving from said database at least one of said network addresses which corresponds to said product identification number;

a method for generating the address of a node on the network, comprising the steps of:

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(a) associating in computer memory at least a portion of a product identification number with the node's network address; said identification number having recognized significance in accordance with an extrinsic standard as a number identifying an article of commerce;

(b) providing an article of commerce bearing an indicia on which said identification number is encoded;

(c) reading at least a portion of said identification number from said indicia; and

(d) retrieving from said computer memory the network address associated therein with said product identification number.

23. The method according to claim 22 wherein said identification number is a Universal Product Code.

24. The method according to claim 22 where said network address is a Uniform Resource Locator.

25. The method according to claim 22 wherein said indicia is encoded in machine-readable format.

26. The method according to claim 22 where said indicia is encoded in human-readable format.

27. The method according to claim 22 wherein said step of reading is performed using a bar code reader.

28. The method according to claim 22 wherein said step of reading is performed by a human reading said indicia and entering said identification number using a keyboard.

29. The method according to claim 22 wherein the database has one or more tables containing said identification number and said network address.

30. The method according to claim 29 wherein said tables are distributed over a plurality of computers.

31. The method according to claim 29 wherein said tables are resident on a single computer.

32. The method according to claim 22 wherein said identification number is an EAN code.

33. An apparatus for using an article of commerce to access a remote computer, comprising:

(a) a machine-readable indicia associated with the article of commerce, said indicia encoding at least one of a plurality of identification numbers, said encoded identification number corresponding to the article in accordance with an extrinsic standard;

(b) an input device generating a signal corresponding to said encoded identification number; and

(c) a database containing a plurality of network addresses and said plurality of identification numbers, each of said identification numbers being associated with at least one of said plurality of network addresses; said database being responsive to said signal for providing one of said network addresses which is associated with said encoded identification number;

further comprising a local host in communication with said database to receive the network address provided by said database;

further comprising a network including a plurality of nodes, each associated with one of said plurality of network addresses; wherein said local host is adapted for communicating with a selected one of said nodes using said network address generated by said database.

34. The apparatus of claim 33 wherein said means for generating said signal is coupled to said local host so that said signal is communicated to said database through said local host.

35. An apparatus for using an article of commerce to access a remote computer, comprising:

(a) a machine-readable indicia associated with the article of commerce, said indicia encoding at least one of a

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plurality of identification numbers, said encoded identification number corresponding to the article in accordance with an extrinsic standard;

(b) an input device generating a signal corresponding to said encoded identification number; and

(c) a database containing a plurality of network addresses and said plurality of identification numbers, each of said identification numbers being associated with at least one of said plurality of network addresses; said database being responsive to said signal for providing one of said network addresses which is associated with said encoded identification number;

further comprising a local host operatively coupled to said means for generating a signal; a server operatively coupled to said local host and said database; and a network including a plurality of nodes, each associated with one of said plurality of network addresses; wherein said server is adapted for communicating with a selected one of said nodes using said network address generated by said database.

36. An apparatus for using an article of commerce to generate the network address of a computer on a network, comprising:

(a) means for generating a signal corresponding to an article identification number which is used to identify the article of commerce in accordance with a standard that specifies the length of the identification number;

(b) a database having a plurality of identification numbers including said article identification number and a plu-

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ality of network addresses, and associating each of said identification numbers with at least one of said network addresses; and

(c) control means responsive to said signal and operatively coupled to said database for retrieving from said database at least one of said network addresses which correspond to said article identification number; further comprising:

(d) a first network containing a plurality of nodes, each corresponding to one of said network addresses;

(e) a local host in communication with said network and said control means and adapted for communication with that one of said nodes corresponding to the network address retrieved by said control means.

37. The apparatus of claim 36 wherein said local host is a multi-user computer with a plurality of user terminals.

38. The apparatus of claim 36 wherein said local host is a single-user computer.

39. The apparatus of claim 36 further comprising a server, wherein said local host computer is remotely connected to said server and said database is resident on said server.

40. The apparatus of claim 39 wherein said communication between said local host and said one of said nodes is carried through said server.

41. The apparatus of claim 36 wherein said database is resident on said local host.

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US006108656A

**United States Patent** [19]  
**Durst et al.**

[11] **Patent Number:** 6,108,656  
 [45] **Date of Patent:** \*Aug. 22, 2000

[54] **AUTOMATIC ACCESS OF ELECTRONIC INFORMATION THROUGH MACHINE-READABLE CODES ON PRINTED DOCUMENTS**

# FOREIGN PATENT DOCUMENTS

WO 98/24036 6/1998 WIPO  
 WO 98/24050 6/1998 WIPO  
 WO 98/40823 9/1998 WIPO  
 WO 98/49813 11/1998 WIPO

[75] **Inventors:** Robert T. Durst; Kevin Hunter, both of Fort Myers, Fla.

[73] **Assignee:** NeoMedia Technologies, Inc., Fort Myers, Fla.

[\*] **Notice:** This patent is subject to a terminal disclaimer.

*Primary Examiner*—Wayne Amsbury  
*Assistant Examiner*—Thuy Pardo  
*Attorney, Agent, or Firm*—Greenberg Traurig, LLP; Anthony R. Barkume

## [57] ABSTRACT

The present invention is a system and method for providing automated access to electronic information stored in a database in either a local or remote location. The system utilizes a machine-readable code printed on a document, referred to herein as an intelligent document since it stores information used to automatically access the information. The machine-readable symbol comprises 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 scans the code via appropriate code scanning (e.g. bar code scanning) equipment, decodes the raw decoded data, and the file location information is then 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. Additional user-specific demographic data such as the user's name and address may also be encoded in the machine-readable code when the document is specifically tailored for individual targeting, such as mailing labels. This demographic information is uploaded to the WWW site for use by the vendor. In addition, the present invention encodes security data, such as an encryption key, for use in secure data transmissions such as electronic commerce over the Internet.

[21] **Appl. No.:** 09/309,869

[22] **Filed:** May 11, 1999

### Related U.S. Application Data

[63] Continuation of application No. 08/967,383, Nov. 8, 1997, Pat. No. 5,933,829.

[60] Provisional application No. 60/030,166, Nov. 8, 1996.

[51] **Int. Cl.**<sup>7</sup> ..... G06F 17/30

[52] **U.S. Cl.** ..... 707/10; 707/3; 707/9

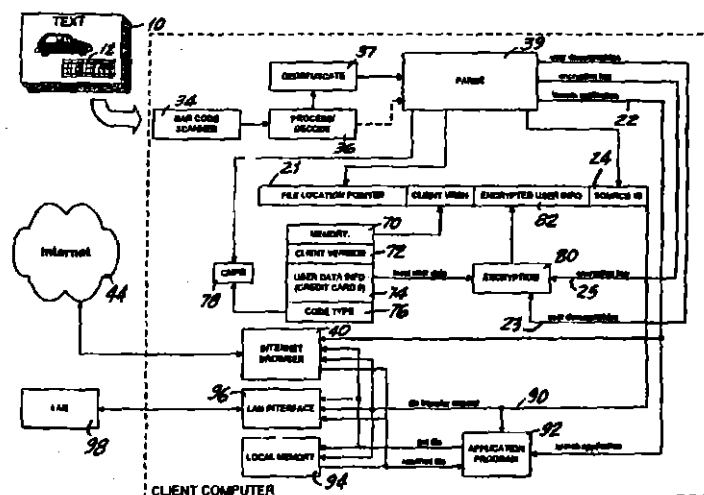
[58] **Field of Search** ..... 235/462; 380/25;  
 395/200.3, 766; 707/10, 514, 9, 3; 705/26,  
 3; 463/41

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5,933,829	8/1999	Durst et al.	707/10

31 Claims, 10 Drawing Sheets

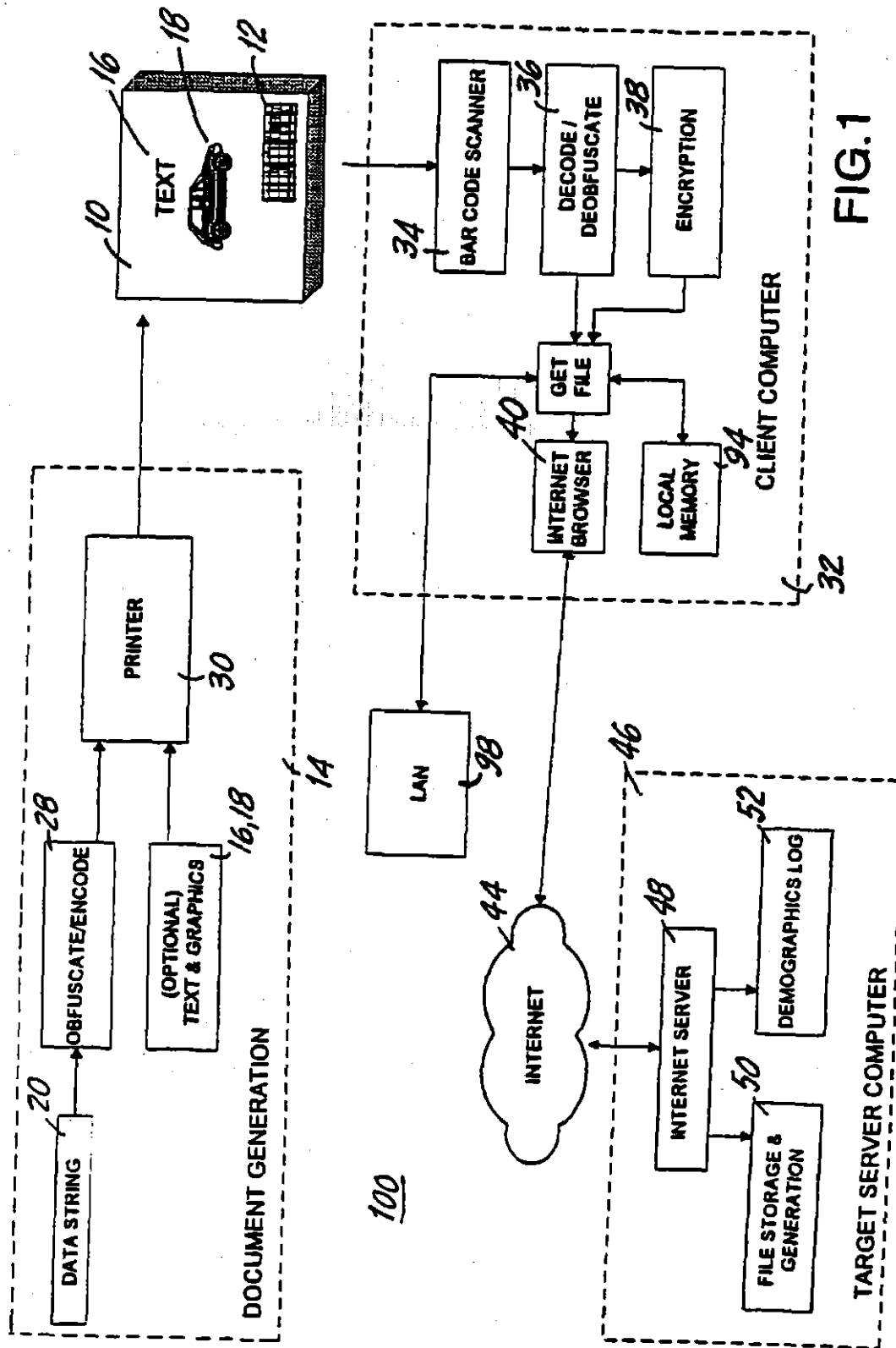


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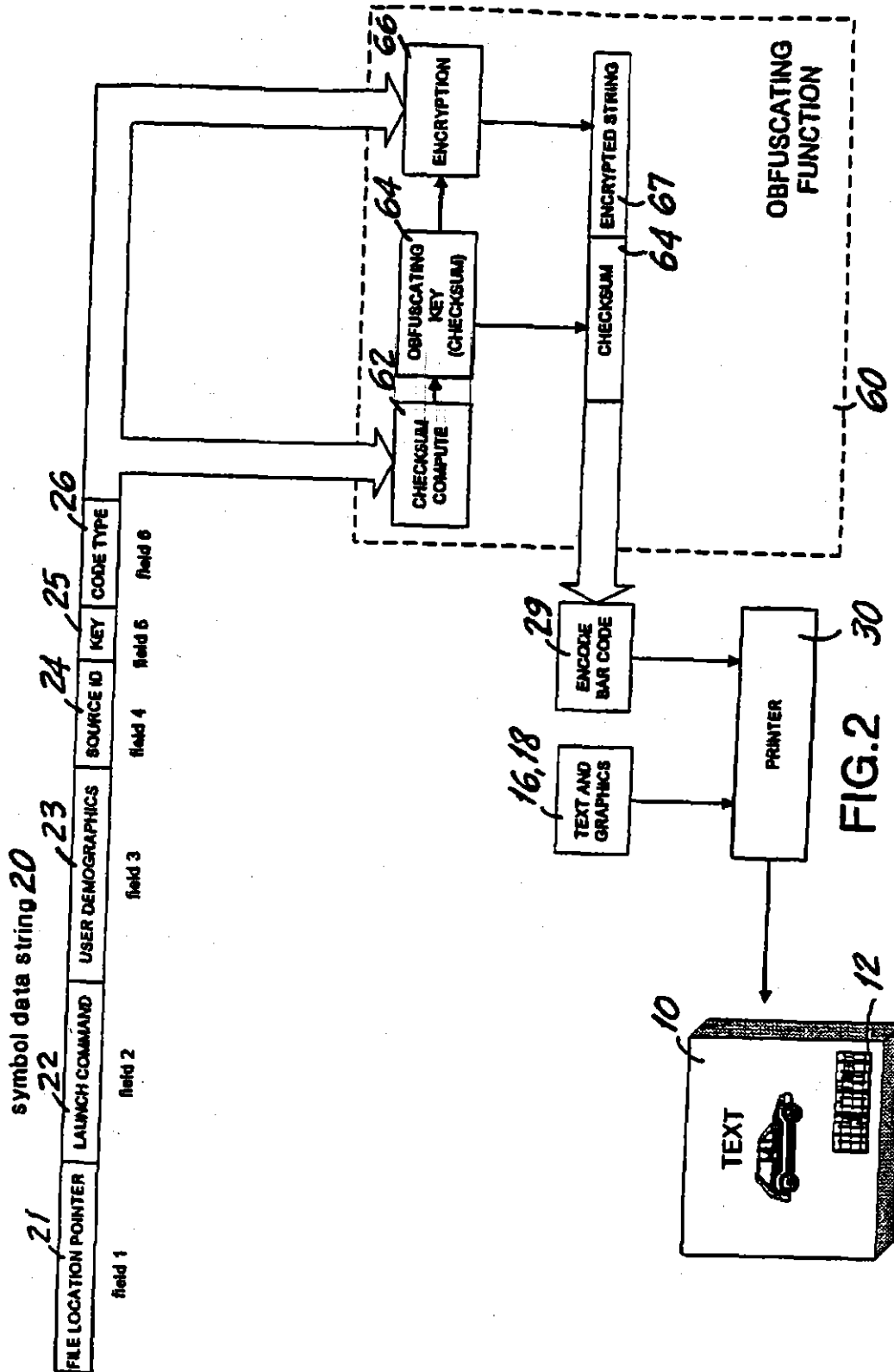


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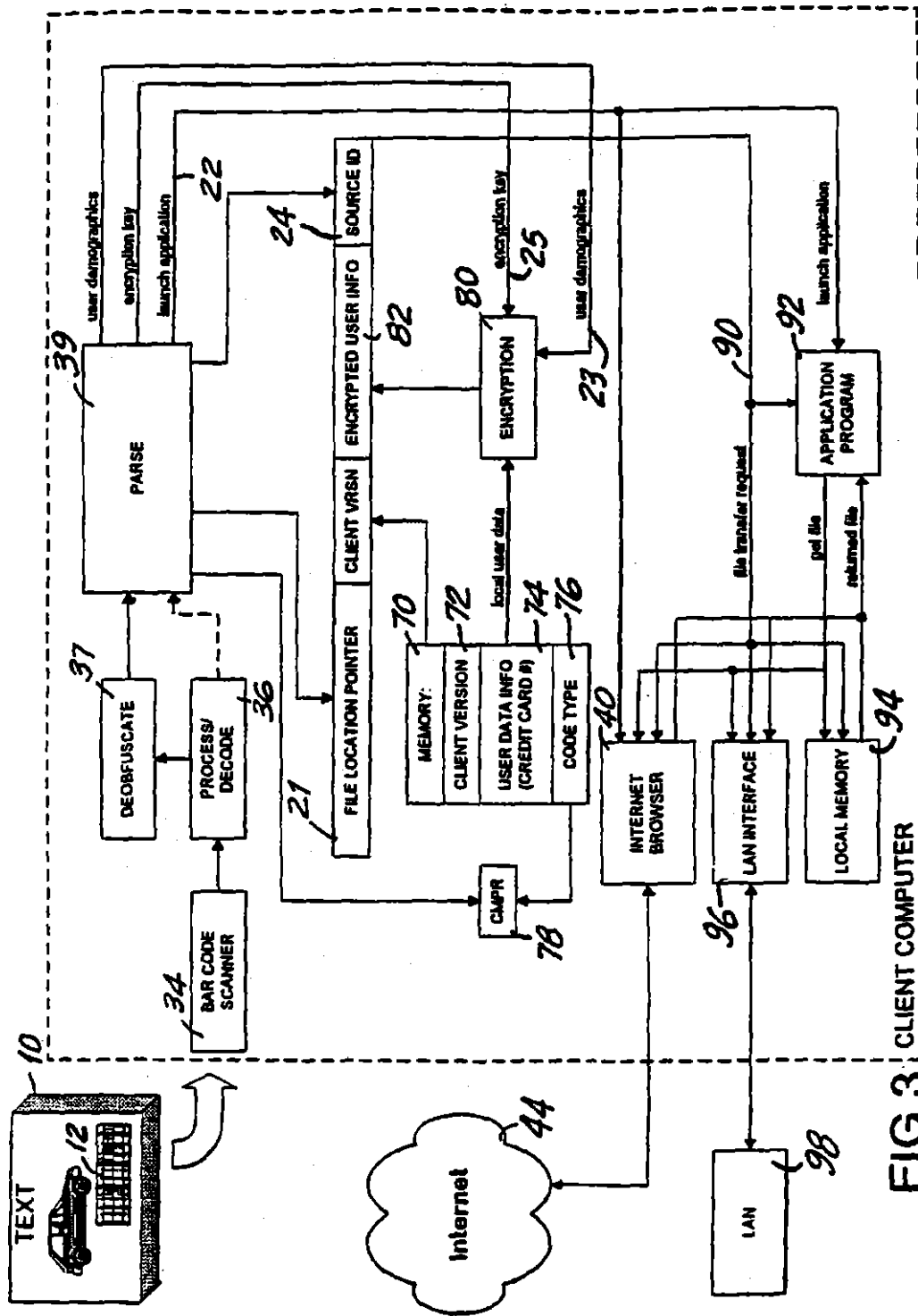


FIG. 3 CLIENT COMPUTER

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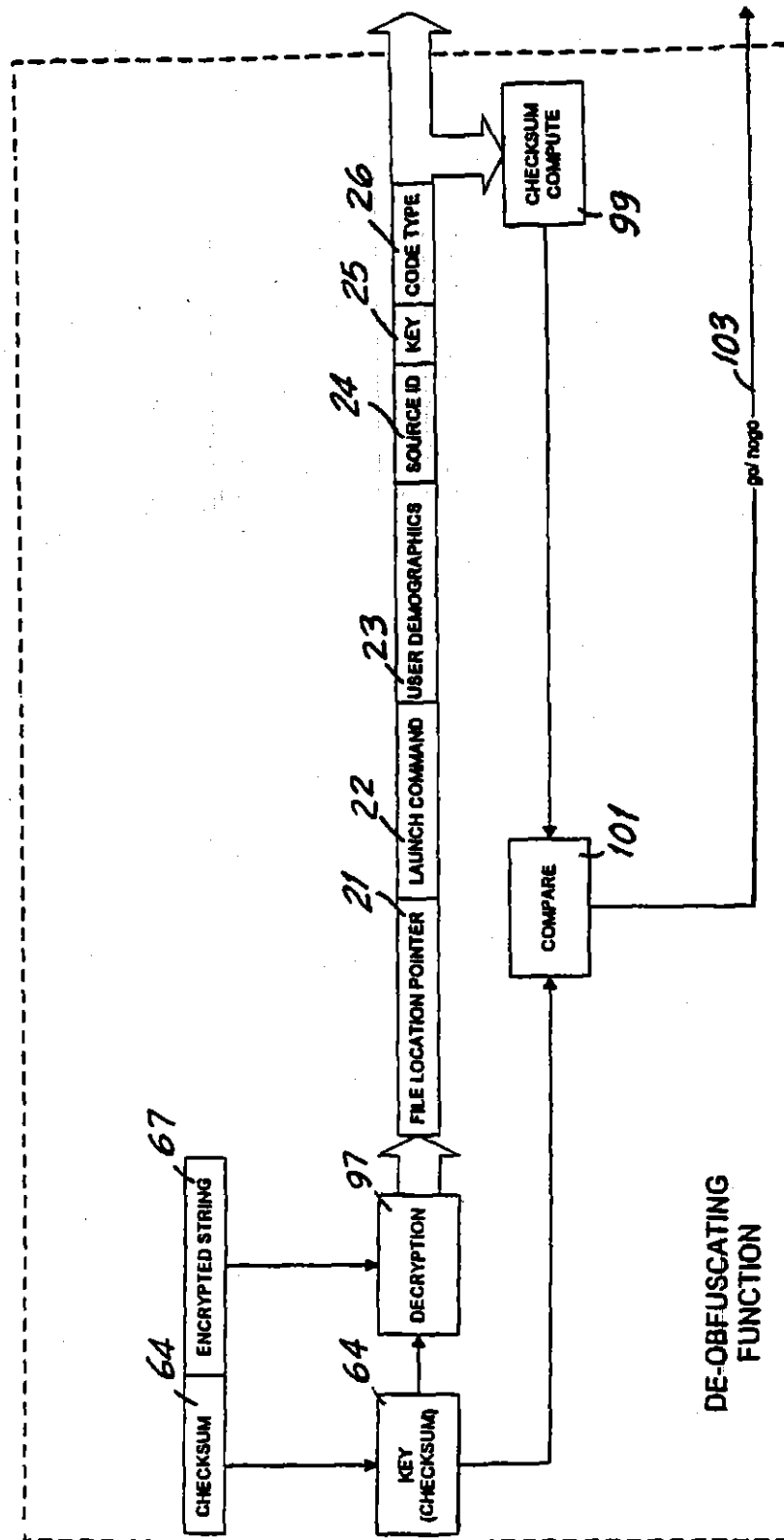


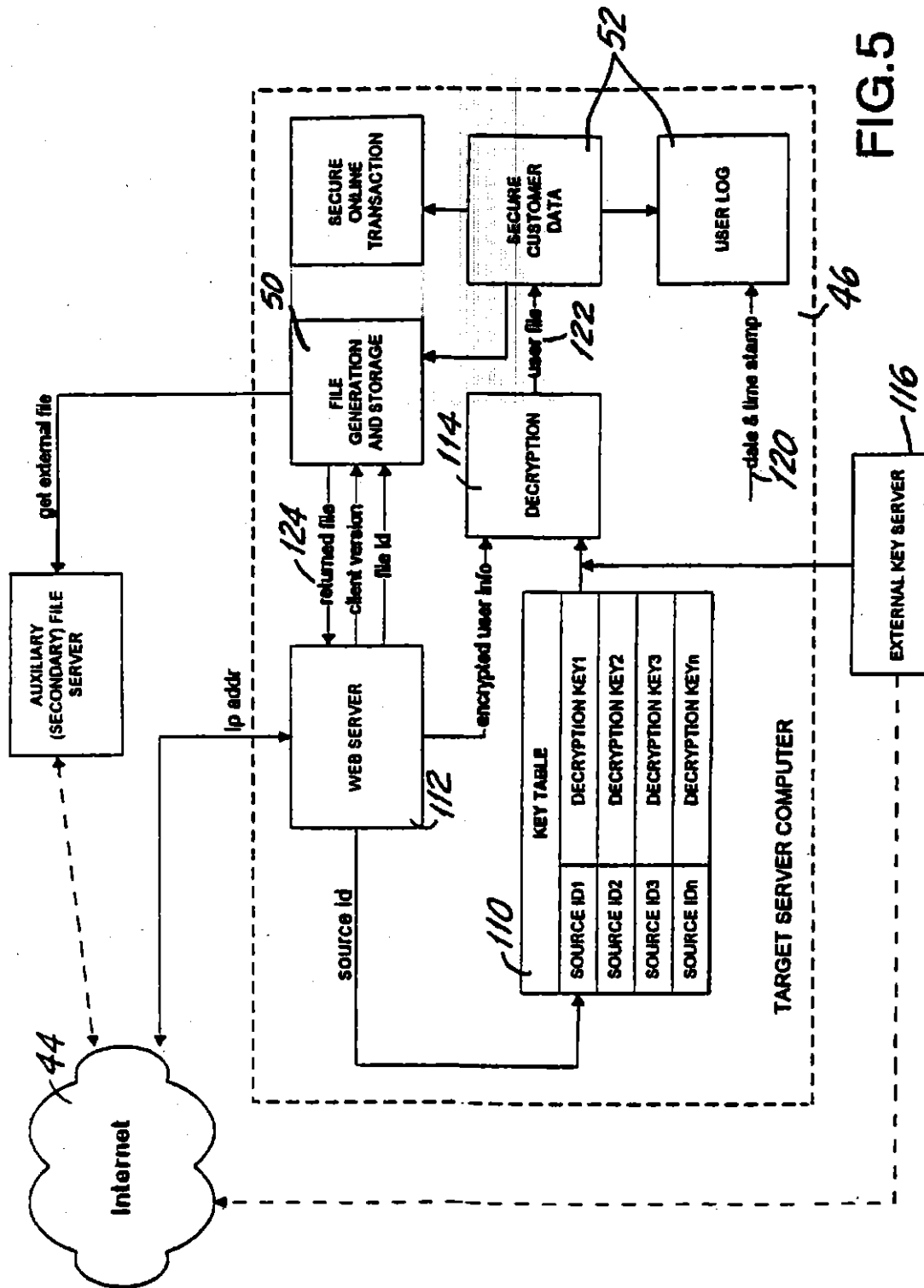
FIG. 4

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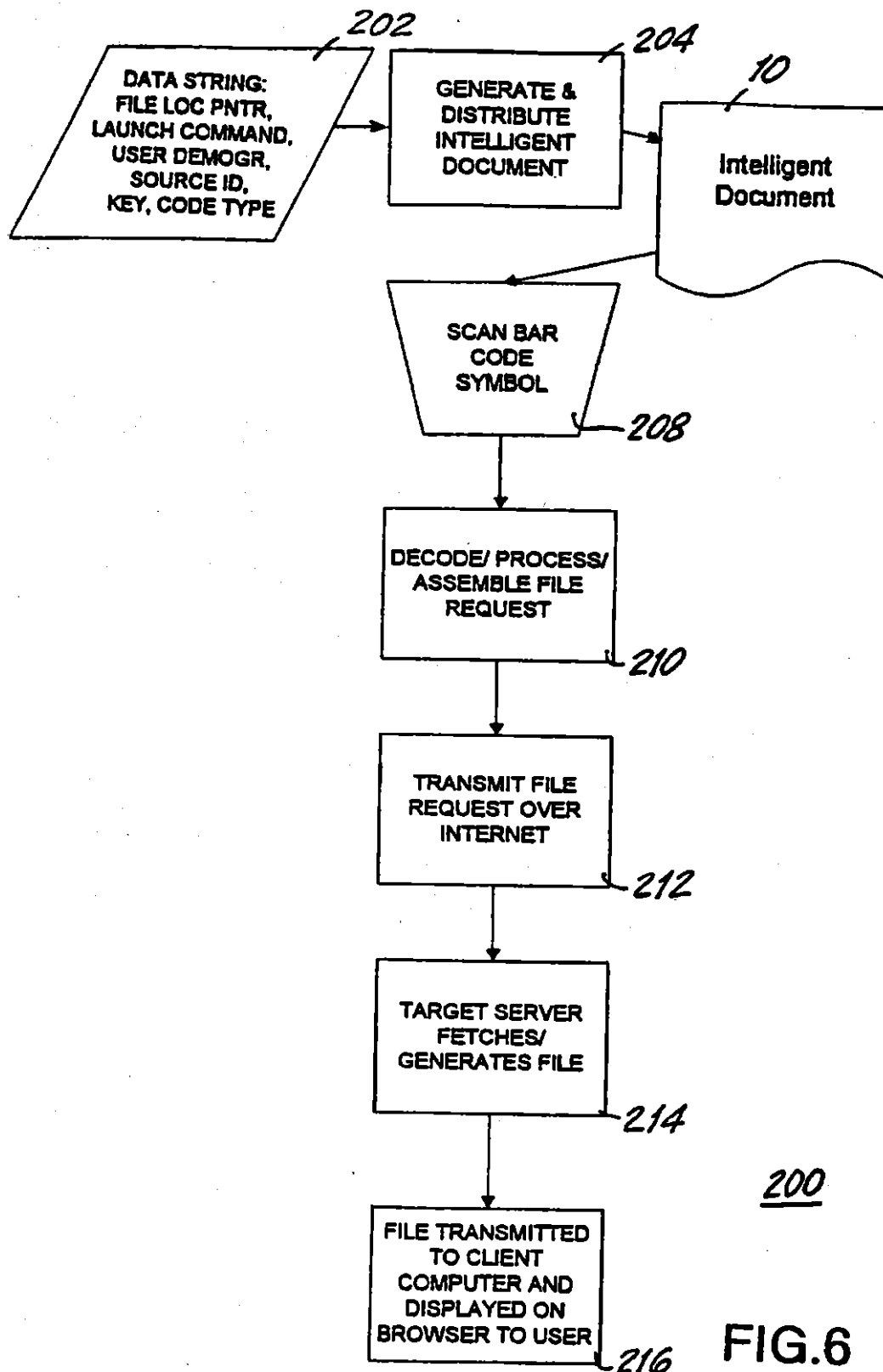


FIG.6

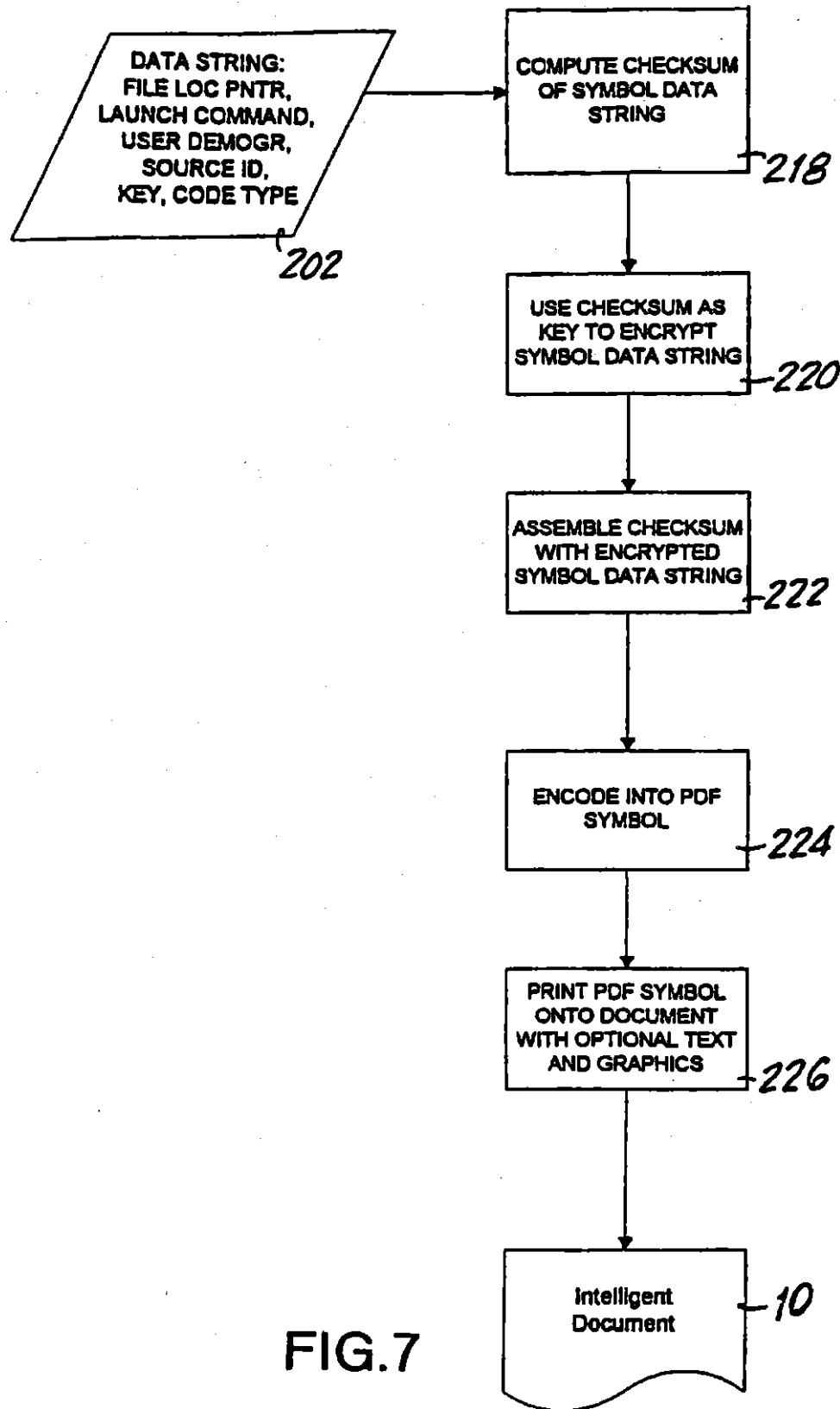


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**FIG.7**

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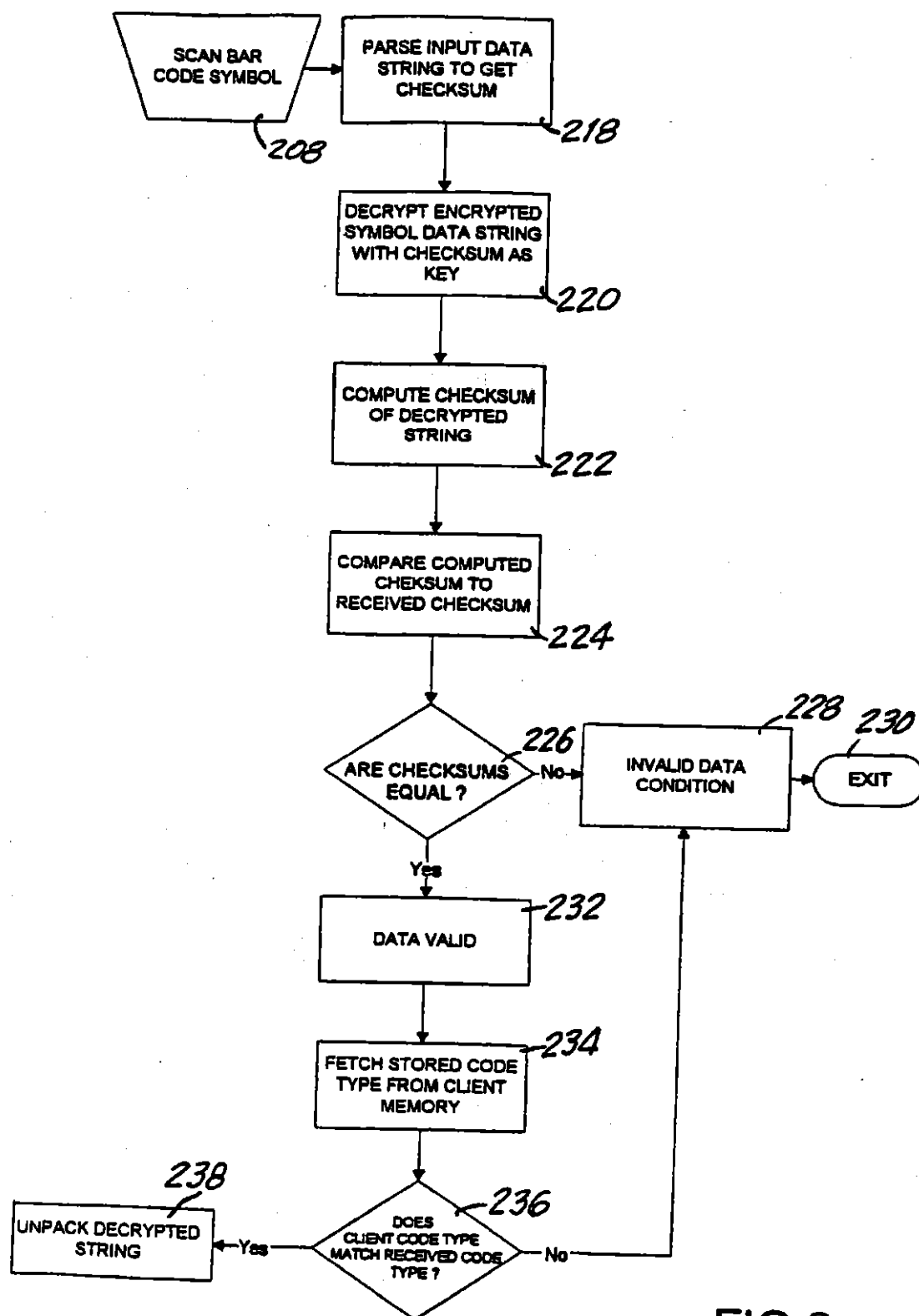


FIG.8

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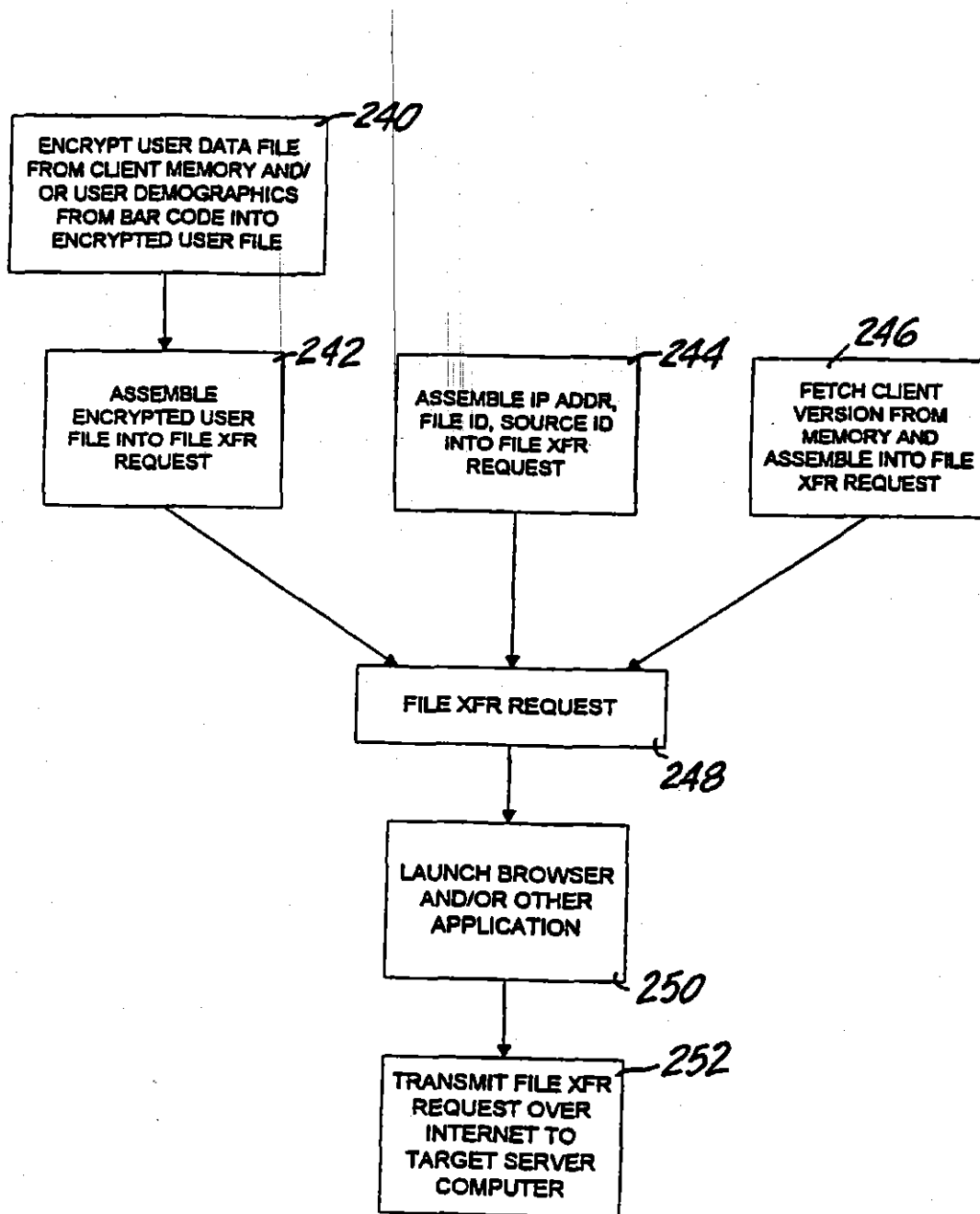


FIG.9

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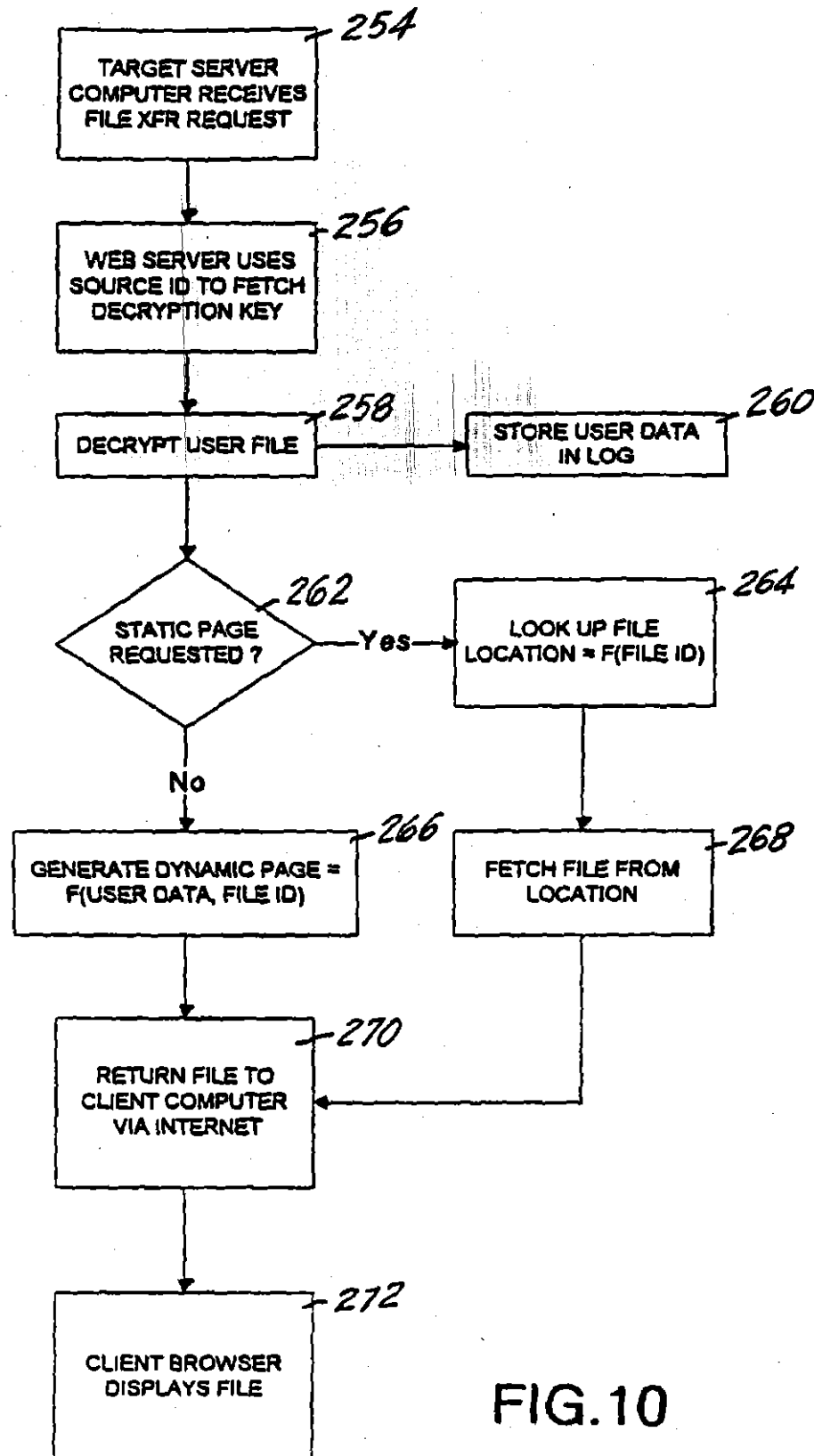


FIG. 10

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# **AUTOMATIC ACCESS OF ELECTRONIC INFORMATION THROUGH MACHINE- READABLE CODES ON PRINTED DOCUMENTS**

## **CROSS-REFERENCE TO RELATED APPLICATION**

This application is a continuation application of application Ser. No. 08/967,383, which was filed on Nov. 8, 1997 now U.S. Pat. No. 5,933,829, which was on and claimed the priority of then co-pending provisional patent application filed in the United States Patent and Trademark Office on Nov. 8, 1996 and assigned Serial No. 60/030,166.

## **BACKGROUND OF THE INVENTION**

Electronic data sources, such as conventional databases, the Internet (i.e., the World Wide Web ("WWW")) are a rich and important means of information retrieval and distribution and, increasingly, electronic commerce. However, there are problems finding the information desired in this increasingly complex and changing network of data sources. Recently introduced Internet "search engines", such as YAHOO, help by allowing a user to search on-line indices of information sources, and even full source text, for relevant key words and phrases related to their topic of interest, but even carefully structured queries by experienced users often results in hundreds and even thousands of possible "hits" which are not sufficiently specific to preclude further manual search which is both data resource inefficient and time consuming.

Because of these inefficiencies, as well as general lack of familiarity with search engines and their syntax, users often rely on human readable print and broadcast media advertising to identify source addresses (e.g., Uniform Resource Locators ("URLs")) for Web sites and other online information of interest. Print media is particularly effective since: (1) it is the most ubiquitous method of communication and advertising in the modern world; and (2) a printed document can serve as a persistent reference to be saved and used during a subsequent on-line session.

However, human readable printed source addresses, and especially URL's, are particularly difficult to manually enter in software programs, such as web browsers, due to their length and use of complex and unfamiliar symbols. If the characters in a URL are not entered exactly, retrieval is prevented or, in a limited number of cases, a legal but incorrect source is accessed. This is especially true when URLs incorporate foreign languages and/or complex query instructions to on-line databases, as is increasingly frequent in most Web sites. In addition, the inability to type or otherwise manually enter symbolic address information due to either disability or lack of training complicates use of on-line information resources such as the Internet for millions of individuals.

Finally, it is widely anticipated that Internet access will increasingly be provided through interactive cable television via Web-ready television receivers and set-top boxes used in conjunction with conventional television receivers. In this home entertainment environment, it is difficult to use keyboards for address entry due to both lack of typing skill and the cumbersome placement of these components. Another method which would eliminate typing and allow users to directly link printed addresses and query scripts to electronic information sources would be highly desirable.

Companies that host Web sites for the purpose of providing information such as advertising, often want to know the

identity and other related information of the users who visit their sites (i.e., download files therefrom). It would be quite advantageous to provide such companies or vendors with this information as part of a specific file transfer request, e.g., as part of a CGI parameters string included in a URL. Additionally, it would be desirable to be able to effect a secure manner of transferring this information, so that a user would have confidence in the system and thus send sensitive information such as a credit card number or the like with the file transfer request. This would enable electronic commerce to flourish well beyond the point it exists today.

## **SUMMARY OF THE INVENTION**

The present invention is a system and method for providing automated access to electronic information stored in a database in either a local or remote location. The system utilizes a machine-readable code printed on a document, referred to herein as an intelligent document since it stores information used to automatically access the information. The machine-readable symbol comprises 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 scans the code via appropriate code scanning (e.g. bar code scanning) equipment, decodes the raw decoded data, and the file location information is then 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. Additional user-specific demographic data such as the user's name and address may also be encoded in the machine-readable code when the document is specifically tailored for individual targeting, such as mailing labels. This demographic information is uploaded to the WWW site for use by the vendor. In addition, the present invention encodes security data, such as an encryption key, for use in secure data transmissions such as electronic commerce over the Internet.

In particular, the present invention is a method and system for a computer, 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 machine readable symbol such as a two-dimensional bar code symbol, and the machine readable symbol is rendered within a data carrier (e.g. printed on an intelligent document). A computer input device such as a two-dimensional bar code scanner is coupled to the client computer and transposes an input data string from the machine readable symbol. The computer parses the input data string to determine the file location pointer, and the file location pointer is then utilized to request the computer file designated thereby.

The file location pointer may be utilized to request the computer file by either passing it to an application program on the client computer suitable for processing the corresponding computer file, and then the application program retrieving the computer file from the specified file location. Alternatively, the file location pointer may be utilized to request the computer file by retrieving a copy of the computer file from the specified file location, and then invoking an application program on the client computer suitable for processing the corresponding computer file.

The client computer assembles a computer file transfer request word including the file location pointer and transmits

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the request word to a target server computer over a computer network system, which may be a wide area network such as the Internet or a local area network (LAN) or intranet. The file location pointer may alternatively specify the location of a computer file stored in a local memory resident in the client computer rather than on a target server computer. When the computer file to be retrieved is on a target server computer on a network, then the file location pointer is a network address associated with the target server computer and a file identifier correlated to the computer file requested by said client computer. In particular, when utilizing the Internet, the file location pointer may be in the form of a uniform resource locator (URL). In any type of networked environment, the target server computer receives the computer file transfer request word and transmits a computer file to the client computer in response thereto.

In addition to the file location pointer, the present invention takes advantage of the information density of the two-dimensional symbology by encoding a source identifier data string within the machine readable symbol. The source identifier data string is used to denote the particular source of the data carrier such as a particular magazine or ad, or can be used to denote an expected user or targeted group of users of the data carrier. The source identifier string is then transposed by the client computer, assembled within the computer file transfer request word, and transmitted to the target server computer. The target server computer stores the source identifier data string received from the client computer in the computer file transfer request word.

Additionally, the machine readable symbol also has encoded therein an encryption key associated with the source identifier data string, which is also transposed by the computer input device. The encryption key is used by the client computer to encrypt information specific to a user of the client computer, and the encrypted user information is assembled within the computer file transfer request word and transmitted to the target server computer. The information specific to a user may be obtained, prior to encryption, from a user information data file stored on the client computer, or it may be obtained from user demographics data correlated to a targeted user of the data carrier that had been previously encoded within and transposed from the machine readable symbol.

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 to determine a decryption key, and then decrypt the encrypted user information received from the client computer in the file transfer request word. The lookup table may either be stored locally on the target server computer, or it may be stored remotely on a secondary server computer.

The decrypted user information may comprise sensitive user information such as a credit card number associated with the user of said client computer, thus enabling an online electronic commercial transaction by utilizing the credit card number. The user demographics data may be used by the target server computer to determine the file to transmit to the client computer; i.e. certain files may be targeted to specific users of the system.

The machine-readable symbol may also have encoded therein an executable command to launch a software utility resident on the client computer, and the software utility is then automatically launched after the machine readable symbol is transposed. For example, the software utility may be an Internet browser program or a word processing program. In addition, specific functions may also be encoded

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in the machine readable symbol along with the application launch command, such as a command to execute a print job of the retrieved computer file.

The symbol data string may optionally be obfuscated prior to being encoded into the machine readable symbol, in which case the input string transposed must likewise be de-obfuscated by the client computer. The obfuscation may be by computing a checksum of the symbol data string, encrypting the symbol data string by utilizing the checksum as an encryption key, and assembling the checksum with the encrypted symbol data string prior to encoding into the machine readable symbol. The de-obfuscation would then be accomplished by parsing the input data string to determine the checksum, decrypting the encrypted symbol data string with the checksum as a decryption key, computing a checksum of the decrypted symbol data string, and comparing the computed checksum with the checksum from said input data string. A valid data condition would be indicated when the comparison step is successful; and an invalid data condition would be indicated when the comparison step is unsuccessful.

#### BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a diagram of the system of the present invention.

FIG. 2 is a diagram of the document generation function of FIG. 1.

FIG. 3 is a diagram of the client computer functions of FIG. 1.

FIG. 4 is a diagram of the deobfuscating function carried out by the client computer of FIG. 3, and FIG. 5 is a diagram of the target server computer of FIG. 1.

FIG. 6 is a top level flowchart of the method of the present invention.

FIG. 7 is a flowchart of the document generation of the present invention.

FIGS. 8 and 9 are a flowchart of the scanning and processing by the client computer of the present invention; and

FIG. 10 is a flowchart of method used by the target server computer of the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The system 100 of the present invention for generating and reading an intelligent document 100 is illustrated in block diagram form in FIG. 1. The system 100 comprises an intelligent document generation system 14, which encodes, assembles and prints an intelligent document 10 for subsequent scanning at a client computer 32.

The system operates with respect to FIGS. 1 and 6 as follows. A vendor who wishes to provide an intelligent document 10 programs certain parameters which will be encoded within a machine-readable code 12 and printed on the document along with text 16 or graphics 18. The document may be an advertisement in the form of a magazine insert or page, a brochure, a label for an envelope, a memorandum, and the like.

Parameters to be included within the machine-readable code depend upon the application desired by the vendor. For example, if the vendor wants the end-user to be able to load the vendor's world wide web (WWW) site automatically upon scanning the code 12, then the parameters included in the data string 20 that is assembled into the machine-readable code include a command 22 to launch an Internet

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browser application, such as NETSCAPE, and a file location pointer such as a uniform resource location (URL) code, such as www.xyzcorp.com (see FIG. 2). This information is encoded with encoding function 20 in accordance with the particular type of machine code being used. For example, one type of code which may be used by the present invention is a PDF417 symbol, which is described in detail in U.S. Pat. No. 5,304,786, which is incorporated by reference herein. The PDF417 symbol, known as a two-dimensional bar code symbol, has enough storage information to encode the browser launch command as well as the URL.

A printer 30 then utilizes the encoded data and desired text 16 and graphics 18 to print an intelligent document 10 as shown in the Figures.

The intelligent document 10 is disseminated to the end user in accordance with the methods desired by the vendor. For example, if the intelligent document is a magazine advertisement, then the user will obtain the magazine by conventional means such as purchase at a retail outlet, the mail, etc. Thus, as shown in FIG. 6, the data string at step 202 is used to generate and distribute at step 204 the intelligent document as desired.

The user, after reading the text and graphics in the document, can access the WWW site of the vendor by utilizing a scanner 34 in conjunction with his computer 32, programmed with appropriate software in accordance with the invention. That is, the user will optically scan the code 12 with an optical scanner 34. An optical scanner 34 sufficient to scan bar code symbols and the like is disclosed in U.S. Pat. No. 5,448,050, which is incorporated herein by reference. 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.

After the two-dimensional bar code data is scanned by the scanner 34 (at step 208), a decoder 36 is used at step 210 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 the browser launch command and URL which had been encoded by the vendor into the code. The WWW browser application 40 is then loaded, and the URL is used to access the WWW site of the vendor accordingly (at step 212). As a result, the user may automatically access the vendor's WWW site without having to enter the URL, thus eliminating all chances of error due to manual data input. After the file request is made at step 212, the internet server 48 at the target server computer 46 fetches or generates the target file 50, as shown in step 214. As shown in step 216, the file is transmitted to the client computer 32 and displayed on the browser 40 for viewing by the user.

The above scenario is useful when a vendor prints and distributes such intelligent documents on a mass scale. That is, the code distributed is the same for each user. In an alternative embodiment, specific user data is included with the data string 20 to provide for personalized operation as follows. This scenario is useful when the vendor makes individual printings keyed to individual users, such as when mailing labels are printed for inclusion on an envelope surrounding a magazine or the like.

In this case, the vendor may include in the code personal data such as the user's name, location, phone number, and other appropriate demographic information 23. When the user scans the document and loads the WWW site, the personal data is uploaded to the vendor's host computer 46 and stored in demographics log 52, thus providing the

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vendor with useful demographic data as to which users have actually utilized the intelligent document scanning service.

The code may also include security information useful in completing secure transfers across the Internet 44. For example, an encryption key 25 appropriate in a public or private key system may be embedded within the code. An appropriate software routine 38 in the user's computer utilizes the key after decoding it in order to encrypt certain data being sent across the Internet 44. 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 scans the associated code, and the credit card number is encoded and transmitted after the WWW site is accessed. The host computer can match the user's name (sent with the transmission) with the appropriate decryption key stored at the host, and decrypt the credit card number accordingly.

The system 10 of the present invention has additional embodiments which allow quick and easy retrieval of a data file on a local basis as well as the Internet 44. That is, the same principles may be applied within a company utilizing an intranet or local area network (LAN) 98. Thus, a department of a company may distribute fliers regarding certain events, new products, etc., and encode appropriate document access information in accordance with the teachings of the invention. The user may obtain further information by scanning the code on the document, which then causes his computer to access his network, file server, etc.

This embodiment is also useful in a small office environment, where a user prints out documents such as letters or memos that may need to be revised at a later date. It is common practice to manually type in the drive location of the document in the lower corner of the document to allow the user to easily access the document at a later date, without searching through massive amounts of files. Thus, a user may type in the text "c:\user\files\smith\clients\letters\xyzcorp\jonesl\dec12" to indicate its location on his drive 94. When he desires to edit or otherwise access the document, he would, in the prior art, have to type in the entire location after launching the proper application (e.g. word processor). In accordance with the teachings of the present invention, a machine readable code may be encoded with this information (as well as a command to launch the application) and printed on the document. When the user later desires to edit the document, he scans the code. The code is decoded, the application is launched, and the file is fetched from the location specified in the code.

The symbol data string 20 may be obfuscated by obfuscation function 28 prior to being encoded into the machine readable symbol. In this situation, the input string transposed by the client computer 32 must be de-obfuscated by de-obfuscating function 60. Referring to FIG. 2, the symbol data string is obfuscated by first computing a checksum of the symbol data string 20 by checksum computation function 62. The checksum is then utilized by the encryption logic 66 as an obfuscating encryption key 64. The symbol data string 20 is input to the encryption logic 66 as shown in FIG. 2, and provided thereby is an encrypted string 67. The encrypted string 67 is assembled with the checksum 64 (which has not been encrypted and is thus "in the clear"), and is input into an encoding function 29. The encoding

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function 29 then encodes the input checksum 64 and encrypted string 67 into a machine readable symbol, which is printed by the printer 30 onto the document 10. As mentioned above, optional text 16 and/or graphics 18 may also be printed onto the document 10 along with the machine readable code 12, if desired by the vendor.

FIG. 7 illustrates the logic flow implemented by the preferred embodiment of the present invention as thus described. That is, at step 202, the data string (which may comprise the file location pointer, a launch command, user demographics, a source identification, an encryption key, and/or a code type) is operated on to compute a checksum at step 218. At step 220, the checksum is used as a key to encrypt the symbol data string. At step 222, the checksum and encrypted key are assembled together; at step 224 (this assembled word is encoded into a machine readable symbol (such as a PDF417 two dimensional bar code symbol)). The symbol is then printed onto the intelligent document 10 with optional text or graphics at step 226.

FIG. 3 illustrates in detail the processing of the client computer 32. The machine readable symbol 12 is scanned by the bar code scanner 34, and the scanned data is processed and decoded by block 36 as well known in the art. The decoded data is input to the de-obfuscation process 37 (described in detail below), or, if obfuscation has not been implemented in the system, to parsing block 39 as shown by the dotted line.

De-obfuscation is the reverse process of obfuscation, and is shown in detail in FIG. 4. The decoded input string from decoder 36 is parsed into two constituent components; the checksum 64, and the encrypted string 67. The checksum 64 is utilized as a decryption key along with decryption logic 97 (which is the parallel process of encryption logic 66) to produce a decrypted data string that is comprised of a file location pointer 21, launch command 22, user demographics 23, source identification 24, encryption key 25, and code type 26. A checksum of this decrypted data string is then computed by checksum compute block 99, and compared by compare block 101 to the checksum 64 that was received in the clear. When the comparison is successful, then a valid condition is indicated on the go/nogo line 103. Conversely, when the comparison is not successful (the computed checksum is not equal to the received checksum), then an invalid condition is indicated on the go/nogo line 103.

The logic flow of the de-obfuscating function is illustrated in FIG. 8. At step 208, the bar code symbol is scanned by the user. At step 218, the decoded input data string is parsed to obtain the checksum, which is utilized at step 220 as a key to decrypt the remaining portion of the string (the encrypted data string). At step 222, the checksum of the decrypted string is computed, and at step 224, it is compared to the received checksum. Decision block 226 directs the flow to step 228 when an invalid data condition is detected (i.e. the checksum comparison is unsuccessful), and the routine exits at step 230. Decision block 226 likewise directs the flow to step 232 when a valid data condition is detected (i.e. the checksum comparison is successful). When successful, a code type 76 (see FIG. 3) is fetched from memory 70 at step 234, and then compared via comparator function 78 at step 236 to the code type that was in the received (decrypted) data string. When no match is found, an invalid data condition is indicated at step 228, and the routine exits at step 230. When a code type match is found, then the decrypted string is unpacked at step 238 for further processing.

With reference to FIG. 3, once the de-obfuscation process 37 is determined to be successful and the code match is

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valid, then the file location pointer 21 and source identification data 24 is loaded to a file transfer request word for subsequent loading to the Internet browser 40, LAN interface 96, or local memory 94, depending on the location of the file to be fetched. The file transfer request word may also be loaded with client version data 72, which indicates to the server which version of the client software is requesting the file.

The source identifier data string 24 that is parsed from the decoded (and de-obfuscated) scanned data string may comprise data correlated to the user (or expected user) of the intelligent document 10. As described below with reference to FIG. 5, the source identifier (source id) string will be used to access a lookup table to determine a decryption key associated with the file access, so that the target server may decrypt certain (encrypted) user information received from the client computer as part of the file transfer request word.

Local user data 74, such as the user's credit card number, is stored in memory 70 and accessed by the client computer for inclusion in the file transfer request word 90 after being encrypted by encryption block 80. That is, when it is desired to transit sensitive user data such as the user's credit card number to the target server computer 46 over the Internet 44, then the encryption block 80 will encrypt the user data by using the encryption key 25 that was obtained from the received data string. In addition, certain user demographics data 23 may be included in the data string 20 (see FIG. 2), which may be correlated to a user (or expected user) of the document 10. This user demographics data could then also be encrypted with encryption block 80 utilizing encryption key 25 to produce encrypted user information 82, for inclusion in the file transfer request word 90.

Optionally, if a launch command 22 was included in the data string 20, then it could be used to execute or launch the designated application. For example, the launch command 22 could cause a word processing program to open and fetch the target file from local memory 94. Likewise, the launch command 22 could execute an Internet browser program 40, so that the file transfer request word 90 would cause the browser to request the appropriate file over the Internet 44.

The logical flow of this process is shown in FIG. 9. At step 240, the user data is taken from memory 70 and encrypted, optionally along with user demographics data obtained from the scanned and de-obfuscated bar code symbol to produce encrypted user information 82. At step 248, the file transfer request 90 is assembled from the encrypted user information (step 242), the file location pointer (optionally comprising the IP address and file identifier) 21 and the source identifier data 24 that are obtained from the scanned and de-obfuscated bar code symbol (step 244), and the client version 72 fetched from memory 70 (step 246). The browser and/or other client application is launched at step 250, and at step 252 the file transfer request is transmitted over the Internet (or LAN) to the target server computer.

With reference to FIGS. 5 and 10, the operation of the target server computer 46 upon receiving the file transfer request will now be described. At step 254, the target server computer 46 receives the file transfer request, for example from the Internet 44. In the Internet example, the target server computer 46 is located at "IP ADDR" (internet protocol address), via means well known in the art. A web server process 112 is executing on the target server computer 46, which at step 256 uses the source identifier string from the file transfer request to fetch a decryption key from key table 110. That is, for each particular source ID, there exists a decryption key mapped thereto that is complementary to



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the encryption key 80 utilized by the client computer to encrypt sensitive user information prior to assembly into the file transfer request. The decryption key is then used at step 258 to decrypt the encrypted user information with decryption process 114 to obtain user file 122. Optionally, an external key server 116, which may be interconnected to the Internet, is used to obtain the decryption key. The decrypted user file is then stored in the secure customer data memory 52, and the user request is tracked in the user log along with the date and time 120 of the request.

As shown in step 262, if a pre-existing file (i.e. a static web page) was requested, then the file is obtained from storage 50, wherein the location is a function of the file identifier (ID) taken from the file location pointer. In this event, the file is fetched from the appropriate location at step 268 and returned to the client computer via the Internet at step 270. The file is then displayed on the client browser at step 272.

If, however, a static page was not requested, but a dynamic page must be generated, then the dynamic page is generated at step 266, for example as a function of the user data and file ID. This could occur where the file to be returned is customized to a user in accordance with is or her identifying indicia. The generated page is then returned to the client browser via the Internet as described above.

Alternatively, the requested file may be located on an external file server, which may be accessed by file generation and storage means 50 for return thereto or for direct forwarding to the client computer via the Internet, as shown by the dotted line in FIG. 5.

What is claimed is:

1. A method for a client computer to retrieve a computer file comprising the steps of:

- a) encoding a symbol data string comprising a file location pointer into a machine readable symbol;
- b) rendering said machine readable symbol within a data carrier;
- c) transposing an input data string from said machine readable symbol with a computer input device coupled to said client computer;
- d) parsing said input data string to determine said file location pointer; and
- e) utilizing said file location pointer to request the computer file designated thereby, by assembling a computer file transfer request word comprising said file location pointer, and transmitting said computer file transfer request word to a target server computer via a computer network system;

f) said target server computer receiving said computer file transfer request word and

g) said target server computer transmitting a computer file to said client computer in response thereto; wherein said machine readable symbol also has encoded therein a source identifier data string, said source identifier data string comprising data correlated to an expected user of said data carrier, and wherein said source identifier data string is transposed by said computer input device.

2. The method of claim 1 wherein said computer network system is an Internet, and wherein said computer file transfer request word is directed towards a target server computer in communication with the Internet.

3. The method of claim 2 wherein said file location pointer comprises a uniform resource locator (URL) for specifying a file on the target server computer in communication with the Internet.

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4. The method of claim 1 wherein said file location pointer comprises a network address associated with said target server computer and a file identifier correlated to the computer file requested by said client computer.

5. The method of claim 1 wherein said source transposed source identifier data string is assembled within said computer file transfer request word and transmitted to said target server computer.

6. The method of claim 5 wherein said target server computer stores said source identifier data string received from said client computer in said computer file transfer request word.

7. The method of claim 5 wherein

said machine readable symbol also has encoded therein an encryption key associated with said source identifier data string,

said encryption key is transposed by said computer input device,

said transposed encryption key is used by said client computer to encrypt information specific to a user associated with said client computer, and

said encrypted user information is assembled within said computer file transfer request word and transmitted to said target server computer.

8. The method of claim 7 wherein said information specific to a user is obtained, prior to encryption thereof, from a user information data file stored on said client computer.

9. The method of claim 7 wherein

said machine readable symbol also has encoded therein user demographics data,

said user demographics data correlated to a targeted user of said data carrier,

said user demographics data is transposed by said computer input device, and wherein

said information specific to a user is obtained, prior to encryption thereof, from said transposed user demographics data.

10. The method of claim 7 wherein

said target server computer utilizes said source identifier data string to access a lookup table to determine a decryption key associated with said encryption key, and said target server decrypts said encrypted user information received from said client computer.

11. The method of claim 10 wherein said lookup table is stored locally on said target server computer.

12. The method of claim 10 wherein said lookup table is stored remotely on a secondary server computer.

13. The method of claim 10 wherein said user information comprises a credit card number associated with said user of said client computer, and wherein on online electronic commercial transaction is accomplished by utilizing said credit card number.

14. A method for a client computer to retrieve a computer file comprising the steps of:

a) encoding a symbol data string comprising a file location pointer into a machine readable symbol;

b) rendering said machine readable symbol within a data carrier;

c) transposing an input data string from said machine readable symbol with a computer input device coupled to said client computer;

d) parsing said input data string to determine said file location pointer; and

e) utilizing said file location pointer to request the computer file designated thereby, by

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assembling a computer file transfer request word comprising said file location pointer, and transmitting said computer file transfer request word to a target server computer via a computer network system;

f) said target server computer receiving said computer file transfer request word and

g) said target server computer transmitting a computer file to said client computer in response thereto;

wherein said machine readable symbol also has encoded therein user demographics data, said user demographics data correlated to a targeted user of said data carrier, and wherein said user demographics data is transposed by said computer input device.

15. The method of claim 14 wherein said user demographics data is included in said file transfer request word transmitted to said target computer, and wherein said user demographics data is stored in said target server computer.

16. The method of claim 15 wherein said computer file transmitted by said target server computer to said client computer is at least partially determined by at least part of said user demographics data.

17. A computer system comprising:

a) a client computer interconnected to a computer network comprising a target server computer associated therewith, and

b) a computer input device coupled to said client computer, adapted to read a machine readable symbol from a data carrier and transmit to said client computer an 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 request the computer file designated thereby; comprising

means for passing said file location pointer to an application program on said client computer suitable for processing the corresponding computer file;

means for the application program to retrieve the computer file from the specified file location;

means for assembling a computer file transfer request word comprising said file location pointer, and

means for transmitting said computer file transfer request word to said target server computer via said network;

wherein said target server computer comprises:

means for receiving said computer file transfer request word; and

means for transmitting a computer file to said client computer in response to said computer file transfer request word;

wherein said input data string fields also comprise a source identifier data string, said source identifier data string comprising data correlated to an expected user of said data carrier.

18. The computer system of claim 17 wherein said computer network is an Internet, and wherein said computer file transfer request word is directed towards a target server computer in communication with the Internet.

19. The computer system of claim 18 wherein said file location pointer comprises a uniform resource locator (URL) for specifying a file on the target server computer in communication with the Internet.

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20. The system of claim 17 wherein said assembling means also assembles said source identifier data string within said computer file transfer request word.

21. The computer system of claim 20 wherein said target server computer further comprises means for storing said source identifier data string received from said client computer in said computer file transfer request word.

22. The computer system of claim 20 wherein said input data string fields also comprise an encryption key associated with said source identifier data string, and wherein said client computer further comprises means for encrypting with said encryption key a user information data file stored on said client computer, said user information data file comprising information regarding the user associated with said client computer, and

wherein said encrypted user information data file is assembled within said computer file transfer request word and transmitted to said target server computer.

23. The computer system of claim 22 wherein said client computer comprises memory means for storing a user information data file, and wherein said information specific to a user is obtained, prior to encryption thereof, from said user information data file.

24. The computer system of claim 22 wherein said input data string fields also comprise user demographics data correlated to a targeted user of said data carrier, and wherein said information specific to a user is obtained, prior to encryption thereof, from said user demographics data.

25. The computer system of claim 22 wherein said target server computer comprises

means for accessing a lookup table, said lookup table for storing a decryption key associated with said source identifier data string, to obtain said decryption key associated with said source identifier data string, and means for decrypting, utilizing said decryption key, said encrypted user information received from said client computer.

26. The computer system of claim 25 wherein said lookup table is stored locally on said target server computer.

27. The computer system of claim 25 wherein said lookup table is stored remotely on a secondary server computer.

28. The computer system of claim 25 wherein said user information comprises a credit card number associated with said user of said client computer, and wherein said client computer further comprises means for executing on online electronic commercial transaction by utilizing said credit card number.

29. A computer system comprising:

a) a client computer interconnected to a computer network comprising a target server computer associated therewith, and

b) a computer input device coupled to said client computer, adapted to read a machine readable symbol from a data carrier and transmit to said client computer an 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 request the computer file designated thereby; comprising

means for passing said file location pointer to an application program on said client computer suitable for Processing the corresponding computer file;

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means for the application program to retrieve the  
computer file from the specified file location;  
means for assembling a computer file transfer  
request word comprising said file location  
pointer, and  
means for transmitting said computer file transfer  
request word to said target server computer via  
said network;  
wherein said target server computer comprises:  
means for receiving said computer file transfer  
request word; and  
means for transmitting a computer file to said client  
computer in response to said computer file transfer  
request word;

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wherein said input data string fields also comprise user  
demographics data correlated to a targeted user of  
said data carrier.  
30. The computer system of claim 29 wherein said user  
demographics data is included in said file transfer request  
word transmitted to said target computer, and wherein said  
target server computer comprises means for storing said user  
demographics data.  
31. The computer system of claim 30 wherein said target  
server computer comprises means for utilizing said user  
demographics data to at least partially determine the com-  
puter file transmitted by said target server computer to said  
client computer.

\* \* \* \* \*

**D**



US006199048B1

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

(10) **Patent No.: US 6,199,048 B1**  
 (45) **Date of Patent: Mar. 6, 2001**

(54) **SYSTEM AND METHOD FOR AUTOMATIC ACCESS OF A REMOTE COMPUTER OVER A NETWORK**

(75) **Inventors:** Frank C. Hudetz, Lisle; Peter R. Hudetz, Plainfield, both of IL (US)

(73) **Assignee:** NeoMedia Technologies, Inc., Fort Myers, FL (US)

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** 09/232,908

(22) **Filed:** Jan. 15, 1999

#### Related U.S. Application Data

(62) Division of application No. 08/538,365, filed on Oct. 3, 1995, now Pat. No. 5,978,773.

(60) Provisional application No. 60/000,442, filed on Jun. 20, 1995.

(51) **Int. Cl.<sup>7</sup>** ..... G06F 3/05; G06K 7/10

(52) **U.S. Cl.** ..... 705/23; 707/4; 235/462.01; 235/472.01

(58) **Field of Search** ..... 709/217, 245, 709/220, 227; 705/23, 21, 27, 26; 235/462, 472.01, 462.01; 345/356; 707/4

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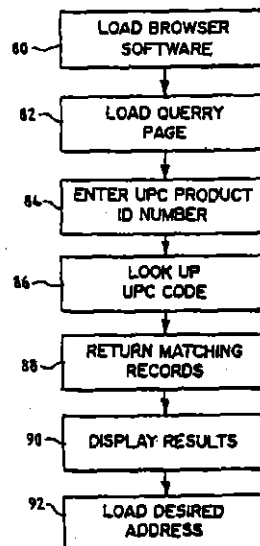
*Primary Examiner*—Daniel H. Pan

(74) *Attorney, Agent, or Firm*—Greenberg Traurig, LLP; Anthony R. Barkume

#### (57) ABSTRACT

A system and method for using identification codes found on ordinary articles of commerce to access remote computers on a network. In accordance with one embodiment of the invention, a computer is provided having a database that relates Uniform Product Code ("UPC") numbers to Internet network addresses (or "URLs"). To access an Internet resource relating to a particular product, a user enters the product's UPC symbol manually, by swiping a bar code reader over the UPC symbol, or via other suitable input means. The database retrieves the URL corresponding to the UPC code. This location information is then used to access the desired resource.

95 Claims, 5 Drawing Sheets

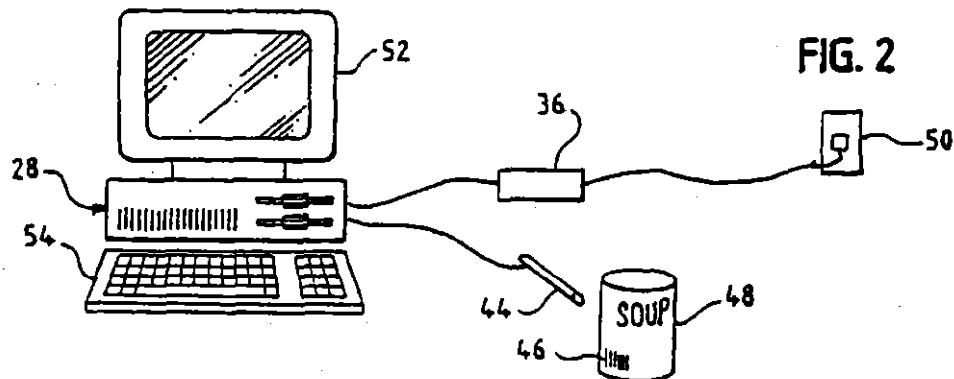
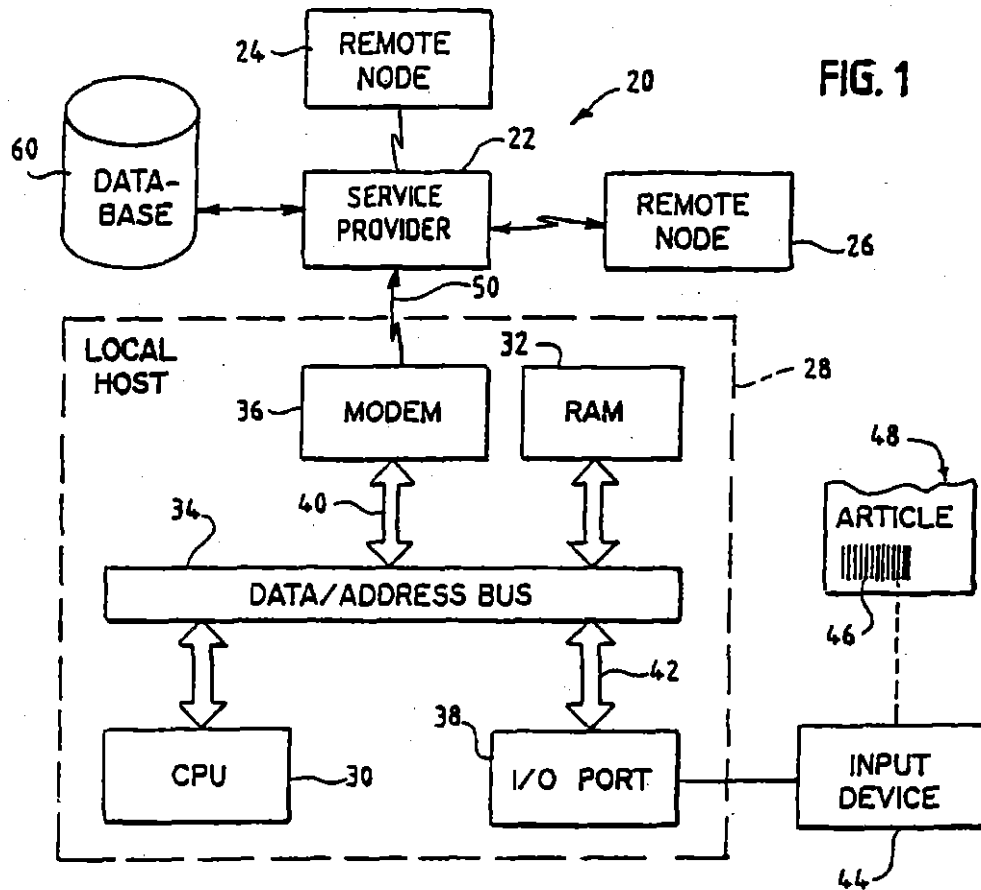


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FIG. 3

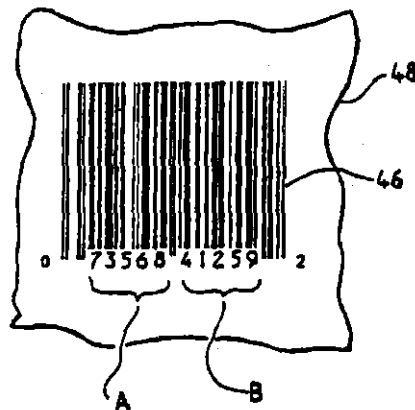


FIG. 5

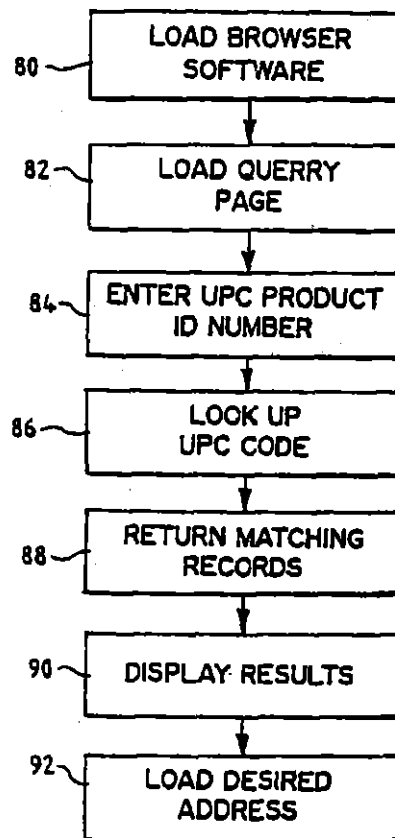


FIG. 4

	70	72	60	74	76
62	UPC-A	UPC-B	URL	DESC	
64	31251	00301	sample.soup.com/subfile/index.html	soup	
66	31251	00302	sample.soup.com/promotion/main.html	giveaway	
68	31251	00400	test.milk.org	milk	
	4205		cars.com/testdrive/main.html	cars	

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FIG. 6

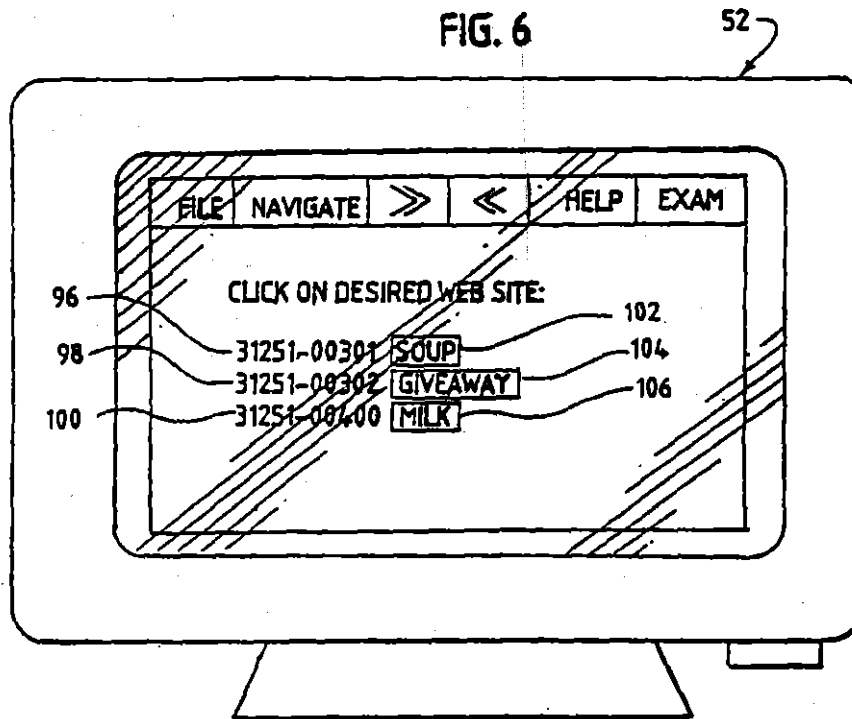
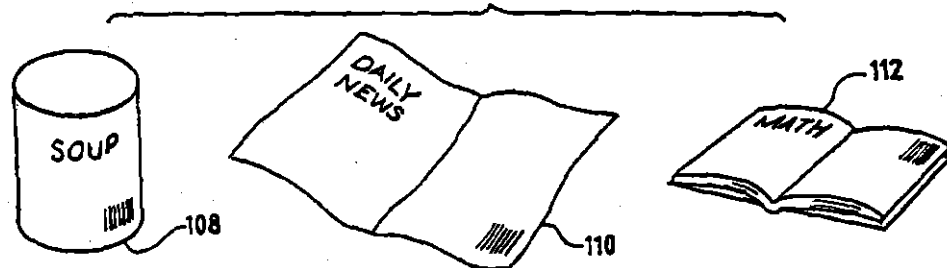


FIG. 7





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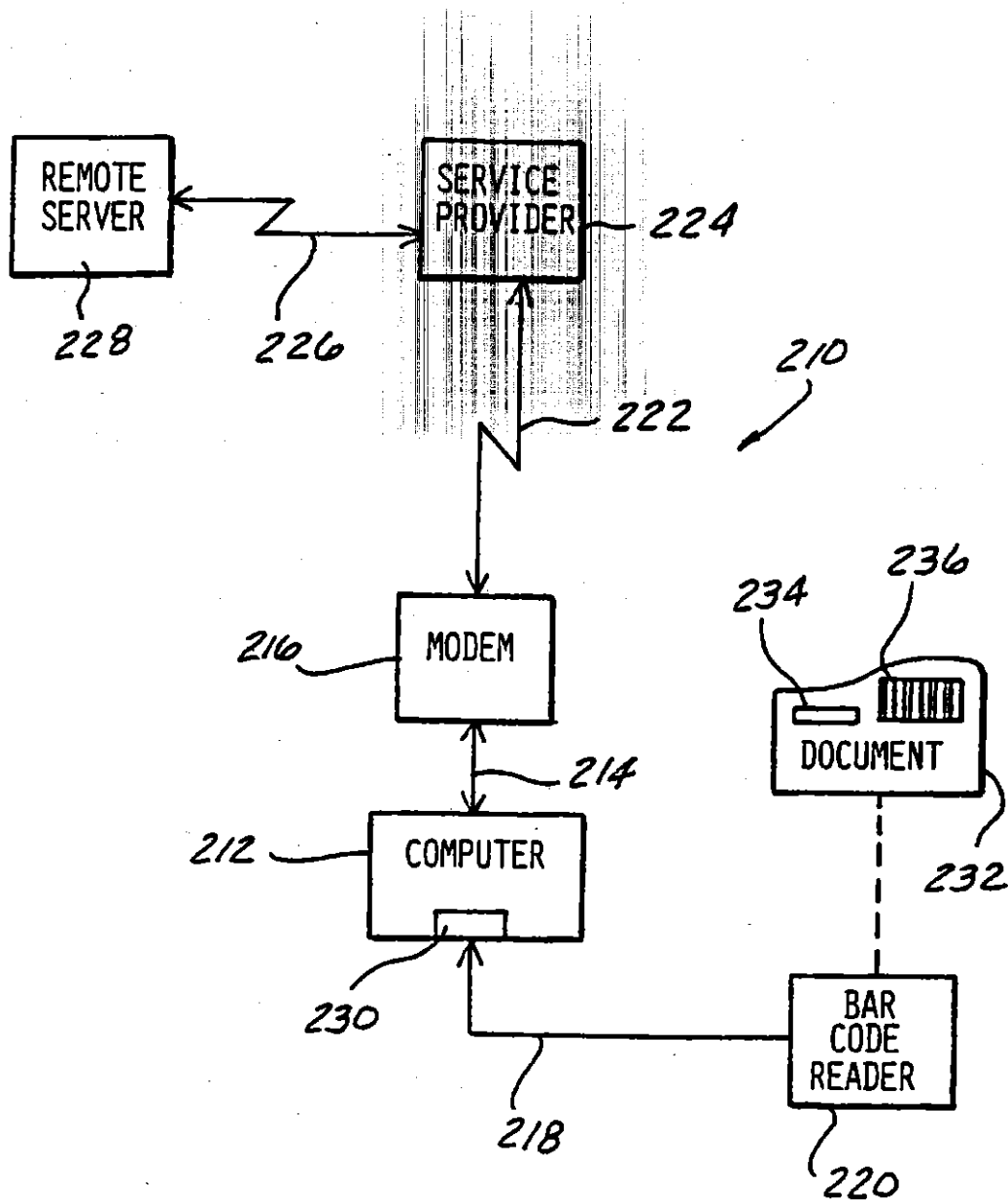


FIG - 8

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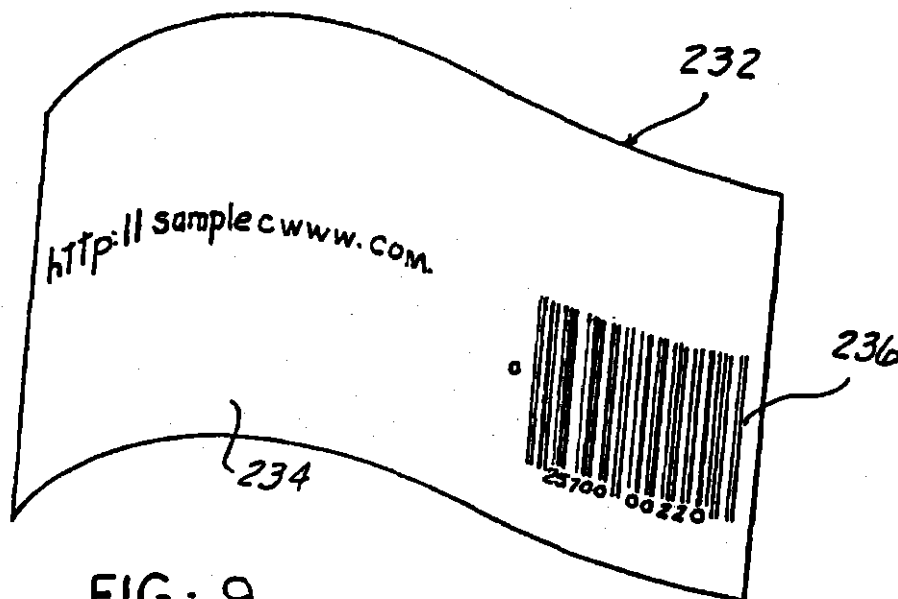


FIG. 9

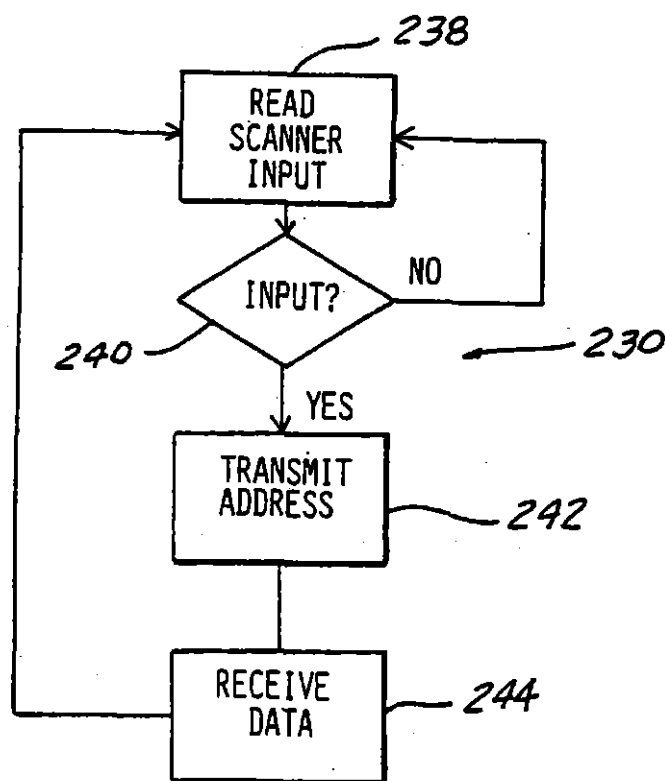


FIG. 10

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# SYSTEM AND METHOD FOR AUTOMATIC ACCESS OF A REMOTE COMPUTER OVER A NETWORK

## RELATED APPLICATION DATA

This application is a divisional application of application Ser. No. 08/538,365, filed on Oct. 3, 1995, now U.S. Pat. No. 5,978,773, which claims priority of provisional Application Ser. No. 60/000,442, filed on Jun. 20, 1995, and entitled "Method and Apparatus for Interfacing with Remote Computers" (hereinafter, "our copending application"), the disclosure of which is hereby incorporated by reference in its entirety.

## FIELD OF THE INVENTION

This invention relates to computer communications generally, and more specifically to techniques for giving users convenient access to information located on computer networks such as the Internet.

## BACKGROUND OF THE INVENTION

A computer network is a set of computers (or "hosts") which are able to communicate electronically. In logical terms, the network can be viewed as a set of nodes or "sites", with each computer on the network being home for one or more nodes. Generally speaking, each host is assigned a numeric address, which the network uses to route information to that particular host. To facilitate human use of networks, addresses are often given alphanumeric codes (or "mnemonics"), which are easier for people to remember. For example, the numeric address 200.98.322.56 may be assigned the mnemonic "sample.com."

At the present time, the world's most important network is the Internet. The Internet is a massive worldwide collection of computer resources, connected together in network fashion by a series of communication protocols known as TCP/IP. Many sites on the Internet can be accessed in accordance with popular standard protocols or formats such as Gopher and Hypertext Transport Protocol ("HTTP"). These sites act as remote servers, providing information to users' computers (or "clients") in accordance with a particular format or protocol. The client system (often an individual's personal computer) must have the necessary software to handle the server's particular protocol.

For example, sites set up in accordance with HTTP are nicknamed "Web sites". If a user wants to access Web sites, she must have a computer connected to the Internet and equipped with software for communicating in accordance with the HTTP protocol. Such software is often called a "browser," because it allows users to browse (or, in the parlance of the enthusiasts, "surf") from Web site to Web site, much the way one might browse through a library. This process is facilitated by the fact that most Web sites have hypertext links to other Web sites, which the user can activate by clicking a mouse on a highlighted portion of the screen.

Typical browser software also maintains a list of sites the user has visited, which the user can recall using commands such as "back" and "forward." These commands, coupled with the hypertext links between Web sites, give users the sensation of "navigating" through a seemingly infinite realm of information, which is popularly referred to as "cyberspace" or the "World Wide Web." Users can also specify a Web site by manually typing in the site's location as a Uniform Resource Locator ("URL"). The URL specifies the precise location of a particular resource, and has three fields:

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<resource type> <domain name> <path>

Domain name, as explained above, is the alphanumeric network address of the host on which a particular resource resides. The "path" is the specific directory and file on the host where a resource is stored. A typical URL is <http://bongo.cc.utexas.edu/neural/cwsapps.html>.

For example, the command "Go <URL>" would cause browser software to request the information residing at the site specified by the URL. This is called "pointing" the browser to the desired Web site. The Web server at the designated URL processes the browser's request by transferring a copy of the file specified by the URL to the user's local host computer. The transferred file includes embedded commands in the hypertext markup language ("HTML"), which cause the client's browser software to display and handle the transferred file in a desired manner.

Cyberspace is not limited to the World Wide Web or the Internet. Massive amounts of information are also available on networks maintained by on-line service providers under the service marks CompuServe, Prodigy and America Online, for example. Users typically access these on-line services via telephone modem connection. To the end user, these networks appear to be a series of sites or locations or "rooms" offering various types of information. The addresses for these locations are assigned by the on-line service providers. Navigation among these locations is handled by proprietary client software, which runs on the user's personal computer.

Many users learn of resources on the Internet or a proprietary on-line service through magazine articles and advertisements. These articles and advertisements include the necessary URL or other network address to access the desired site. Many publications compile lists of sites they deem particularly worthwhile. When a user sees a listing for a site which looks interesting, he can manually enter the published URL or other mnemonic address into his browser or other software, and access the site.

As explained in our copending application, we realized that published computer addresses—whether URLs or otherwise—were difficult for people to use because they have to be tediously entered into their computers. A good example of an address which may be difficult to enter is the University of Texas address cited above. The problem is particularly acute for persons with a visual or physical disability.

Another problem using the Internet, we realized, is that many users have trouble even finding URLs or other network addresses for desired sites such as Web pages. Accordingly, Web site sponsors publish their Web site URLs in print advertising and on packaging. The difficulty with this approach however is that the URLs are still long, and cumbersome to remember and enter into a computer.

In our copending application, we proposed to resolve these problems by allowing people to access published locations without having to manually enter the published address. In accordance with one embodiment of the invention, the mnemonic address or verbal description of a network location is published along with the location's numeric address in bar code format. The user's computer is equipped with a bar code reader and browser software. The bar code reader is suitably interfaced to the computer's browser software to allow bar code input to be accepted as address information. When the user sees an interesting published address, he scans the associated bar code using the bar code reader, thereby loading the desired numeric address into the browser. The browser then accesses the Web or other site corresponding to that numeric address.

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We are finding several problems with this and other approaches that have been tried. First, some URLs and other network addresses contain upwards of 20-30 characters, and therefore require very long bar code symbols, which can clutter advertising and packages, and may not be practical from either an esthetic or technical perspective. Second, placing URLs on printed material (whether or not in bar code format) requires manufacturers to redesign products, packaging and/or advertisements, and many manufacturers may be reluctant to do this. Third, previous proposal, if the network address is changed, the package needs to be redesigned, and packages already in the marketplace will have incorrect address information.

### SUMMARY OF THE INVENTION

The present invention offers a better way for consumers and others to access resources on remote computers, particularly Web sites. In accordance with one aspect of the invention, the dissemination and entry of network addresses is accomplished by means of existing identification standards (e.g., bar codes) found on ordinary products like soup or soda, in conjunction with a centralized database of network locations.

One embodiment of the invention is a system in which a bar code or other indicia is associated with a product or other article of commerce. The indicia encodes (in human and/or machine readable form) a UPC or other identification number, which is associated with the article in accordance with an extrinsic standard. A computer database is provided that relates standard UPC codes to Internet URLs or other network addresses. To access a network resource relating to a particular product, the user swipes a bar code reader across the product's UPC symbol. The database then retrieves the URL corresponding to the UPC product data. This location information is then used to access the desired resource on the network.

In accordance with another aspect of the invention, network addresses are directly encoded into bar code format. In this manner, the necessity of manually entering the address is eliminated. Users can more quickly review published lists of Web Sites or other locations. The bar-coded address can also be printed on removable stickers or detachable cards, allowing users to readily clip the stickers or cards for future reference.

In accordance with yet another aspect of the invention, navigational commands (in addition to addresses) can be published together in both human-readable and bar code formats. These commands include common commands such as "back" and "forward," as well as more specialized command sequences, such as the commands necessary to access particular services, files, and documents on the Internet or the proprietary on-line services. Rather than manually enter these commands, the user selects a desired command by scanning its associated bar code. The output of the bar code reader is accepted by the browser software as the selected command.

The invention offers a number of important advantages. First, because product identification information is already widely disseminated using standardized and preassigned codes, the invention eliminates the need for separately disseminating domain names or other network location data. Further, the invention can be implemented without requiring manufacturers to redesign packaging or other articles, or to develop special bar code indicia. This overcomes a Catch-22 often facing new technologies: manufacturers will not participate until there is widespread consumer interest; con-

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sumers are not interested until there is widespread manufacturer participation. With the invention, mass participation by manufacturers in the technology is automatic.

Second, the invention allows practical use of bar codes and other machine readable media for entry of network location data. As we realized, encoding URL data in bar code format is not practical because the resulting bar codes are too long. By using existing UPC product codes in combination with the database of network locations, users have the benefit of bar code or comparable technology for entering network location data. Thus, the necessity of manually entering the address is eliminated. Users can access a desired site by simply using a bar code reader. The UPC can also be printed on removable stickers or detachable cards, allowing users to readily clip the stickers and cards for future reference. This is particularly useful when the user reads about the location at a time when he does not have access to a computer.

Third, the invention overcomes the problems encountered when network addresses are changed. Network addresses can change as companies reorganize their on-line marketing strategies. Also, Internet addresses are assigned by an independent third party—InterNic—which may in some cases have the authority to unilaterally change a company's address. Finally, unforeseen trademark conflicts (involving for example Internet domain names) may require adoption of new addresses. With the invention, a new address assignment requires only that the database of addresses be updated. Products, packaging, advertisements and the like bearing the standard identification codes need not be redesigned.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a computerized system for interfacing with a computer network in accordance with the invention.

FIG. 2 is a perspective view of the local host computer shown in FIG. 1.

FIG. 3 is an enlarged view of the article of commerce shown in FIG. 1, illustrating in detail the UPC symbol thereupon.

FIG. 4 is a tabular view of the database shown in FIG. 1.

FIG. 5 is a flow chart illustrating the operation of the system of FIG. 1 in accordance with the invention.

FIG. 6 is an idealized view of the CRT screen of the client system of FIG. 1 displaying information in accordance with the invention.

FIG. 7 is a perspective view of articles of commerce which can be used in accordance with the invention to access remote computers.

FIG. 8 is a block diagram of a computerized apparatus for interfacing with a computer network in accordance with a second embodiment of the invention.

FIG. 9 is an idealized perspective of the document of FIG. 8 having a network address in both bar code and human readable formats.

FIG. 10 is a flow chart illustrating the operation of the apparatus of FIG. 8 in accordance with the invention.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

#### 1. Overview

FIG. 1 is a block diagram illustrating one application of the invention, namely the use of an ordinary article of commerce to access sites on the Internet's World Wide Web. As explained below, this embodiment of the invention

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allows a person who desires Internet resources concerning a particular product to access those resources using the product's UPC symbol. The data encoded on the UPC symbol can be entered manually or (for greater convenience) using a bar code reader.

Referring to FIG. 1, the Internet 20, illustrated here in generalized format, includes a service provider 22 and two remote nodes 24 and 26. In this case, service provider 22 is a local Internet access provider. Service provider could also be an online service provider, such as America OnLine®, Compuserve®, Microsoft Network and Prodigy®. In such cases, local host 28 need not be on Internet 20—that is, need not have a network address.

An end-user (not shown) accesses Internet 20 using local host 28, which in this case is an IBM compatible personal computer including a CPU 30, a random access memory 32 and an address/data bus 34 by operatively connecting CPU 30 and memory 32. Unless otherwise specified, the term "memory" herein includes any storage device, including RAM, ROM, tape or disk drives (or collections or networks of tape or disk drives), and any other device for storing information. A modem 36 and I/O port 38 are attached to bus 34 by a suitable interfaces 40 and 42, respectively. An input device 44 is connected to bus 34 via I/O port 38. Input device 44 is a commercially available wand-style bar code reader reads a Uniform Product Code ("UPC") bar code symbol 46 affixed to an article of commerce 48. Alternatively, input device 44 could be a card reader, optical character or voice recognition system, touch screen, scanner, pen, keyboard or other known input device.

Local host computer 28 need not be a personal computer, and could for example be a mainframe or minicomputer having a terminal by which the user could enter and receive data. In that arrangement, input device 44 would be attached to the terminal.

Modem 36 is adopted for electronic communication via a suitable telephone link 50 with service provider 22. Computer 28 functions as an Internet host because it is connected to service provider 22 using Point to Point Protocol ("PPP") via telephone link 50. Other telecommunications channels may be used, such as ISDN or a connection which incorporates a third party intermediary network such as Tym-Net<sup>SM</sup>. Alternatively, local host 28 could be connected directly to Internet 20, as is likely to be the case where local host 28 is a larger computer, such as mainframe. FIG. 2 offers a perspective view of local host 28 and article of commerce 48 and also illustrates a CRT monitor 52 and keyboard 54 suitably coupled to bus 34.

In this illustration, local host 28 is used to access Internet resources (or "Web sites") on remote nodes 24 and 26, which are available using the HTTP protocol. HTTP uses a client-server architecture, with remote nodes 24 and 26 acting as servers, and local host 28 acting as a client. Local host is equipped with Netscape Navigator brand Web browser software which enables it to function as an HTTP client.

Remote nodes 24 and 26 have pre-assigned network locations (or "domain names"), and desired resources (such as a particular Web site) are located in specific directories and files (or "paths") resident on a remote nodes 26 and 28. The precise locations of those resources are specified using URL, which, as explained above, includes three fields: <resource type> <domain name> <path>. To access resources of a particular remote node 24 or 26, local host 28 requests those resources from Internet 20 using the appropriate URL. Thus, the URL functions as a more precise kind of network address than a domain name.

The URL required is often supplied by the user. Users learn about the existence of a desired resource (and its

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corresponding ULR) through a variety of means, including publication in a printed advertisement. In current practice, the URL acquired from a printed source must be entered using a keyboard. As explained above, this can be tedious. Moreover, in many cases, users may have trouble finding references to desired Web pages.

## 2. Article of Commerce

In accordance with the invention, access to desired resources on remote nodes 24 and 26 is achieved using an article of commerce 48. The term "article of commerce" includes tangible things that are sold or moved through commerce, such as consumer products, packaging, and printed media including books, newspapers, magazines, stickers, fliers, cards, tags and labels. Article 48 bears a standard UPC bar code symbol or indicia 46. Symbol 46 is shown in greater detail in FIG. 3, and may be affixed to article 48 in any suitable manner, including printing directly on the article or its packaging, or applied to labels or tags attached or otherwise affixed to the article. In accordance with UPC standards, symbol 46 encodes a ten-digit number (the "product identification number"). As shown in FIG. 3, the product identification number encoded in UPC symbol 46 consists of two five-digit fields, A and B. Field A is a unique, pre-assigned number signifying a particular manufacturer. Field B is a number identifying one of the manufacturer's products. In the United States, UPC product identification numbers are assigned by the Uniform Code Council, Inc.

UPC symbol 46 provides a machine-readable number that uniquely identifies a particular product and its manufacturer. This is useful at the retail point-of-sale, where purchase of a particular item is recorded by scanning the item's bar code symbol.

There are numerous other formats and systems for assigning product identification numbers to articles of commerce. For example, the International Article Numbering Association ("EAN") assigns its own number to products outside of the U.S. and Canada, and uses a different symbology than used with the UPC. Product identification codes for books are provided by the International Standard Book Numbering System ("ISBN") and are encoded using a symbology specified by that organization. Likewise, magazines and serial publications are assigned product identification codes by the International Standard Serial Numbering System ("ISSN").

These numbering systems share at least three characteristics. First, for purposes of this invention, the identification numbers may be assigned in accordance with an "extrinsic" standard. By extrinsic, it is meant that the assignment of numbers is made a by group or association for the purpose of identifying articles of commerce. It is likely that new types of identification numbers will arise in the future, as will new organizations for assigning and administering those numbers, and the present invention contemplates use of both existing and future extrinsic identification numbers and formats.

Second, the identification numbers may have recognized significance as numbers identifying articles of commerce.

The level of recognition may be among the general public, or a defined subset, such as a particular industry or occupation.

Third, the identification numbers may be encoded in a standard, machine readable format—namely, bar codes. Other machine readable formats may also be used for this purpose, including magnetic stripes or optical character recognition ("OCR"), and the present invention could be practiced with product identification numbers encoded in those formats as well.

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### 3. URL/UPC Database

In accordance with the invention, service provider 22 includes a relational database 60, which is shown in more detail in FIG. 4. Database 60 includes records 62-68, which are accessible using a suitable database management system software. Each record 62-68 of database 60 contains four fields 70-76. Fields 70 and 72 contain a UPC product identification number, as explained below. Field 74 holds a URL suitable for locating a resource on the Internet. Depending on the application, other network addresses—  
 5 Either numeric or mnemonic, physical or virtual—may be used. Field 76 holds a narrative description of the resource addressed in field 74. This particular arrangement of fields is but one illustration of how the invention may be practiced. For example, additional fields could be provided, or the UPC  
 10 product identification number could be held in a single field.

Each record 62-68 of database 60 associates a UPC product identification number (contained in fields 70 and 72) with a particular Internet URL and narrative description (contained in fields 74 and 76, respectively). The association is based on selected criteria. In this case, the criteria is the existence of a Web resource sponsored by the manufacturer of the product identified by the UPC number in fields 70 and 72. (If no such resource exists, then the particular product  
 20 identifier can be omitted from database 60). Other criteria can be used. For example, the association could be based on the existence of a Web site simply referring to or relating to the product.

As stated, fields 70 and 72 contain a UPC product identification number. Field 70 contains the first five digits of the product identification number (field A of FIG. 3). As explained above, these digits uniquely identify the product's manufacturer. Field 72 contains the second five digits of the product identification number (field B of FIG. 3). These digits identify the manufacturer's particular product. In some cases, a manufacturer may have many products and only one Web site or other Internet resource. In that case, field 72 may be left blank, as shown in cell 78 of record 68. When field 72 is left blank, database 60 associates the Web resource indicated in field 74 with any product identification number whose first five digits match the manufacturer number specified in field 70.  
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Database 60 itself is accessible via service provider 22, which is equipped with Web server software such as provided by Netscape Communications, Inc. The server software provides access to an HTML document (the "Query Page") resident on service provider 22 at a predetermined URL. The Query Page, when displayed on CRT 52 by local host 28 using a forms-capable browser allows the user to enter a query in the form of a UPC product identification number. Alternatively, database 60 could be resident on local host 28 or another remote computer 24 or 26. The Web server at service provider 22 may have a predetermined URL location. Browser software resident in local host computer 28 may be configured to automatically request that predetermined URL location when the browser software is initially loaded.  
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Database 60 may be incorporated with a database or search engine of Web sites or other Internet resources (such as the Yahoo or Lycos databases). In that case, the Query Page may give the user the option of entering a UPC number or an alternative search term, such as a portion of the URL or the topic to which the desired resource pertains.

Also, database 60 may be divided into one or more tables, which may be distributed over more than one computer. For example, a first table may contain records associating UPC numbers with names of products or manufacturers. A second  
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table associates products and/or manufacturer names with Internet addresses. Thus, the process of using the UPC number to locate a network address may involve one or more steps. For example, database 60 might determine the name of a product corresponding to a UPC number using a first table, and then determine network addresses corresponding to that product name using a second table. Even though multiple steps are involved, the UPC number is still "associated" in computer memory with the network address for purposes of the invention.

### 4. Operation of the Invention

Suppose a user is interested in Internet resources concerning a particular type of product. In accordance with the invention, the user can access those resources by taking an ordinary specimen of the product—a can of soup for example—and entering all or part of the product's UPC product identification number 46. Database 60 uses the entered product identification number to look-up the associated URL, which is returned to the user in the form of a HTML document.

This operation is illustrated in FIG. 5. At a block 80, the user loads his browser software onto local host computer 28. The browser software is programmed to automatically load the "Query Page" which provides access to database 60. The user in this case is a human, but alternatively a program (or "process") running on local host 28 could be the "user" in the sense that it is the process which is requesting information from the Internet and supplying the UPC number.

At a block 82, the Query Page is transmitted to local host computer 28 in the form of an HTML document. Browser software resident on local host 28 displays the Query Page on CRT screen 52. At block 84, the user (or process) enters the first five or all ten digits of the UPC product identification number encoded by symbol 46. Because the UPC product identification number is printed in both machine and human-readable format (See FIG. 3), this may be done by manual entry using keyboard, voice recognition system or other input device. More preferably, however, entry is accomplished by scanning UPC symbol 46 affixed to article 48. Input device 44 reads UPC symbol 46, and generates an ASCII character string which is read by CPU 30 via I/O port 38. If the UPC number is scanned, then all 10 digits will generally be entered. The UPC product identification number is transmitted to the Web server resident on local service provider 22, which at a block 86 looks up the entered UPC number in database 60.  
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At block 88, database 60 retrieves all records 62-68 having UPC fields 70 and 72 that match the product identification number entered by the user. The records are conveyed to the user in the form of an HTML document. The criteria at block 88 for whether UPC fields 70 and 72 "match" the product identification number may be based on a "query by example" approach. For example, suppose at block 84 the user only enters the manufacturer portion (e.g. "31251") of a product identification number. It is assumed in this case that the user is interested in any record 62-68 having a field 70 that matches the entered manufacturer portion. (Recall that the database 60 stores the UPC number in two fields—field 70 for the first five digits (corresponding to manufacturer) and field 72 for the second five digits (corresponding to manufacturer's product)). Thus, at block 88, records 61, 64 and 65 are returned to the user, because field 70 in each of those records contains "31251."

If the user entered all ten digits of a UPC product identification number (e.g., "31251-00302"), then only records whose fields 70 and 72 matched "31251" and "00302," respectively, would be retrieved. (In this case, that

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would be record 64). If all ten UPC digits are entered, and no exact match is found, database 60 may be programmed to retrieve records (if any) where at least the manufacturer portion (that is, first five digits) matches field 70.

At block 90, browser software on local host computer 28 displays records retrieved at block 88 on CRT 52. The records are returned in an HTML document, which is displayed by the browser in a screen format 94, as illustrated in FIG. 6. In this example, records 62, 64 and 66 have been retrieved. Screen format 94 displays data from each record in a separate rows 96, 98 and 100, respectively. If no matching records are found at block 88, a message such as "no records found" may be returned instead.

Text from description field 76 of each of records 62, 64 and 66 is displayed as hypertext links 102, 104 and 106, respectively. Link 102 is associated with the URL of record 62, link 104 with the URL of record 64, and link 106 with the URL of record 66. When the user selects one of links 102-106 (by mouse click or otherwise), the browser software loads the URL associated with the selected link to access the resource at the location specified by that URL.

#### 5. Alternative Embodiments

The foregoing embodiment is just one example of the present invention. Many alternatives are possible.

#### Other Networks and Protocols.

While the present invention is illustrated with respect to a system for accessing the Internet's World Wide Web, it could be practiced using other Internet protocols (such as Gopher) or other types of wide area networks and systems, including those offered by "on-line service" providers such as America OnLine® of Fairfax, Va. or CompuServe® of Columbus, Ohio or the Microsoft® Network of Redmond, Wash.

In those cases, database 60 could be resident on the on-line service provider's computer. The network address information contained in database 60 could be either Internet URLs, or locations within the on-line service provider's environment. In this case, the protocol used to communicate between local host 28 and service provider 22 need not be HTTP or other Internet protocol. However, service provider 22 can provide a gateway to Internet 20, and access to a desired network location on the Internet can be made using a URL retrieved from database 60.

#### Controlled Access.

Database 60 need not be publicly accessible. Access to database 60 can be limited either by placing database 60 on a proprietary network, or, if placed on an open network, using a password or digital signature system to permit access only to authorized persons. Also, records 62-68 may be selectively accessible. For example, each record can contain an additional field indicating whether the URL contained in field 74 points to network location containing material inappropriate for children. In that case, database 60 can be programmed to return URL at block 88 only if the user has supplied a proper password.

#### Automatic Jumping to Desired Location.

In the disclosed embodiment, the URL associated with a selected UPC product identification code is returned to the end user in an HTML document at block 88 of FIG. 5. The user can then hypertext link to the site corresponding to the URL. Alternatively, instead of displaying query results at step 90 (of FIG. 5), browser software in local host can automatically load the retrieved URL and point the user to the site corresponding to that URL. An additional field in database 60 can provide a code indicating whether this feature should be enabled or disabled for a particular URL.

Identification Numbers and Symbolologies. The invention can be practiced using standard identification numbers—and

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symbolologies other than UPC numbers and formats. For example, EAN, ISBN and ISSN numbers and formats discussed above could be used.

#### Articles of Commerce.

As shown in FIG. 7, product identification numbers—whether bar coded or otherwise—may be placed all types of items, such as a consumer product 102, newspaper 104 or book 106, as well as coupons, fliers, cards and advertisements (not illustrated). For example, by placing a product's UPC code on an advertisement for the product, the advertiser could, in accordance with the invention, facilitate access to Internet resources concerning the product.

#### Machine Reading Technology.

In lieu of a bar coding, the invention could be practiced with product identification information that is encoded using other technologies. For example, product identification information could be encoded on a magnetic strip affixed to a product, card or other article. In place of wand, local host computer could use a magnetic card reader. Alternatively, the number could simply be printed in human-readable format, and an optional optical character recognition system could be used to facilitate entry.

#### Direct Coding of Address.

In place of a standard UPC symbol, bar code technology could be used to encode the actual mnemonic or numeric (IP) network address in machine-readable format. While this arrangement does not achieve all the advantages of the invention, it allows the user to easily enter desired address information using a bar-code reader instead of manually typing the address.

An example of the direct coding of network addresses is shown in the illustrated FIGS. 8-10. Referring to FIG. 8, a block diagram of the computerized apparatus 10 for interfacing with a computer network in accordance with the invention is illustrated. Apparatus 113 includes a computer 114, which may be an IBM compatible personal computer. Attached to computer 114 by a suitable input/output interface 115 is a modem 116. Also attached to computer 114 via an input/output interface 118 is a bar code reader 120. Bar code reader 120 is designed to read conventional bar codes. Bar code technology is described generally in U.S. Pat. No. 5,115,326 issued May 19, 1992 and entitled "Method of Encoding an E-Mail Address in a Fax Message and Routing the Fax Message to a Destination and Network", and U.S. Pat. No. 5,420,943 issued May 30, 1995 and entitled "Universal Computer Input Device," the disclosures of which are both hereby incorporated by reference.

Modem 116 is adopted for electronic communication via a suitable telephone link 122 with a service provider 124. Service provider 124 may be an Internet service provider or a proprietary on-line service such as Prodigy or America On-Line. Service provider 124 in turn is electronically connected by a suitable communication link 126 to a remote server 128. For purposes of illustration, we assume that remote server's 128 numeric network address is 200.98.154, and that the assigned address mnemonic is <http://sample@www.com>.

Computer 114 is equipped with communication software for establishing and maintaining a communication link with service provider 124 via modem 116 and telephone link 122. Computer 114 is also equipped with software (see FIG. 10) such as Netscape Navigator brand Web browser software (version 1.0) which enables it to request and receive information from remote server 128 via service provider 124. To operate software 130, a user (not shown) enters an alpha-numeric address such as [sample@www.com](http://sample@www.com). Browser software 130 sends service provider 124 a request for the

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information contained at address corresponding to the mnemonic sample@www.com. As explained above, that mnemonic address belongs to remote server 128.

Using the address sample@www.com, service provider 124 routes the request to remote server 128 via communication link 126. Remote server 128 responds by sending the desired information via communication link 126 to service provider 124, which relays the information to computer 114 via modem 116 and telephone link 122. Once the information is received by computer 114, browser software 130 displays the information in a useful format for the user.

In accordance with the invention, a document 132 is provided. Document 132 may be a magazine article, advertising or other printed matter. As shown in FIG. 9, Document 136 contains human readable information 134 about resources available at a location on a network such as the Internet, including resources provided by remote server 128. In this example, human readable information 134 includes remote server's 128 mnemonic address—http://sample@www.com. A bar-code indicia 136 is placed near human readable information 134. Bar code 136 contains remote server's 128 numerical address (200.98.154) in machine-readable form.

Alternatively, bar code 136 could contain a machine-readable version of the mnemonic address. Under that arrangement, the bar-coded digits would correspond to alphanumeric symbols of the mnemonic address. For example, the bar coded number "97" could correspond to the character "a". In that case, however, bar code 136 may have to be exceptionally long.

If the user wants access remote server 128, he or she scans bar code 136 using bar code reader 120. Bar code reader 120 generates a signal on input/output interface 118 corresponding to the numeric address encoded by bar code 136 (which for purposes of illustration we assume to be 257004-00220, as shown in FIG. 9). Browser software 130 on computer 114 reads the numeric address via input/output interface 118, and forwards it to service provider 124, along with a request for information contained at the location corresponding to that address. Service provider 124 determines that the numeric address is that of remote server 128, and routes to there the request for information.

Referring to FIG. 10, the operation of browser software 130 is shown in more detail. In an initial step 138, browser software attempts to read input from bar code reader 120. At a decision block 140, browser software 130 determines whether reader 120 has input. If no input is available, control returns to block 138, where browser software 130 again attempts to read bar code reader 120. If input is available at decision block 140, then control moves to a block 142 where browser software 130 transmits the input read at block 138 to service provider 124. There are other ways to handle input from bar code reader 120, and more sophisticated techniques maybe used in actual commercial embodiments of the invention.

Service provider 124 interprets the input as a numeric network address. In this case, we have assumed that the address is that of remote server 128. Service provider forwards a request for data to remote server 128. At a block 144, the requested data contained on remote server 128 is received by browser software 130 via service provider 124. Once received, the data is available for whatever use required by the user. Control then returns to block 138 where the foregoing process is repeated indefinitely.

In effect, the necessity of manually typing in the mnemonic address sample@www.com is eliminated. Instead, the numeric address is obtained from the bar code indicia 136 by

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use of bar code reader 120. As explained above, bar code 136 could contain the mnemonic as well as numeric address. Browser software could be programmed to accept either format (mnemonic or numeric) as input from bar code reader 120, with the default expectation being that the bar coded data is a numeric address unless the user otherwise specifies. Alternatively, the first coded number of bar code 136 could indicate whether the information that follows represents a numeric or mnemonic address. If bar code 136 can contain either mnemonic or numeric addresses, then browser software should include a flag or other indication alerting service provider 124 as to the format of the transmitted data.

The foregoing embodiment is just one example. Many alternatives are possible. For example, in lieu of a bar code scanning device, a card reader could be employed. The card reader would read a magnetic stripe affixed to a card or other printed matter. The card would contain human-readable information about a network resource, and the magnetic strip would contain the resource's numeric or mnemonic address in machine-readable format. Alternatively, a RF data collection scanner or CCD scan-system could be used. Bar code symbol 126 could also be associated with specific commands such as "forward", or "back," or command sequences used to access information.

We claim:

1. A method of connecting a user computing device to one of a plurality of remote computers available for communication over a network comprising:

- a) reading a data carrier modulated with an index;
- b) accessing a database with the index, the database comprising a plurality of records that link an index to a pointer which identifies a remote computer on the network;
- c) extracting a pointer from the database as a function of the index; and
- d) using the pointer to establish communication with the remote computer identified thereby.

2. The method of claim 1 wherein the step of reading a data carrier modulated with an index comprises the step of reading a light pattern emanating from an object and demodulating the light pattern to obtain the index.

3. The method of claim 2 wherein the step of reading a light pattern emanating from an object and demodulating the light pattern to obtain the index comprises scanning a bar code symbol encoded with the index.

4. The method of claim 3 wherein the bar code symbol is encoded in accordance with an extrinsic standard.

5. The method of claim 2 wherein the step of reading a light pattern emanating from an object and demodulating the light pattern to obtain the index comprises using optical character recognition techniques.

6. The method of claim 1 wherein the index is at least a portion of a Universal Product Code.

7. The method of claim 1 wherein the index is at least a portion of a EAN code.

8. The method of claim 1 wherein the index is at least a portion of an ISBN code.

9. The method of claim 1 wherein the index is at least a portion of an ISSN code.

10. The method of claim 1 wherein the step of reading a data carrier modulated with an index comprises receiving a signal emanating from an article of commerce, the signal being modulated with the index.

11. The method of claim 1 wherein the step of reading a data carrier modulated with an index comprises inputting into the user computing device an audible signal modulated with information correlated to the index.

12. The method of claim 11 wherein the step of inputting into the user computing device an audible signal modulated



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with information correlated to the index comprises the use of voice recognition techniques.

13. The method of claim 1 wherein the step of reading a data carrier modulated with an index comprises inputting into the user computing device an RF signal modulated with information correlated to the index.

14. The method of claim 1 wherein the step of reading a data carrier modulated with an index comprises accessing a magnetic card with a magnetic card reader.

15. The method of claim 1 wherein the steps of accessing a database and extracting a pointer therefrom are carried out on the user computing device.

16. The method of claim 1 wherein the steps of accessing a database and extracting a pointer therefrom are carried out on a server computer located remotely from the user computing device.

17. The method of claim 1 wherein the database is distributed over more than one computer.

18. The method of claim 1 wherein the pointer comprises a network address.

19. The method of claim 1 wherein the pointer comprises a Uniform Resource Locator.

20. The method of claim 1 wherein the pointer comprises the name of a remote computer.

21. The method of claim 1 wherein the pointer comprises an IP address.

22. The method of claim 1 wherein the index is comprised of a first field and a second field.

23. The method of claim 22 wherein the step of accessing a database with an index comprises the steps of using only the first field of the index to access the database.

24. The method of claim 23 wherein a plurality of indexes having the same first field and different second fields will result in extraction of the same pointer.

25. The method of claim 24 wherein the first field is a manufacturer identification number and the second field is a product identification number.

26. The method of claim 1 wherein the step of using the pointer to establish communication with the remote computer identified thereby is executed automatically by the user computing device without user intervention.

27. The method of claim 26 wherein the automatic communication by the user computing device with the remote computer is executed by a web browser program running on the user computing device.

28. The method of claim 1 wherein the step of using the pointer to establish communication with the remote computer identified thereby is executed by a user selecting hypertext link returned to the user computing device by the database.

29. The method of claim 1 wherein the network over which the user computing device establishes communication with the remote computer is a wide area network.

30. The method of claim 29 wherein the wide area network is the Internet.

31. The method of claim 29 wherein the wide area network is a proprietary online service.

32. The method of claim 31 wherein the database is resident on an online service provider computer with which the user computing device has established direct communication.

33. The method of claim 32 wherein the online service provider computer additionally provides a gateway to the Internet.

34. The method of claim 1 wherein access to the database requires entry of a password.

35. The method of claim 1 wherein the database is associated with a search engine.

36. A system comprising:

a. a user computing device;

b. an input device associated with the user computing device, configured to read a data carrier modulated with an index;

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c. means for storing a database comprising a plurality of records that link an index to a pointer which identifies a remote computer;

wherein the user computing device comprises:

means for accessing the database to extract a pointer from the database as a function of the index; and

means for using the pointer to establish communication with the remote computer identified thereby.

37. The system of claim 36 wherein the user input device comprises means for reading a light pattern emanating from an object and demodulating the light pattern to obtain the index.

38. The system of claim 37 wherein the means for reading a light pattern emanating from an object and demodulating the light pattern to obtain the index comprises means for scanning a bar code symbol encoded with the index.

39. The system of claim 38 wherein the means for scanning a bar code symbol is adapted to scan a bar code symbol encoded in accordance with an extrinsic standard.

40. The system of claim 37 wherein the means for reading a light pattern emanating from an object and demodulating the light pattern to obtain the index comprises means for using optical character recognition techniques.

41. The system of claim 36 wherein the input device is configured to read an index comprising at least a portion of a Universal Product Code.

42. The system of claim 36 wherein the input device is configured to read an index comprising at least a portion of a EAN code.

43. The system of claim 36 wherein the input device is configured to read an index comprising at least a portion of an ISBN code.

44. The system of claim 36 wherein the input device is configured to read an index comprising at least a portion of an ISSN code.

45. The system of claim 36 wherein the input device is adapted to receive a signal emanating from an article of commerce, the signal being modulated with the index.

46. The system of claim 36 wherein the input device comprises means for inputting into the user computing device an audible signal modulated with information correlated to the index.

47. The system of claim 46 wherein the means for inputting into the user computing device an audible signal modulated with information correlated to the index is configured to utilize voice recognition techniques.

48. The system of claim 36 wherein the input device comprises means for inputting an RF signal modulated with information correlated to the index.

49. The system of claim 36 wherein the input device comprises means for reading a magnetic stripe card.

50. The system of claim 36 wherein the means for storing a database is located on the user computing device.

51. The system of claim 36 wherein the means for storing a database is located on a server computer located remotely from the user computing device.

52. The system of claim 36 wherein the means for storing a database is distributed over more than one computer.

53. The system of claim 36 wherein the pointer comprises a network address.

54. The system of claim 36 wherein the pointer comprises a Uniform Resource Locator.

55. The system of claim 36 wherein the pointer comprises the name of a remote computer.

56. The system of claim 36 wherein the pointer comprises an IP address.

57. The system of claim 36 wherein the index is comprised of a first field and a second field.

58. The system of claim 57 wherein the means for accessing a database with an index comprises means for using only the first field of the index to access the database.

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59. The system of claim 58 wherein a plurality of indexes having the same first field and different second fields will result in extraction of the same pointer.

60. The system of claim 59 wherein the first field is a manufacturer identification number and the second field is a product identification number.

61. The system of claim 36 wherein the means for using the pointer to establish communication with the remote computer identified thereby executes automatically by the user computing device without user intervention.

62. The system of claim 61 wherein the automatic communication by the user computing device with the remote computer is executed by a web browser program running on the user computing device.

63. The system of claim 36 wherein the means for using the pointer to establish communication with the remote computer identified thereby executes by a user selecting hypertext link returned to the user computing device by the database.

64. The system of claim 36 wherein the network over which the user computing device establishes communication with the remote computer is a wide area network.

65. The system of claim 64 wherein the wide area network is the Internet.

66. The system of claim 64 wherein the wide area network is a proprietary online service.

67. The system of claim 66 wherein the database is resident on an online service provider computer with which the user computing device has established direct communication.

68. The system of claim 67 wherein the online service provider computer additionally provides a gateway to the Internet.

69. The system of claim 36 wherein access to the database requires entry of a password.

70. The system of claim 36 wherein the database is associated with a search engine.

71. A user computing device comprising:

- a. an input device configured to read a data carrier modulated with an index; and
- b. computer processing means for executing a software program adapted to:
  - utilize the index to access a database comprising a plurality of records that link an index to a pointer which identifies a remote computer;
  - retrieve from the database a pointer as a function of the index; and
  - use the pointer to establish communication with the remote computer identified thereby.

72. The user computing device of claim 71 wherein the user input device comprises means for reading a light pattern emanating from an object and demodulating the light pattern to obtain the index.

73. The user computing device of claim 72 wherein the means for reading a light pattern emanating from an object and demodulating the light pattern to obtain the index comprises means for scanning a bar code symbol encoded with the index.

74. The user computing device of claim 73 wherein the means for scanning a bar code symbol is adapted to scan a bar code symbol encoded in accordance with an extrinsic standard.

75. The user computing device of claim 72 wherein the means for reading a light pattern emanating from an object and demodulating the light pattern to obtain the index comprises means for using optical character recognition techniques.

76. The user computing device of claim 71 wherein the input device is configured to read an index comprising at least a portion of a Universal Product Code.

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77. The user computing device of claim 71 wherein the input device is configured to read an index comprising at least a portion of a EAN code.

78. The user computing device of claim 71 wherein the input device is configured to read an index comprising at least a portion of an ISBN code.

79. The user computing device of claim 71 wherein the input device is configured to read an index comprising at least a portion of an ISSN code.

80. The user computing device of claim 71 wherein the input device is adapted to receive a signal emanating from an article of commerce, the signal being modulated with the index.

81. The user computing device of claim 71 wherein the input device comprises means for inputting into the user computing device an audible signal modulated with information correlated to the index.

82. The user computing device of claim 81 wherein the means for inputting into the user computing device an audible signal modulated with information correlated to the index is configured to utilize voice recognition techniques.

83. The user computing device of claim 71 wherein the input device comprises means for inputting an RF signal modulated with information correlated to the index.

84. The user computing device of claim 71 wherein the input device comprises means for reading a magnetic stripe card.

85. The user computing device of claim 71 wherein the software program is adapted to utilize the index to access a database located on the user computing device.

86. The user computing device of claim 71 wherein the software program is adapted to utilize the index to access a database located on a server computer remote from the user computing device.

87. The user computing device of claim 71 wherein the software program is adapted to utilize the index to access a database distributed over more than one computer.

88. The user computing device of claim 71 wherein the index is comprised of a first field and a second field, and wherein the software program is adapted to access a database with only the first field of the index.

89. The user computing device of claim 88 wherein a plurality of indexes having the same first field and different second fields will result in extraction of the same pointer.

90. The user computing device of claim 71 wherein the software program is adapted to use the pointer to establish communication with the remote computer identified thereby automatically without user intervention.

91. The user computing device of claim 90 wherein the automatic communication by the user computing device with the remote computer is executed by a web browser program running on the user computing device.

92. The user computing device of claim 71 wherein the software program is adapted to use the pointer to establish communication with the remote computer identified thereby by using a user-selected hypertext link returned to the user computing device by the database.

93. The user computing device of claim 71, further adapted to establish communication with the remote computer over a wide area network.

94. The user computing device of claim 93 further adapted to establish communication with the remote computer over the Internet.

95. The user computing device of claim 93 further adapted to establish communication with the remote computer over a proprietary online service.

\* \* \* \* \*

**FILE COPY**

AO 121 (6/90)

<b>TO:</b>	
<b>COMMISSIONER OF PATENTS AND TRADEMARKS WASHINGTON, D.C. 20231</b>	<b>REPORT ON THE FILING OF DETERMINATION OF AN ACTION OR APPEAL REGARDING A COPYRIGHT</b>

In compliance with the Act of July 19, 1952 (66 Stat. 814; 35 U.S.C. 290) you are hereby advised  
that a court action has been filed on the following patent(s) in the U.S. District Court:

<b>DOCKET NO. 04CV21</b>	<b>DATE FILED January 2, 2004</b>	<b>UNITED STATES DISTRICT COURT, NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION</b>
<b>PLAINTIFF Neomedia Technologies, Inc</b>		<b>DEFENDANT Virgin Entertainment Group Inc. et.al</b>
<b>PATENT NO.</b>	<b>DATE OF PATENT</b>	<b>PATENTEE</b>
5,933,829	Aug 3, 1999	Neomedia Technologies, Inc
5,978,773	Nov. 2, 1999	Neomedia Technologies, Inc
6,108,656	Aug. 22, 2000	Neomedia Technologies, Inc
6,199,048 B1	Mar. 6, 2001	Neomedia Technologies, Inc

In the above-entitled case, the following patent(s) have been included:

<b>DATE INCLUDED</b>	<b>INCLUDED BY</b> [ ] Amendment [ ] Answer [ ] Cross Bill [ ] Other Pleading		
<b>PATENT NO.</b>	<b>DATE OF PATENT</b>	<b>PATENT</b>	

In the above-entitled case, the following decision has been rendered or judgment issued:

<b>DECISION/JUDGMENT</b>		
<b>CLERK Michael W. Dobbins</b>	<b>(BY) DEPUTY CLERK José M. Montes</b>	<b>DATE January 5, 2004</b>

Copy 1 - Upon initiation of action, mail this copy to Commissioner Copy 3 - Upon termination of action, mail this copy to Commissioner  
Copy 2 - Upon filing document adding patent(s), mail this copy to Commissioner Copy 4 - Case file copy

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS

DOCKETED

JAN 05 2004

Civil Cover Sheet

FILED-ED4  
81:14 Wd 2-NVF 70  
DISTRICT COURT

This automated JS-44 conforms generally to the manual JS-44 approved by the Judicial Conference of the United States in September 1974. The data is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. The information contained herein neither replaces nor supplements the filing and service of pleadings or other papers as required by law. This form is authorized for use only in the Northern District of Illinois.

Plaintiff(s): NeoMedia Technologies, Inc.

Defendant(s): Virgin Entertainment Group, Inc.,  
Virgin Megastore Online (US), Inc., and Virgin  
Megastore

County of Residence: DuPage

County of Residence:

Plaintiff's Atty: Michael H. Baniak & Jeffrey A. Pine  
Baniak Pine & Gannon  
150 N. Wacker Dr., Ste. 1200  
Chicago, IL 60606  
312-673-0360

Defendant's Atty:

04C 0021

II. Basis of Jurisdiction: 3. Federal Question (U.S. not a party)

III. Citizenship of Principal  
Parties (Diversity Cases Only)

Plaintiff:- N/A  
Defendant:- N/A

JUDGE MANNING

MAGISTRATE JUDGE BOBRICK

IV. Origin : 1. Original Proceeding

V. Nature of Suit: 830 Patent

VI. Cause of Action: Patent Infringement (Title 35 U.S.C. Sec. 1, et seq.)

VII. Requested in Complaint

Class Action:  
Dollar Demand:  
Jury Demand: Yes

VIII. This case IS NOT a refiling of a previously dismissed case.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

JAN. 2, 2004

If any of this information is incorrect, please go back to the Civil Cover Sheet Input form using the *Back* button in your browser and change it. Once correct, print this form, sign and date it and submit it with your new civil action. **Note: You may need to adjust the font size in your browser display to make the form print properly.**

Revised: 06/28/00

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS

DOCKETED

JAN 05 2004

In the Matter of

NeoMedia Technologies, Inc.,

v.

Virgin Entertainment Group, et al.,

Defendants.

Plaintiff

Case Number

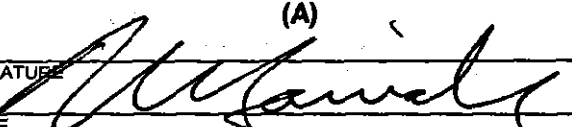
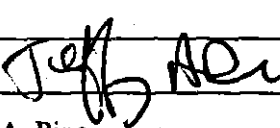
04C 0021

JUDGE MANNING

APPEARANCES ARE HEREBY FILED BY THE UNDERSIGNED AS ATTORNEY(S) FOR:

Plaintiff NeoMedia Technologies, Inc.

MAGISTRATE JUDGE BOBRICK

(A)	(B)
SIGNATURE 	SIGNATURE 
NAME Michael H. Baniak	NAME Jeffrey A. Pine
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STREET ADDRESS 150 N. Wacker Drive, Suite 1200	STREET ADDRESS 150 N. Wacker Drive, Suite 1200
CITY/STATE/ZIP Chicago, Illinois 60606	CITY/STATE/ZIP Chicago, Illinois 60606
TELEPHONE NUMBER (312) 673-0360	TELEPHONE NUMBER (312) 673-0360
IDENTIFICATION NUMBER (SEE ITEM 4 ON REVERSE) 6191091	IDENTIFICATION NUMBER (SEE ITEM 4 ON REVERSE) 6205821
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TRIAL ATTORNEY? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	TRIAL ATTORNEY? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
	DESIGNATED AS LOCAL COUNSEL? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
(C)	(D)
SIGNATURE	SIGNATURE
NAME	NAME
FIRM	FIRM
STREET ADDRESS	STREET ADDRESS
CITY/STATE/ZIP	CITY/STATE/ZIP
TELEPHONE NUMBER	TELEPHONE NUMBER
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DESIGNATED AS LOCAL COUNSEL? YES <input type="checkbox"/> NO <input type="checkbox"/>	DESIGNATED AS LOCAL COUNSEL? YES <input type="checkbox"/> NO <input type="checkbox"/>

1-3