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Angles et al.

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[45] **Date of Patent: *Aug. 3, 1999**

[54] **SYSTEM AND METHOD FOR DELIVERING CUSTOMIZED ADVERTISEMENTS WITHIN INTERACTIVE COMMUNICATION SYSTEMS**

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[*] 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).

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[22] Filed: **Aug. 20, 1996**

[51] **Int. Cl.**[6] **G06F 17/30**; G06F 17/60

[52] **U.S. Cl.** **705/14**; 705/27

[58] **Field of Search** 705/14, 27

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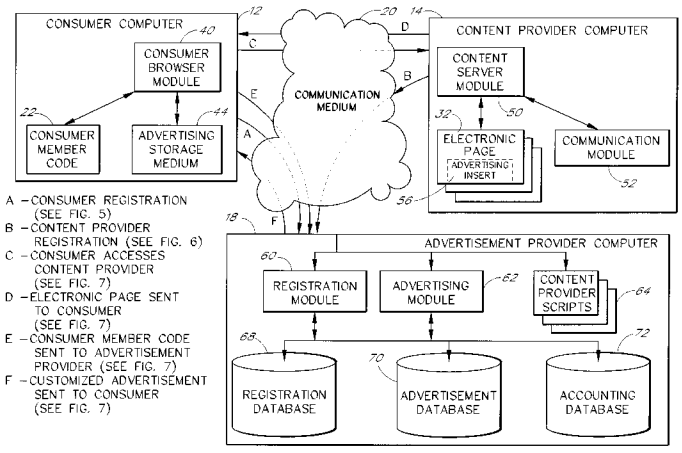
Assistant Examiner—James W. Myhre
Attorney, Agent, or Firm—Knobbe, Martens, Olson & Bear LLP

[57] **ABSTRACT**

The present invention is a system and method for delivering customized electronic advertisements in an interactive communication system. The customized advertisements are selected based on consumer profiles and are then integrated with offerings maintained by different content providers. The preferred interactive communication system interconnects multiple consumer computers, multiple content provider computers and multiple Internet provider computers with an advertisement provider computer. Whenever a consumer directs one of the consumer computers to access an offering existing in one of the content provider computers, an advertising request is sent to the advertisement provider computer. Upon receiving the advertising request, the advertising provider computer generates a custom advertisement based on the consumer's profile. The custom advertisement is then combined with the offering from the content provider computer and displayed to the consumer. The advertisement provider computer also credits a consumer account, a content provider account and an internet provider account each time a consumer views a custom advertisement. Furthermore, the advertisement provider computer tracks consumer responses to the customized advertisements.

17 Claims, 11 Drawing Sheets



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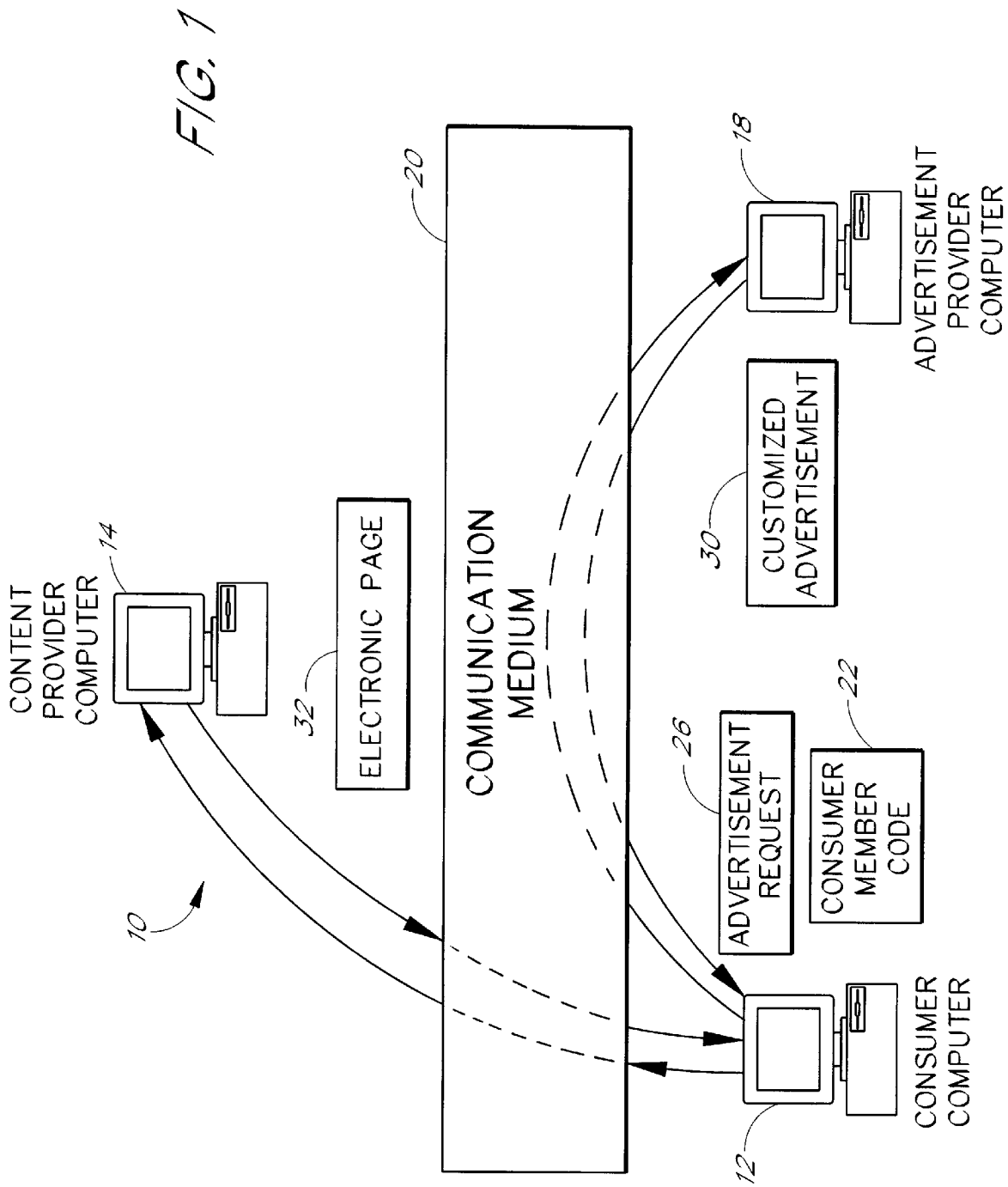
FIG. 1
CONTENT PROVIDER COMPUTER
14
10
ELECTRONIC PAGE
32
COMMUNICATION MEDIUM
20
ADVERTISEMENT PROVIDER COMPUTER
18
CUSTOMIZED ADVERTISEMENT
30
ADVERTISEMENT REQUEST
26
CONSUMER MEMBER CODE
22
CONSUMER COMPUTER
12

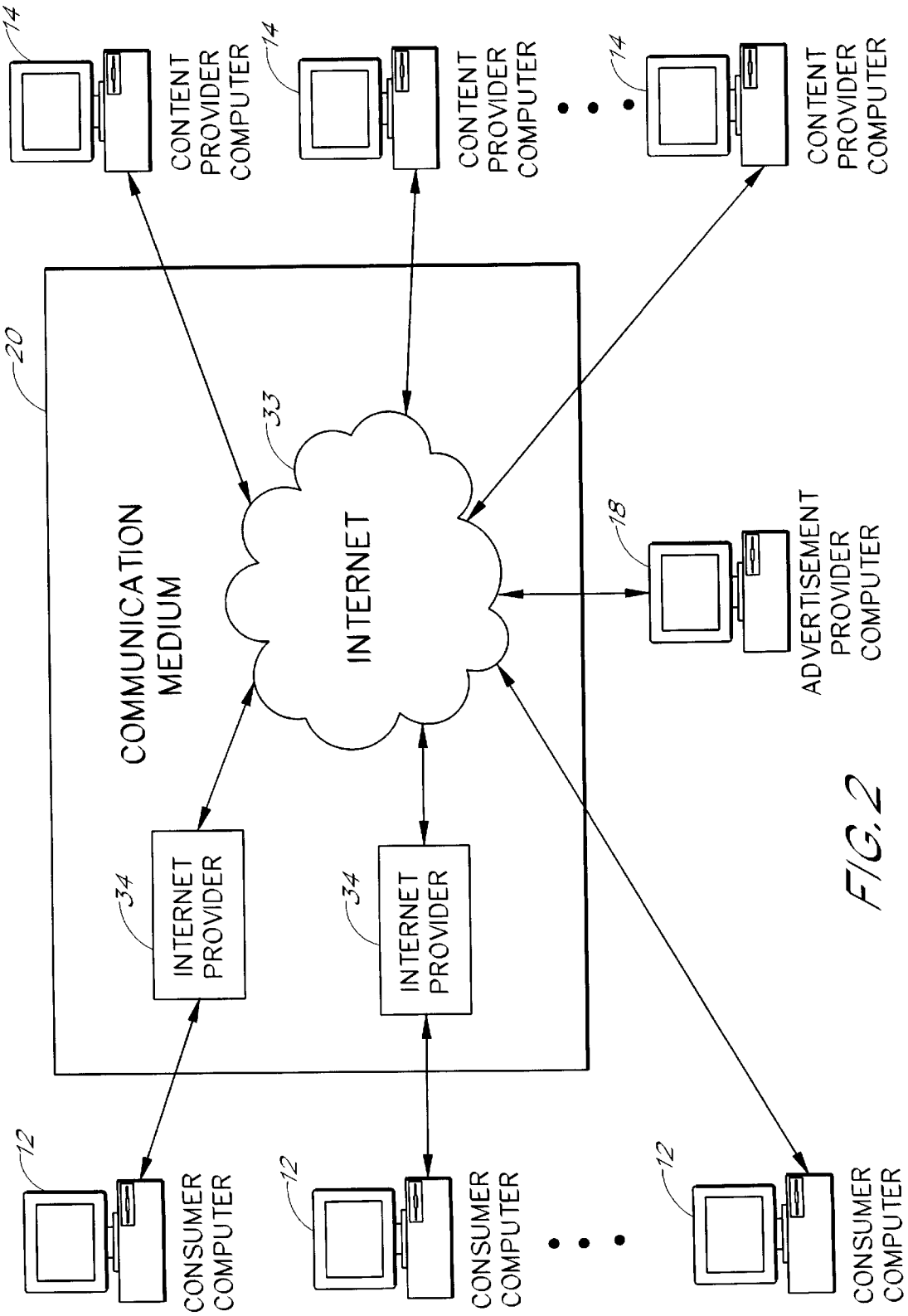
14
CONTENT PROVIDER COMPUTER
14
CONTENT PROVIDER COMPUTER
14
CONTENT PROVIDER COMPUTER
20
COMMUNICATION MEDIUM
33
INTERNET
18
ADVERTISEMENT PROVIDER COMPUTER
34
INTERNET PROVIDER
34
INTERNET PROVIDER
12
CONSUMER COMPUTER
12
CONSUMER COMPUTER
12
CONSUMER COMPUTER

FIG. 2

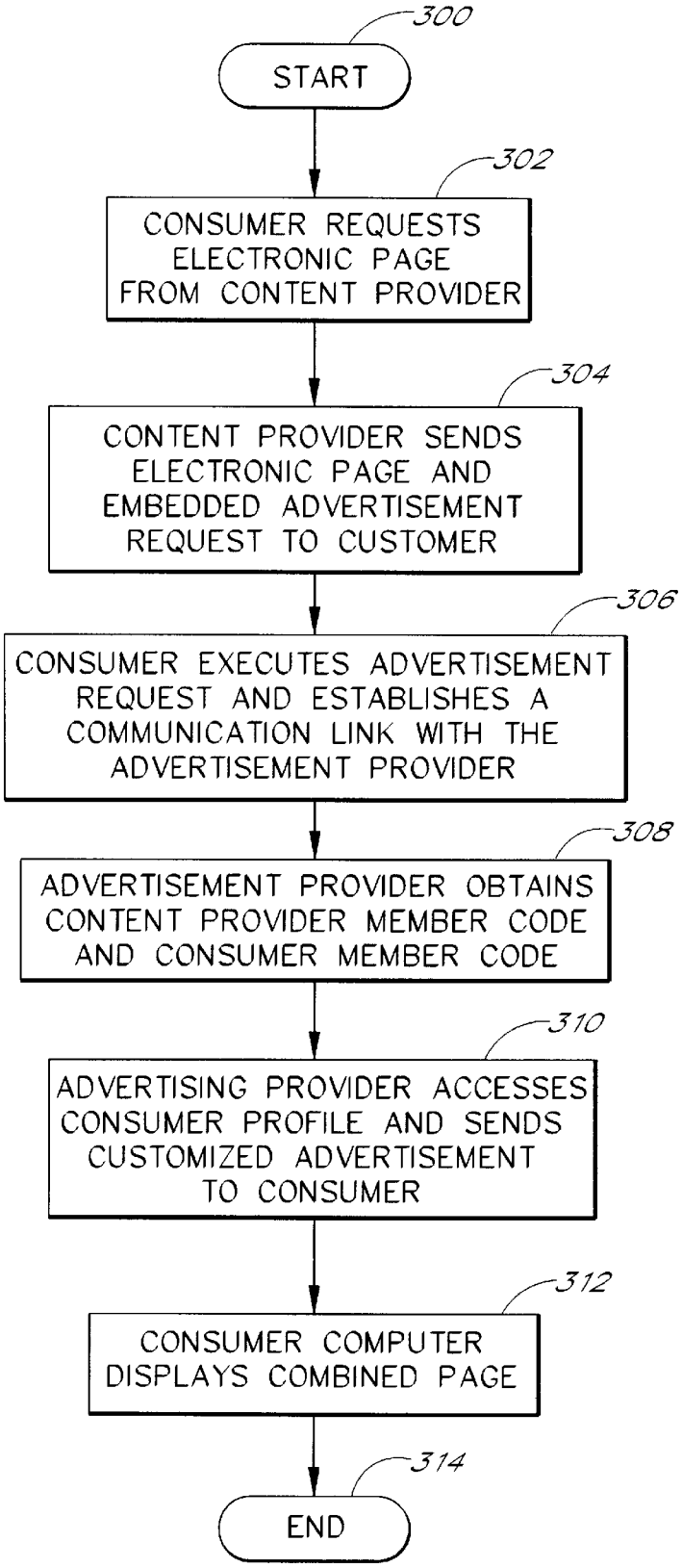
300
START
302
CONSUMER REQUESTS ELECTRONIC PAGE FROM CONTENT PROVIDER
304
CONTENT PROVIDER SENDS ELECTRONIC PAGE AND EMBEDDED ADVERTISEMENT REQUEST TO CUSTOMER
306
CONSUMER EXECUTES ADVERTISEMENT REQUEST AND ESTABLISHES A COMMUNICATION LINK WITH THE ADVERTISEMENT PROVIDER
308
ADVERTISEMENT PROVIDER OBTAINS CONTENT PROVIDER MEMBER CODE AND CONSUMER MEMBER CODE
310
ADVERTISING PROVIDER ACCESSES CONSUMER PROFILE AND SENDS CUSTOMIZED ADVERTISEMENT TO CONSUMER
312
CONSUMER COMPUTER DISPLAYS COMBINED PAGE
314
END

FIG. 3

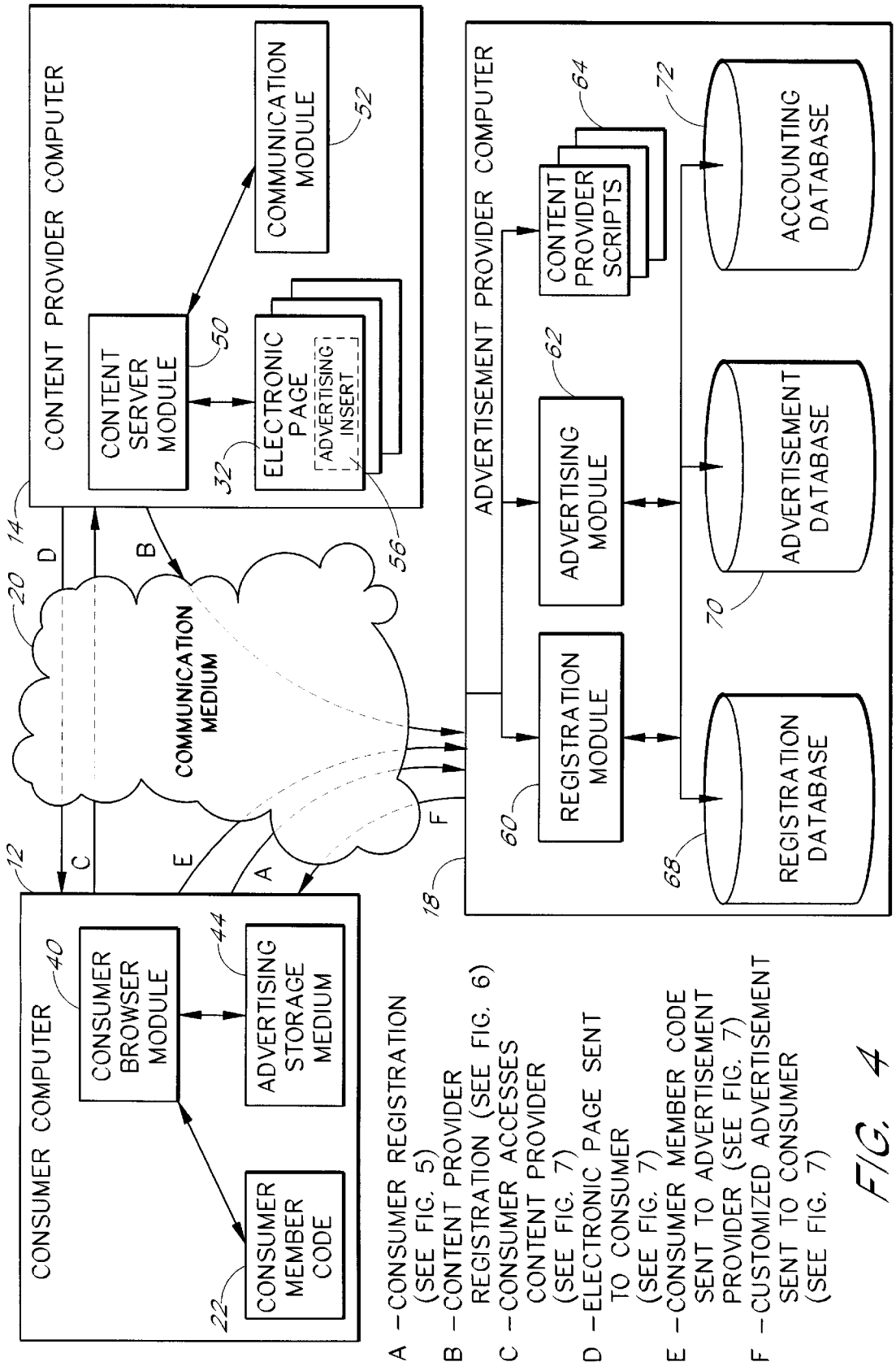
CONTENT PROVIDER COMPUTER
CONTENT SERVER MODULE
COMMUNICATION MODULE
ELECTRONIC PAGE
ADVERTISING INSERT
COMMUNICATION MEDIUM
CONSUMER COMPUTER
CONSUMER BROWSER MODULE
ADVERTISING STORAGE MEDIUM
CONSUMER MEMBER CODE
ADVERTISEMENT PROVIDER COMPUTER
CONTENT PROVIDER SCRIPTS
ADVERTISING MODULE
REGISTRATION MODULE
ACCOUNTING DATABASE
ADVERTISEMENT DATABASE
REGISTRATION DATABASE
A – CONSUMER REGISTRATION (SEE FIG. 5)
B – CONTENT PROVIDER REGISTRATION (SEE FIG. 6)
C – CONSUMER ACCESSES CONTENT PROVIDER (SEE FIG. 7)
D – ELECTRONIC PAGE SENT TO CONSUMER (SEE FIG. 7)
E – CONSUMER MEMBER CODE SENT TO ADVERTISEMENT PROVIDER (SEE FIG. 7)
F – CUSTOMIZED ADVERTISEMENT SENT TO CONSUMER (SEE FIG. 7)

FIG. 4

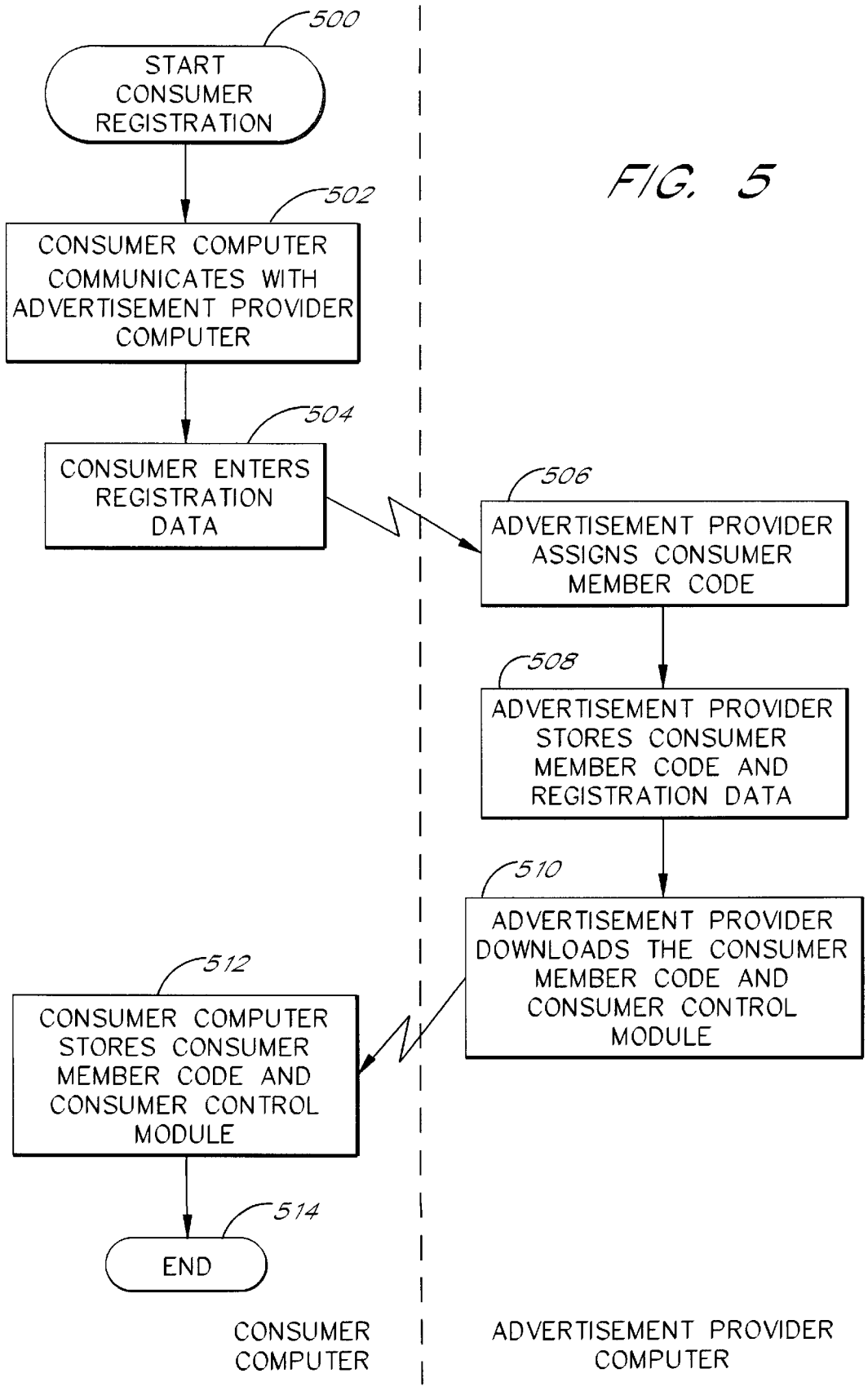
500
START CONSUMER REGISTRATION
502
CONSUMER COMPUTER COMMUNICATES WITH ADVERTISEMENT PROVIDER COMPUTER
504
CONSUMER ENTERS REGISTRATION DATA
506
ADVERTISEMENT PROVIDER ASSIGNS CONSUMER MEMBER CODE
508
ADVERTISEMENT PROVIDER STORES CONSUMER MEMBER CODE AND REGISTRATION DATA
510
ADVERTISEMENT PROVIDER DOWNLOADS THE CONSUMER MEMBER CODE AND CONSUMER CONTROL MODULE
512
CONSUMER COMPUTER STORES CONSUMER MEMBER CODE AND CONSUMER CONTROL MODULE
514
END
CONSUMER COMPUTER
ADVERTISEMENT PROVIDER COMPUTER

FIG. 5

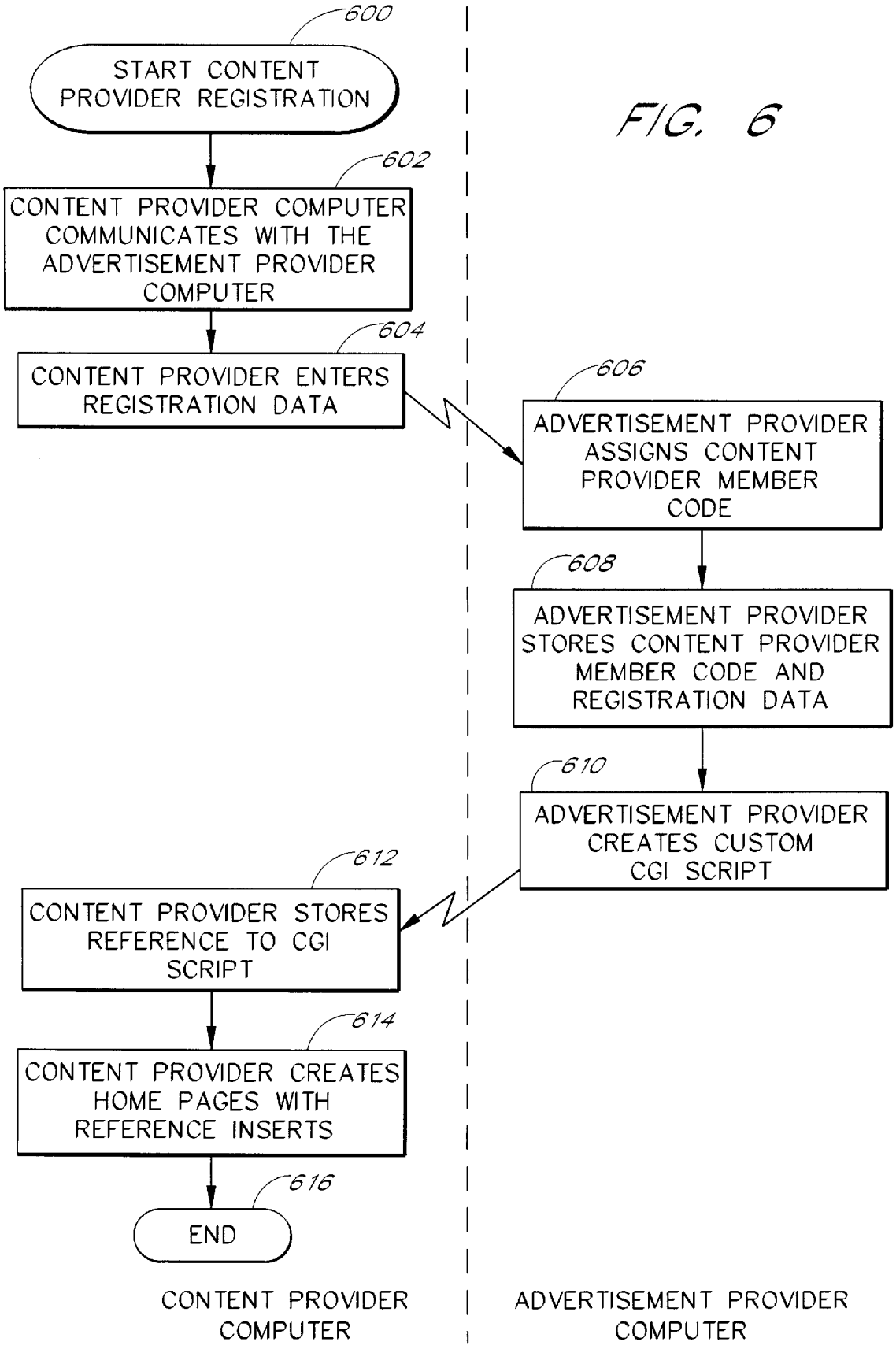
600
START CONTENT PROVIDER REGISTRATION
602
CONTENT PROVIDER COMPUTER COMMUNICATES WITH THE ADVERTISEMENT PROVIDER COMPUTER
604
CONTENT PROVIDER ENTERS REGISTRATION DATA
606
ADVERTISEMENT PROVIDER ASSIGNS CONTENT PROVIDER MEMBER CODE
608
ADVERTISEMENT PROVIDER STORES CONTENT PROVIDER MEMBER CODE AND REGISTRATION DATA
610
ADVERTISEMENT PROVIDER CREATES CUSTOM CGI SCRIPT
612
CONTENT PROVIDER STORES REFERENCE TO CGI SCRIPT
614
CONTENT PROVIDER CREATES HOME PAGES WITH REFERENCE INSERTS
616
END
CONTENT PROVIDER COMPUTER
ADVERTISEMENT PROVIDER COMPUTER

FIG. 6

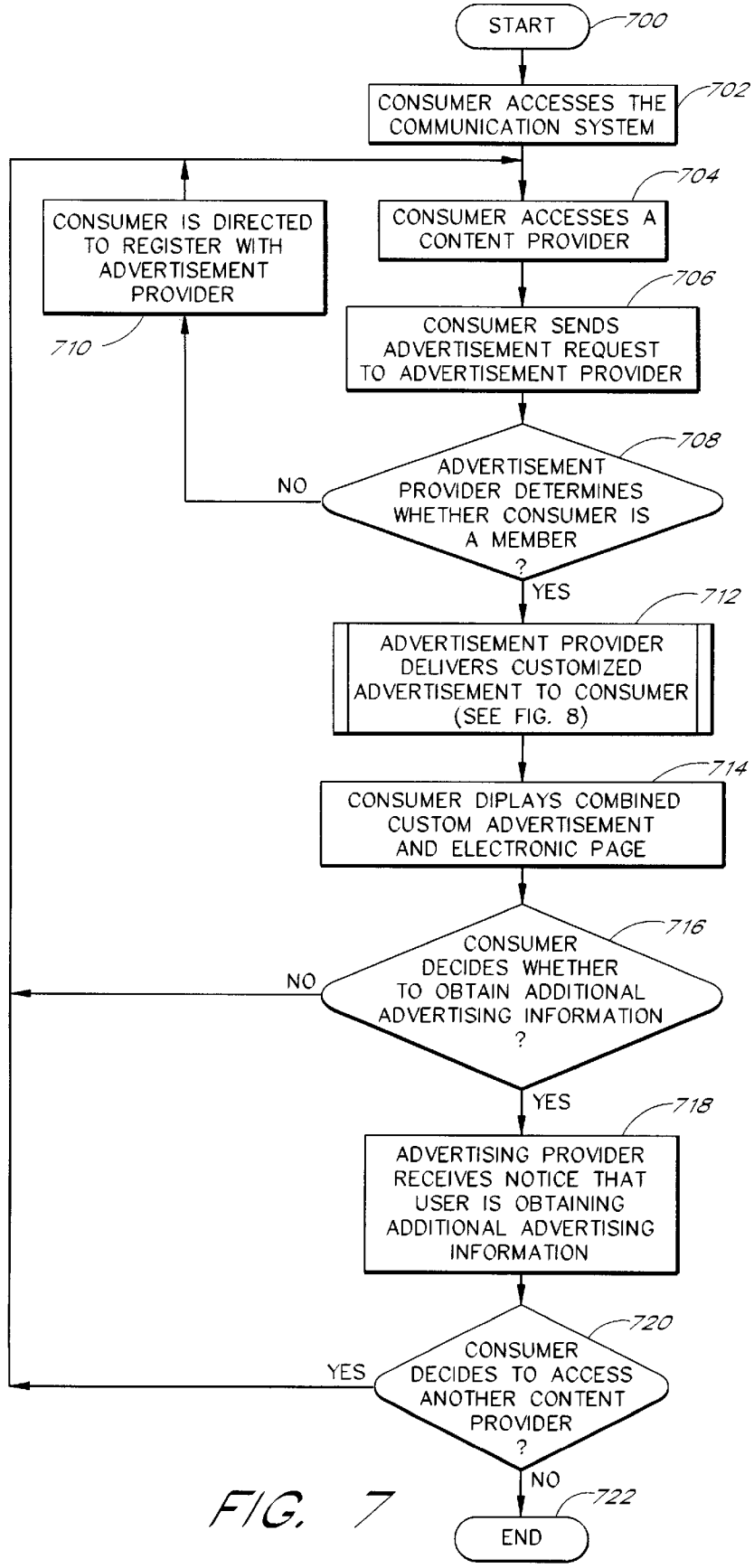
START
700
CONSUMER ACCESSES THE COMMUNICATION SYSTEM
702
CONSUMER ACCESSES A CONTENT PROVIDER
704
CONSUMER SENDS ADVERTISEMENT REQUEST TO ADVERTISEMENT PROVIDER
706
ADVERTISEMENT PROVIDER DETERMINES WHETHER CONSUMER IS A MEMBER ?
708
NO
CONSUMER IS DIRECTED TO REGISTER WITH ADVERTISEMENT PROVIDER
710
YES
ADVERTISEMENT PROVIDER DELIVERS CUSTOMIZED ADVERTISEMENT TO CONSUMER (SEE FIG. 8)
712
CONSUMER DIPLAYS COMBINED CUSTOM ADVERTISEMENT AND ELECTRONIC PAGE
714
CONSUMER DECIDES WHETHER TO OBTAIN ADDITIONAL ADVERTISING INFORMATION ?
716
NO
YES
ADVERTISING PROVIDER RECEIVES NOTICE THAT USER IS OBTAINING ADDITIONAL ADVERTISING INFORMATION
718
CONSUMER DECIDES TO ACCESS ANOTHER CONTENT PROVIDER ?
720
YES
NO
END
722

FIG. 7

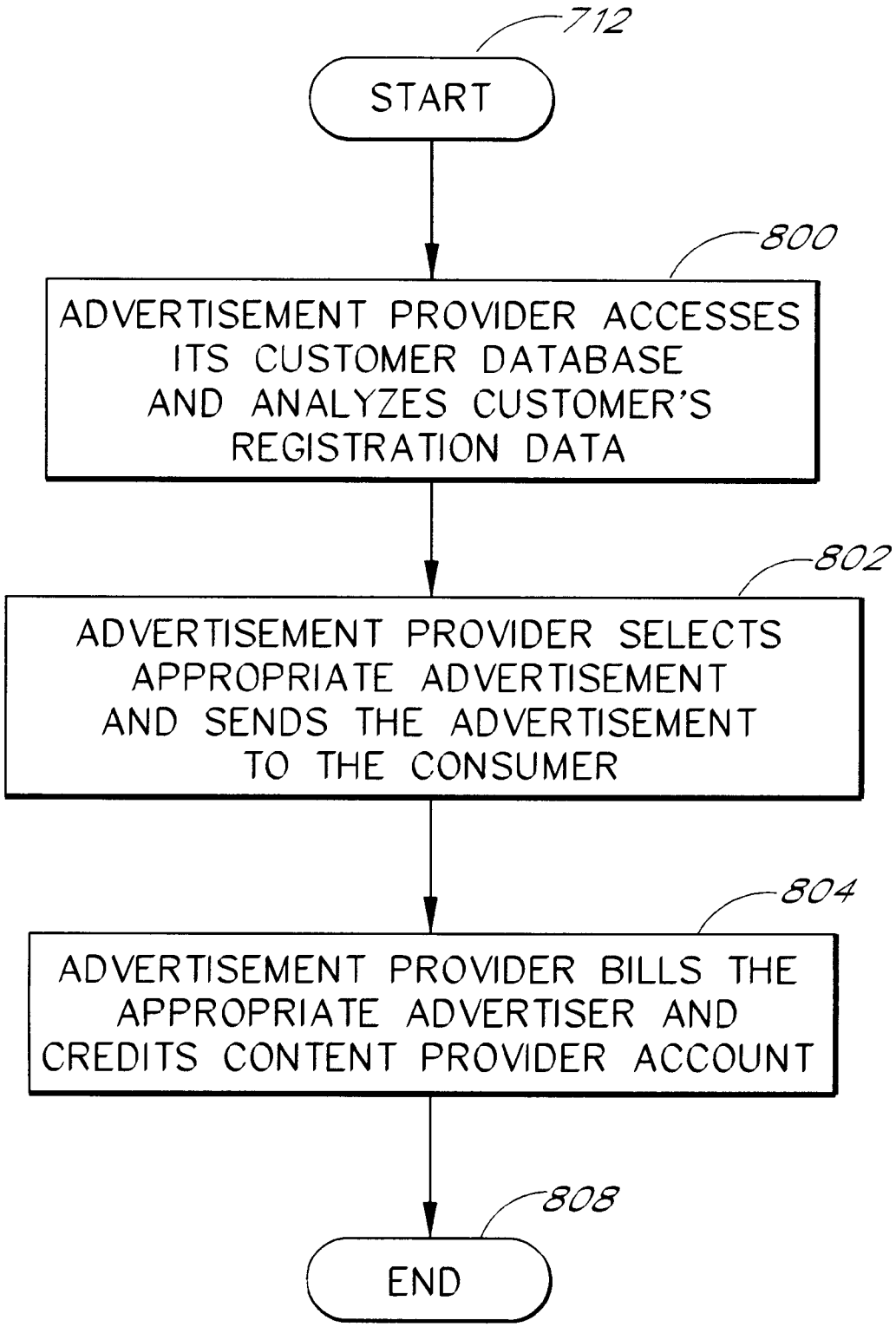
712
START
800
ADVERTISEMENT PROVIDER ACCESSES ITS CUSTOMER DATABASE AND ANALYZES CUSTOMER'S REGISTRATION DATA
802
ADVERTISEMENT PROVIDER SELECTS APPROPRIATE ADVERTISEMENT AND SENDS THE ADVERTISEMENT TO THE CONSUMER
804
ADVERTISEMENT PROVIDER BILLS THE APPROPRIATE ADVERTISER AND CREDITS CONTENT PROVIDER ACCOUNT
808
END

FIG. 8

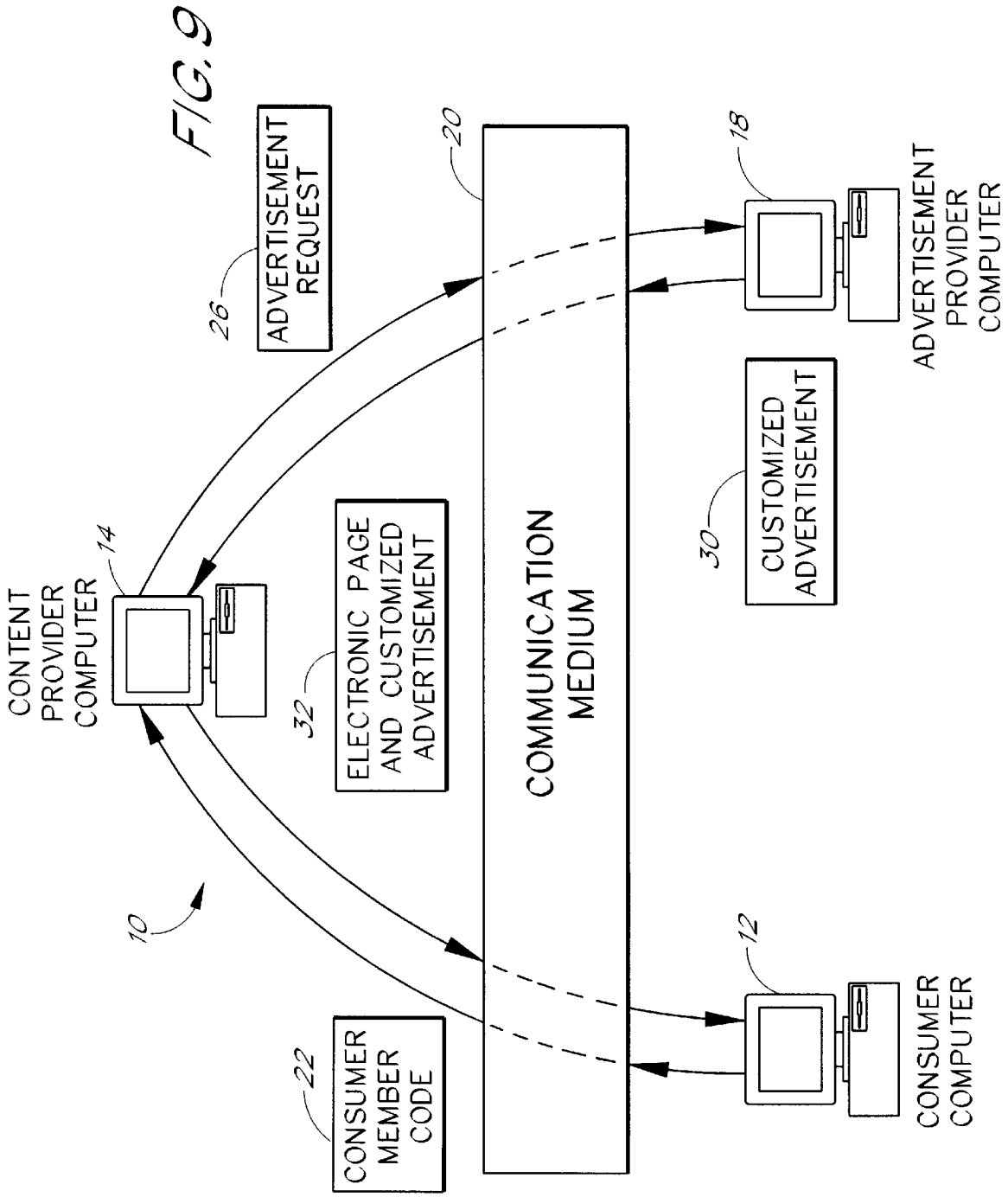
FIG. 9
CONTENT PROVIDER COMPUTER
14
ADVERTISEMENT REQUEST
26
ELECTRONIC PAGE AND CUSTOMIZED ADVERTISEMENT
32
10
CONSUMER MEMBER CODE
22
20
COMMUNICATION MEDIUM
18
ADVERTISEMENT PROVIDER COMPUTER
CUSTOMIZED ADVERTISEMENT
30
12
CONSUMER COMPUTER

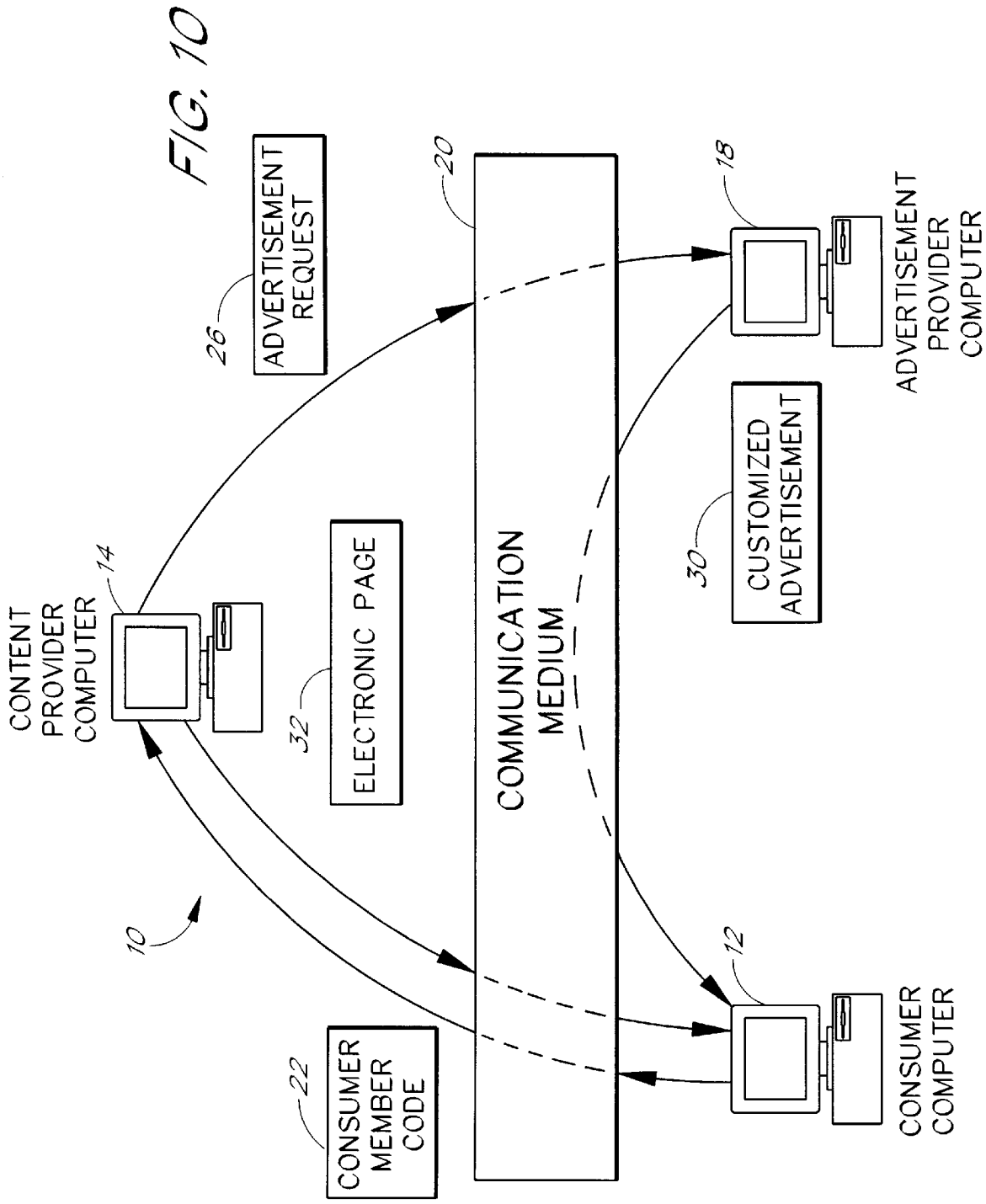
CONTENT PROVIDER COMPUTER
14
10
ADVERTISEMENT REQUEST
26
ELECTRONIC PAGE
32
CONSUMER MEMBER CODE
22
20
COMMUNICATION MEDIUM
18
ADVERTISEMENT PROVIDER COMPUTER
CUSTOMIZED ADVERTISEMENT
30
12
CONSUMER COMPUTER

FIG. 10

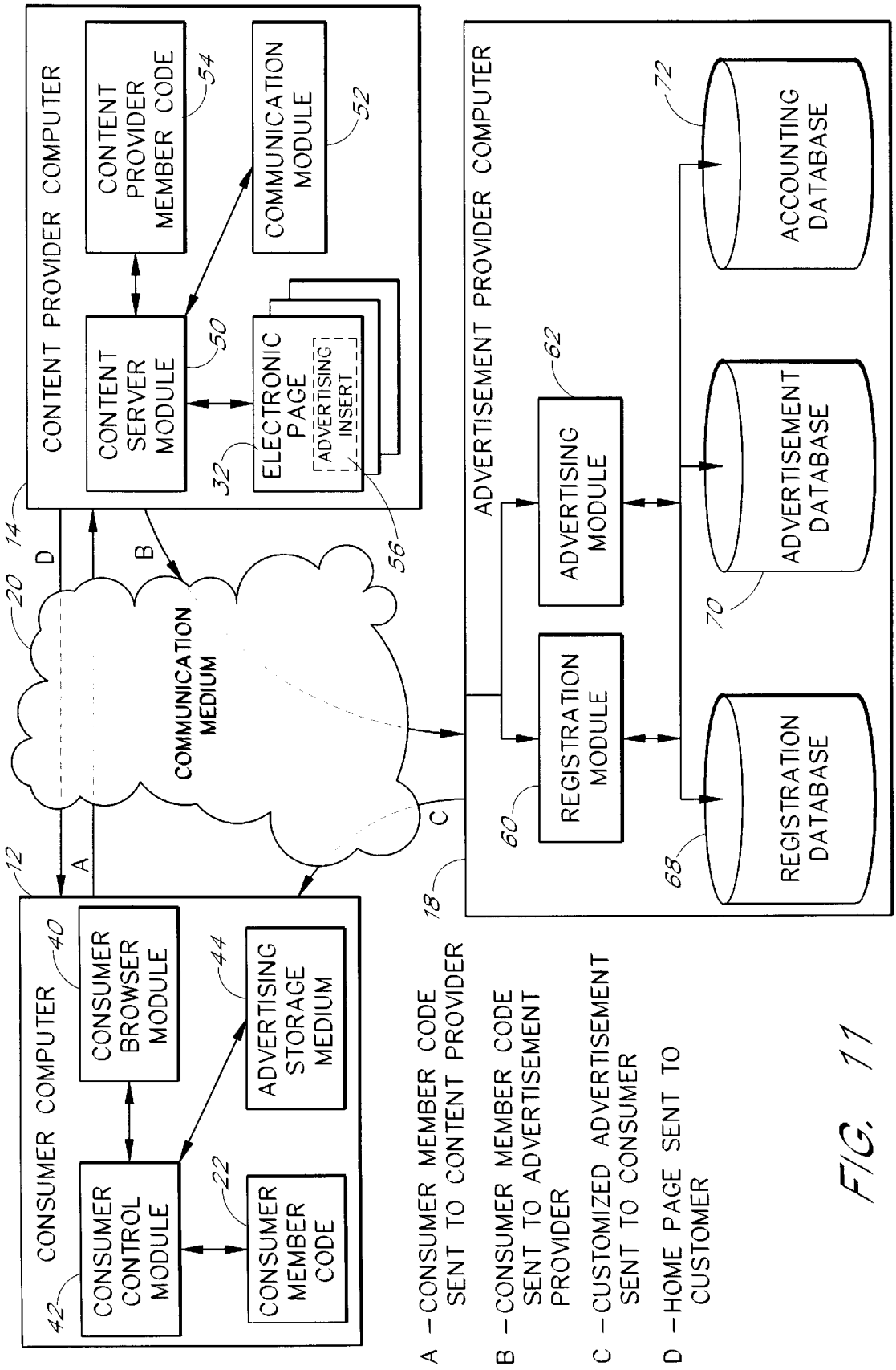
CONTENT PROVIDER COMPUTER
CONTENT PROVIDER MEMBER CODE
54
COMMUNICATION MODULE
52
CONTENT SERVER MODULE
50
ELECTRONIC PAGE
ADVERTISING INSERT
32
56
14
D
B
20
COMMUNICATION MEDIUM
A
C
12
18
ADVERTISEMENT PROVIDER COMPUTER
ADVERTISING MODULE
62
REGISTRATION MODULE
60
ACCOUNTING DATABASE
72
ADVERTISEMENT DATABASE
70
REGISTRATION DATABASE
68
CONSUMER COMPUTER
CONSUMER BROWSER MODULE
40
ADVERTISING STORAGE MEDIUM
44
CONSUMER CONTROL MODULE
42
CONSUMER MEMBER CODE
22
A – CONSUMER MEMBER CODE SENT TO CONTENT PROVIDER
B – CONSUMER MEMBER CODE SENT TO ADVERTISEMENT PROVIDER
C – CUSTOMIZED ADVERTISEMENT SENT TO CONSUMER
D – HOME PAGE SENT TO CUSTOMER

FIG. 11

SYSTEM AND METHOD FOR DELIVERING CUSTOMIZED ADVERTISEMENTS WITHIN INTERACTIVE COMMUNICATION SYSTEMS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to communication systems and, in particular, to an apparatus and method for delivering customized advertisements within interactive communications systems.

2. Background

Recently, a wide range of interactive devices have been developed to provide information to consumers. These interactive devices include, for example, computers connected to various computer on-line services, interactive kiosks, interactive television systems and the like. In particular, the popularity of computer on-line services has grown immensely in popularity over the last decade.

Computer on-line services are provided by a wide variety of different companies. In general, most computer on-line services are accessed via the Internet. The Internet is a global network of computers. The structure of the Internet is a network backbone with networks branching from the backbone. These branches, in turn, have networks branching from them, and so on. Routers move information packets from network to network, until the information packets reach their destination. For a more detailed description of the structure and operation of the Internet, please refer to "The Internet Complete Reference," by Harley Hahn and Rick Stout, published by McGraw-Hill, 1994.

One popular part of the Internet is the World Wide Web. The World Wide Web contains computers which display graphical and textual information. Computers which provide information on the World Wide Web are typically called "websites." A website is defined by an Internet address which has an associated electronic page, often called a "home page." Generally, a home page is an electronic document which organizes the presentation of text, graphical images, audio and video into a desired display. These websites are operated by a wide variety of entities which are typically called "content providers."

A user may access the Internet using a home personal computer (PC) equipped with a conventional modem. Special interface software is installed within the PC so that when the user wishes to access the Internet, an attached modem is automatically instructed to dial the telephone number associated with the local Internet host server. The user can then access information at any address accessible over the Internet. Two well-known software interfaces, for example, are the Netscape Navigator developed by Netscape, Inc. and the Microsoft Internet Explorer developed by Microsoft Corporation.

Information exchanged over the Internet is typically encoded in HyperText Mark-up Language (HTML) format. The HTML format is a scripting language which is used to generate the home pages for different content providers. In this setting, a content provider is an individual or company that places information (content) on the Internet so that it can be accessed by others. As is well known in the art, the HTML format is a set of conventions for marking different portions of a document so that each portion appears in a distinctive format. For example, the HTML format identifies or "tags" portions of a document to identify different categories of text (e.g., the title, header, body text, etc.). When

a web browser accesses a HTML document, the web browser reads the embedded tags in the document so it appears formatted in the specified manner.

A HTML document can also include hyper-links which allow a user to move from one document to another document on the Internet. A hyper-link is an underlined or otherwise emphasized portion of text which, when selected using an input device such as a mouse, activates a software connection module which allows the user to jump between documents (i.e., within the same website or to other websites). Hyper-links are well known in the art, and are sometimes referred to as anchors.

Although the Internet and the World Wide Web, together with other interactive devices, are used widely to share information among different users, the full range of possibilities for use of these interactive computer services have not yet been fully developed.

As the popularity of the Internet and the World Wide Web has increased over the years, more companies are trying to find ways of promoting their product in a cost-effective manner. Thus, there has been a tremendous proliferation of corporate advertising across the Internet. For example, some companies such as Yahoo Corporation offer free services, such as the ability to search for particular sites on the Internet, but post advertising messages to consumers to help offset the cost of their service. Unfortunately, there is so far no effective way of targeting particular advertisements to those consumers most likely to use the product or service being offered. Therefore, a tremendous amount of advertising is wasted on promoting goods or services to an improper audience. As the number of people accessing the Internet increases, it will become more important to specifically target advertising to those individuals most likely to purchase the goods or services being offered. It will also be important for advertisers to know how effective a particular ad has become by tracking the responses of individual consumers. Unfortunately, there is currently no convenient mechanism for predetermining which users might be interested in a particular category of advertised goods or services. There is also no current method for tracking consumer responses to particular advertisements.

SUMMARY OF THE INVENTION

The system of the present invention overcomes the difficulties discussed above by providing an on-line advertising service which can custom tailor specific advertisements to particular consumers and track consumer responses to the advertisements. In particular, the present invention is a system and method for delivering customized advertisements to users of interactive devices. The interactive devices of the present invention can include computers connected to on-line services, interactive kiosks, interactive television systems and the like. In broad terms, the present invention includes a communications system having at least three different entities which communicate with each other. The entities include: a content provider, an advertisement provider and a consumer.

In the preferred embodiment, the invention is directed to delivering custom advertisements to consumers who use their computers to view information offered by different content providers existing on the Internet. Preferably, when a consumer accesses a content provider, the content provider transmits an electronic document to the consumer. Embedded within the electronic document is a advertisement request. When the consumer's computer displays the electronic document, the embedded advertisement request

directs the consumer computer to communicate with an advertisement provider. In response, the advertisement provider provides a customized advertisement. The advertisement provider then tracks the consumer's response to the customized advertisement.

The advertisement provider operates a computer which is also connected to the Internet. The advertisement provider's computer stores demographic information about consumers, and sends customized advertisements to the consumers based on the consumers demographic profile and tracks consumer responses to the customized advertisements. For example, when accessing a content provider's website, a consumer with a demographic profile indicating an interest in farming would be sent customized advertisements for farm products by the advertisement provider. Customer requests for more information about the advertised farm products are also monitored.

A consumer who wishes to receive customized advertisements first registers with the advertisement provider by entering pertinent demographic information into the advertisement provider's demographic database. The advertisement provider then retains a demographic profile of the consumer. In return, the advertisement provider assigns the consumer a unique member code. In an alternate embodiment, the consumer is sent unique software which enhances the consumer's Internet browser so that custom advertisements can be merged with electronic documents obtained from the content provider.

The content provider websites also register with the advertisement provider before they can receive the customized advertisement services. During registration, the advertisement provider assigns a custom member code to the content provider, creates a program called a "content provider script" for each content provider, and transfers an "advertisement request" to the content provider which identifies the content provider script. Preferably, the content provider script contains the content provider's member code. The advertisement request, on the other hand, contains commands which invoke the content provider script.

After obtaining the advertisement request, the content provider embeds the advertisement request into its electronic documents. When a registered consumer accesses a content provider's website, the content provider website transfers the electronic document and the embedded advertisement request to the consumer's computer. The embedded advertisement request directs the consumer computer to invoke the referenced content provider script in the advertisement provider computer. The advertisement provider executes the content provider script and obtains the content provider member code. The advertisement provider uses the content provider member code to track the number of advertisements displayed by a particular content provider.

In addition, to executing the content provider script, the advertisement provider also obtains the consumer's member code from the consumer computer. The advertisement provider uses the consumer member code to identify the consumer's demographic profile and preferences. The advertisement provider then selects an appropriate advertisement based on the consumer's profile and sends the customized advertisement to the consumer computer. The consumer computer then merges the content provider's electronic document with the advertisement provided by the advertisement provider to create a single displayed document to the consumer.

Another feature of the invention is directed to monitoring the particular advertisements which are viewed by particular consumers. With this information, advertisers can pay for advertising directed at specific demographic target groups. Additionally, advertisers may be billed by the advertisement provider based on actual delivery of the advertisements to pertinent consumers.

The invention also supports custom advertisements which can contain hyper-links to other information. The hyper-links typically direct the user's Internet browser to access different websites on the Internet. For example, if a consumer wishes to obtain additional information about an advertised product or service, the consumer may simply use a mouse to select an embedded hyper-link in the custom advertisement and be immediately transported to an advertiser's website. At the advertiser's website, the user may receive a directed sales pitch, more information or a purchase order request form.

An additional feature of the invention allows the advertisement provider to monitor the number of advertisements viewed by consumers associated with a particular content provider. With this information, the content providers can receive advertising revenue based on the number of consumers who access their websites. This frees the content providers from having to generate advertising data, from having to individually contact advertisers, from having to negotiate advertising payment fees, and from having to maintain an advertising administrative staff.

Another aspect of the invention relates to the addition of a fourth category of entities—the Internet providers. An Internet provider is a service which provides Internet access to consumers. Examples of Internet providers include American On-line, the Microsoft Network, Prodigy, Compuserve, and Network Intensive. Many users pay monthly access fees to the Internet providers to obtain local telephone connections, a variety of help services and an organized format for accessing the Internet.

When a consumer registers with the advertisement provider, this aspect of the present invention obtains information about the consumer's Internet provider and stores this information in the demographic profile. The system of the present invention can then monitor the number of advertisements viewed by consumers associated with a particular Internet provider. Accordingly, the system of the present invention can pay an Internet provider based on the number of advertisements viewed by its consumers. The Internet providers can then use this advertising revenue to reduce consumer access fees.

BRIEF DESCRIPTION OF THE FIGURES

FIG. **1** is a high level block diagram of the preferred system of the present invention and illustrates the interaction between the consumer computer, content provider computer, and advertisement provider computer.

FIG. **2** is a block diagram of the preferred system of the present invention showing the interaction of many consumer computers and content provider computers with an advertisement provider computer.

FIG. **3** is a high level flow diagram of the preferred process for sending electronic information and custom advertisements to a consumer computer.

FIG. **4** is a block diagram of the preferred system of the present invention showing the flow of information among the consumer computer, content provider computer and advertisement provider computer through a communication medium.

FIG. **5** is a flow diagram of the preferred process of registering a consumer with an advertisement provider.

FIG. **6** is a flow diagram of the preferred process of registering a content provider with an advertisement provider.

FIG. **7** is a flow diagram of the preferred process whereby a consumer accesses a content provider and is thereafter sent an electronic document and customer advertisement.

FIG. **8** is a detailed flow diagram of the preferred process where by the advertisement provider computer delivers the customized advertisement to the consumer computer.

FIG. **9** is a block diagram of an alternative embodiment of the present invention wherein the customized advertisement is sent through the content provider computer prior to reaching the consumer computer.

FIG. **10** is a block diagram of an alternative embodiment of the present invention wherein the content provider computer requests the customized advertisement and the advertisement computer then sends the customized advertisement directly to the consumer computer.

FIG. **11** is a block diagram of another embodiment of the present invention showing the flow of information among the consumer computer, content provider computer and advertisement provider computer through a communication medium.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention is an apparatus and method for providing customized advertisements to consumers. In a preferred embodiment, the customized advertisements are generated by an advertisement provider computer whenever a consumer accesses a content provider website. Although the present invention is described herein with reference to a preferred interactive communications system, the invention is not so limited, and can be used in a variety of other contexts in which it is desirable to provide customized advertisements to consumers.

To facilitate a complete understanding of the invention, the remainder of the detailed description is arranged within the following sections and subsections:

I. Glossary of Terms and Acronyms

II. Overview of the Preferred Interactive Communication System

III. Implementation of the Preferred Interactive Communication System

A. The Communication Medium

B. The Consumer Computers

C. The Content Provider Computers

D. The Advertisement Provider Computer

IV. Registration and Customized Advertisement Processing

A. Consumer Registration

B. Content Provider Registration

C. Customized Advertisement Processing

V. Other Embodiments

VI. Conclusion

I. Glossary of Terms and Acronyms

The following terms and acronyms are used throughout the detailed description:

Client-Server. A model of interaction in a distributed system in which a program at one site sends a request to a program at another site and waits for a response. The requesting program is called the "client," and the program which responds to the request is called the "server." In the context of the World Wide Web, the client is typically a "Web browser" which runs on a user's computer; the program which responds to Web browser requests at a website is commonly referred to as a "Web server."

Common Gateway Interface (CGI). A standard interface which specifies how a Web server (or possibly another information server) launches and interacts with external programs (such as a database search engine) in response to requests from clients. For example, when a consumer Web user fills out an on-screen form which is linked to a database query, the on-screen form will invoke a common gateway interface program (called a CGI "script") which processes the desired database query. For more information on the common gateway interface, see Ian S. Graham, *The HTML Source Book,* John Wiley and Sons, Inc., 1995 (ISBN 0471-11894-4), pp. 231–278.

Digital Cash. In digital cash commerce, a consumer who maintains an electronic bank account and a payee who maintains an electronic bank account can engage in on-line transactions. When the consumer purchases a good or service with digital cash, the consumer's bank account is automatically debited and the payee's bank account is automatically credited. Likewise, when providing a digital cash refund or transfer, the payee can debit its own bank account while crediting the consumer's bank account.

Internet. A collection of interconnected (public and/or private) networks that are linked together by a set of standard protocols to form a distributed network. While this term is intended to refer to what is now commonly known as the Internet, it is also intended to encompass variations which may be made in the future, including changes and additions to existing standard protocols.

HyperText Markup Language (HTML). A standard coding convention and set of codes for attaching presentation and linking attributes to informational content within documents. (HTML 2.0 is currently the primary standard used for generating Web documents.) During a document authoring stage, the HTML codes (referred to as "tags") are embedded within the informational content of the document. When the Web document (or "HTML document") is subsequently transferred from a Web server to a Web browser, the codes are interpreted by the Web browser and used to parse and display the document. In addition to specifying how the Web browser is to display the document, HTML tags can be used to create links to other websites and other Web documents (commonly referred to as "hyper-links"). For more information on HTML, see Ian S. Graham, *The HTML Source Book,* John Wiley and Sons, Inc., 1995 (ISBN 0471-11894-4).

Hypertext Transport Protocol (HTTP). The standard World Wide Web client-server protocol used for the exchange of information (such as HTML documents, and client requests for such documents) between a Web browser and a Web server. HTTP includes a number of different types of messages which can be sent from the client to the server to request different types of server actions. For example, a "GET" message, which has the format GET <URL>, causes the server to return the document or file located at the specified Universal Resource Locator (URL).

Persistent Client State Cookies (Cookie). A file stored on the client computer which contains information such as user names and preferences. In the preferred embodiment, the Cookie in the consumer computer stores a member code which uniquely identifies each consumer. The specification for Cookies can be found at http://www.netscape.com/newsref/std/cookie_spec.html.

Plug-in. A plug-in is a custom application which allows developers to customize or enhance features of Web brows-

ers and Web servers. Thus, a plug-in works in concert with the Web browser or a Web server to provide additional features. Typically, a HTML tag exists in a HTML document which commands the Web browser or Web server to launch the plug-in. For example, a HTML tag may command a Web browser to execute a plug-in which communicates with an external database. The plug-in specification documentation can be found at http://www.netscape.com and http://www.microsoft.com.

Transmission Control Protocol/Internet Protocol (TCP/IP). A standard Internet protocol (or set of protocols) which specifies how two computers exchange data over the Internet. TCP/IP handles issues such as packetization, packet addressing, handshaking and error correction. For more information on TCP/IP, see Volumes I, II and III of Comer and Stevens, *Internetworking with TCP/IP,* Prentice Hall, Inc., ISBNs 0-13-468505-9 (vol. I), 0-13-125527-4 (vol. II), and 0-13-474222-2 (vol. III).

Uniform Resource Locator (URL). A unique address which fully specifies the location of a file or other resource on the Internet. The general format of a URL is protocol://machine address:port/path/filename. The port specification is optional, and if none is entered by the user, the Web browser defaults to the standard port for whatever service is specified as the protocol. For example, if HTTP is specified as the protocol, the Web browser will use the HTTP default port.

World Wide Web ("Web"). Used herein to refer generally to both (1) a distributed collection of interlinked, user-viewable hypertext documents (commonly referred to as "Web documents" or "electronic pages" or "home pages") that are accessible via the Internet, and (2) the client and server software components which provide user access to such documents using standardized Internet protocols. Currently, the primary standard protocol for allowing applications to locate and acquire Web documents is the HyperText Transfer Protocol (HTTP), and the electronic pages are encoded using the HyperText Markup Language (HTML). However, the terms "Web" and "World Wide Web" are intended to encompass future markup languages and transport protocols which may be used in place of or in addition to the HyperText Markup Language and the HyperText Transfer Protocol.

II. Overview Of The Preferred Interactive Communication System

This section provides an overview of an interactive communication system in a preferred embodiment of the present invention. A block diagram of the preferred interactive communication system is shown in FIG. **1**. The interactive communication system **10** includes a consumer computer **12**, a content provider computer **14** and an advertisement provider computer **18** which communicate with each other by use of a communication medium **20**.

In operation, a consumer directs the consumer computer **12** to communicate with the content provider computer **14** via the communication medium **20**. Once the consumer computer **12** establishes a communication link with the content provider computer **14**, the content provider computer **14** transfers an electronic page **32** to the consumer computer **12**. The preferred electronic page **32** contains an embedded advertisement request **26**.

When the consumer computer **12** receives the electronic page **32**, it executes the embedded advertisement request **26**. The embedded advertisement request **26** directs the consumer computer **12** to establish a communications link with the advertisement provider computer **18**. Furthermore the embedded advertisement request **26** directs the advertisement provider computer **18** to execute a content provider script (not shown). The content provider script exists on the advertisement provider computer **18** and contains a content provider member code (not shown). The advertisement provider computer **18** uses the content provider member code to track the number of advertisements viewed by the consumer computers **12** connected to a particular content provider computer **14**.

In addition, the consumer computer **12** contains a consumer member code **22** which uniquely identifies the consumer. The advertisement provider computer **18** obtains the consumer member code **22** and uses the consumer's member code **22** to access the consumer's profile in a demographic database (not shown). Based on the consumer's profile, the advertisement provider computer **18** selects an appropriate customized advertisement **30**. The advertisement provider computer **18** then sends the customized advertisement **30** to the consumer computer **12**. As discussed in more detail below, the consumer computer **12** merges the electronic page **32** and customized advertisement **30**.

As shown in FIG. **2**, a single advertisement provider computer **18** also supports an interactive communication system with multiple consumer computers **12** and multiple content provider computers **14**. As different consumer computers **12** access different content provider computers **14**, the content provider computers **14** communicate with the advertisement provider computer **18** as discussed above. In the preferred embodiment, the advertisement provider computer **18** is configured to respond to each of the content provider **14** computers in a timely manner. It should be noted that a single advertisement provider **18** can manage requests from numerous content providers and act like a "clearing house" for advertisements.

Referring to FIG. **3**, an overview of the process of a consumer requesting an electronic document is shown. At start state **300** the process initializes and moves to state **302** wherein the consumer computer **12** requests an electronic page **32** from the content provider computer **14**. As discussed in more detail below, the consumer computer **12** uses internet browsing software (not shown) to access the content provider's URL address. The consumer browser software then accesses an electronic document **32** stored on the content provider computer **14**.

Moving to state **304**, the content provider computer **14** sends the electronic document **32** and the embedded advertisement request to the consumer computer **12**. Proceeding to state **306**, the consumer computer executes the advertisement request **26** and establishes a communications link with the advertisement provider computer **18**. Proceeding to state **308**, the advertisement request **26** directs the advertisement provider computer **18** to execute a content provider script which contains the content provider member code. In addition, during state **308**, the advertisement provider computer **18** obtains the consumer member code **22** stored on the consumer computer **12**.

Proceeding to state **310**, the advertisement provider computer **18** uses the consumer member code **22** to access the consumer's profile. The advertisement provider computer **18** selects an appropriate advertisement based on the consumer's profile and then sends the customized advertisement **30** to the consumer computer **12**.

Proceeding to state **312**, the process combines the electronic page **32** from the content provider computer **14** and the customized advertisement **30** from the advertisement provider computer **18** into a displayable page. Once the combined page has been displayed to the consumer, the process ends at end state **314**.

III. Implementation Of The Preferred Interactive Communication System

A. The Communication Medium

Focusing now on the communication medium **20** as shown in FIG. **2**, the presently preferred computer medium includes the Internet **33** which is a global network of computers. The structure of the Internet **33**, which is well known to those of ordinary skill in the art, includes a network backbone with networks branching from the backbone. These branches, in turn, have networks branching from them, and so on. Routers move information packets between network levels, and then from network to network, until the packet reaches the neighborhood of its destination. From the destination, the destination network's host directs the information packet to the appropriate terminal, or node. For a more detailed description of the structure and operation of the Internet **33**, please refer to "The Internet Complete Reference," by Harley Hahn and Rick Stout, published by McGraw-Hill, 1994.

In one advantageous embodiment, the Internet routing hubs comprise domain name system (DNS) servers, as is well known in the art. DNS is a Transfer Control Protocol/Internet protocol (TCP/IP) service that is called upon to translate domain names to and from Internet Protocol (IP) addresses. The routing hubs connect to one or more other routing hubs via high speed communication links.

One of ordinary skill in the art, however, will recognize that a wide range of interactive communication mediums can be employed in the present invention. For example, the communication medium **20** can include interactive television networks, telephone networks, wireless data transmission systems, two-way cable systems, customized computer networks, interactive kiosk networks, automatic teller machine networks, and the like.

In addition to the Internet **33**, the communication medium **20** may also contain Internet providers **34**. An Internet provider **34** is a computer system which provides Internet **33** access to the consumer computers. Examples of Internet providers **34** include American On-line, the Microsoft Network, Prodigy, Compuserve, and Network Intensive to name a few. Many users pay monthly access fees to the Internet providers **34** because the Internet providers **34** provide local telephone connections, a variety of help services and an organized format for accessing the Internet **33**.

The Internet providers **34** are optional, and in some cases, the consumer computers **12** may have direct access to the Internet **33**. For example, the consumer computers **12** may be connected to a local area network which in turn is directly connected to the Internet **33**. It should be understood that the local area network may also connect to the Internet **33** via a conventional telephone line; however, since local area networks typically have a higher volume of data traffic, it is advantageous to include a high-speed connection to support the volume of information which the local area network will transfer to and from the Internet **33**.

As further depicted in FIG. **2**, an Internet provider **34** connects a consumer computer **12** to the Internet **33**. Typically, the Internet provider **34** is connected to an Internet routing hub via a high speed communications link. The communication links, in turn, connect to the content provider computers. When a consumer desires to access information available on the Internet **33** via an Internet provider **34**, the consumer initiates a connection with the Internet provider **34** from his or her consumer computer **12**.

For example, the consumer invokes a browser which executes on the consumer computer **12**. The browser, in turn, establishes a communication link directly with the Internet **33** or with the Internet provider **34** via a communications link. Once connected to the Internet provider **34**, the consumer can direct the browser to access information provided by one of the content provider computers **14**. The Internet provider **34** then communicates with the Internet **33** to establish a communications link between the consumer computer **12** and the desired content provider computer **14**.

One popular part of the Internet **33** is the World Wide Web. The World Wide Web contains different computers which store HTML documents capable of displaying graphical and textual information. The content provider computers **14** which provide information on the World Wide Web are typically called "websites." A website is defined by an Internet address which has an associated electronic page. Generally, an electronic page is a document which organizes the presentation of text, graphical images, audio and video. As discussed above, these websites are operated by a wide variety of content provider computers **14**.

B. The Consumer Computers

Focusing now on the consumer computer **12** as illustrated in FIG. **4**, the consumer computer **12** is a device which allows a consumer to interact with the communication medium **20**. In the preferred embodiment, the consumer computer **12** is a conventional computer which is equipped with a conventional modem. Preferably, the consumer computer **12** runs an appropriate operating system such as the Microsoft® Windows® 3.1, Microsoft® Windows **95**, Microsoft® Windows® NT, the Apple® MacOS®, or IBM® OS/2® operating systems. As is conventional, the preferred operating system includes a TCP/IP stack which handles all incoming and outgoing message traffic passed over the Internet **33**.

In other embodiments, the consumer computer **12** could, for example, be a computer workstation, a local area network of individual computers, an interactive television, an interactive kiosk, a personal digital assistant, an interactive wireless communications device or the like which can interact with the communication medium **20**. While in such systems, the operating systems will differ, they will continue to provide the appropriate communications protocols needed to establish communication links with the communication medium **20**.

In the preferred embodiment, the consumer computer **12** utilizes several operational modules including a consumer browser module **40**, a consumer member code **22** and an advertising storage medium **44**. The consumer browser module **40** (hereinafter referred to as the consumer browser) is a software program which allows a consumer to access different content providers through the communication medium **20**. In the preferred embodiment, the consumer browser **40** is the Netscape® Navigator developed by Netscape, Inc. or the Microsoft® Internet Explorer developed by Microsoft Corporation. One of ordinary skill in the art, however, will recognize that numerous other types of access software could also be used to implement the present invention. These other types of access software could, for example, be other types of Internet browsers, custom network browsers, two-way communications software, cable modem software, point-to-point software and the like.

The consumer member code module **22** stores a code which uniquely identifies each consumer. In the preferred embodiment, the consumer member code module **22**, which is hereinafter referred to as the consumer member code **22**, is a set of alpha-numeric characters. The consumer member code **22**, as is discussed in more detail below, is assigned when the consumer registers with the advertisement provider computer **18**. Thus, when a consumer registers with the

advertisement provider computer **18**, the consumer is assigned a unique member code. A copy of the consumer member code **22** is then stored on the consumer computer **12** in a "cookie".

A "cookie" is a small piece of information which a web server (via a CGI script) can store with a web browser and later read back from that browser. This is useful for having the browser remember some specific information across several pages; for example, when the consumer browses through a "virtual shopping mall" and add items to his "shopping cart," a list of the items he has picked up is kept in the consumer browser's cookie file so that the consumer can pay for all the items at once he has finished shopping.

To create a cookie, a web server sends a "Set-Cookie" HTTP header line in response to a URL access from a browser:

Set-Cookie: NAME=VALUE; expires=DATE; path=PATH; domain=DOMAIN_NAME; secure

NAME and VALUE are the actual information to include in the cookie. DATE is the time at which the cookie information expires and will be "forgotten" by the browser. DOMAIN is a host or domain name for which the cookie is valid. PATH specifies a subset of the URLs at that server for which the cookie is valid. If "secure" is included in the cookie, then the cookie will only be transmitted over a secure network connection. All of these fields except NAME=VALUE are optional.

Whenever the browsing software sends a HTTP request for a URL on a server for which it has stored cookies, it includes a line in the form: Cookie: NAME=VALUE; NAME=VALUE; . . . which lists all cookies that apply to that particular URL. The following is a sample CGI program (a Unix shell script) that sends a cookie to a particular URL.

```
#!/bin/sh
echo "Content-type: text/html"
echo "Set-cookie: codeno=12345A; expires=Thursday, Jan. 1, 1998-12:00:00 GMT"
echo ""
echo "& 1 t; H1 & gt; Here is the member code number & 1 t; /H1 & gt; "Codeno=123456"" (This is stored with the browser)
(end)
```

The following is an exemplary script which reads a cookie:

```
#!/bin/sh
echo "Content-type: text/html"
echo ""
echo "Here is the member code: & 1 t; P & gt;"
echo "$HTTP_COOKIE & 1 t; P & gt;"
(end)
```

An advertising storage medium **44** can also be included in the consumer computer **12**, but is optional. In one embodiment, the advertising storage medium **44** is a compact disk drive and a compact disk. The compact disk stores a variety of advertisements which can be retrieved and displayed by the consumer computer **12**. The advertising storage medium **44**, however, can consist of a wide range of data storage devices including, but not limited to, digital video devices, floppy disks, hard drives, system memory, tape drives, Personal Computer Memory Card Interface Adapter cards (PCMCIA cards), and the like. As is discussed in more detail below, in one embodiment of the present invention, the consumer computer **12** receives an advertisement command which directs the consumer computer **12** to retrieve and display one of the advertisements stored on the advertising storage medium **44**.

Preferably, the advertisement command identifies a particular location on the advertising storage medium **44**, such as the particular track and sector where an advertisement is located. Because current communications systems transfer data at much slower rates than local storage devices, the consumer computer **12** can retrieve an advertisement from the advertising storage medium **44** much faster than obtaining the advertisement directly from the advertisement provider computer **18**. Accordingly, a short advertisement command can be sent which specifically retrieves a particular advertisement from the advertising storage medium, which significantly reduces transmission times and response times across the communication medium **20**.

C. The Content Provider Computers

A wide range of information and services are available to the consumers by accessing information stored on different content provider computers **14**. In the preferred embodiment, the content provider computers **14** are websites on the World Wide Web. Preferably, the content provider computer **14** is a conventional computer which is equipped with a communications link to the Internet **33**. Preferably, the content provider computer **14** runs an appropriate operating system such as Unix, Microsoft® Windows® 3.1, Microsoft® Windows **95**, Microsoft® Windows® NT, the Apple® MacOS® or IBM® OS/2® operating system. As is conventional, the preferred operating system includes a TCP/IP stack which handles all incoming and outgoing message traffic passed over the Internet **33**.

The content provider computers **14** can, however, include a wide range of devices with provide information, graphics or text. These devices may contain specialized operating systems which communicate using their respective communications protocols. For example, the content provider computers **14** can include, network servers, video delivery systems, audio-visual media providers, television programming providers, telephone switching networks, wireless communication centers and the like.

As illustrated in FIG. **4**, the content provider computer **14** in the preferred embodiment delivers information to the consumer computer **12** by utilizing a variety of operational modules. These modules include a content server module **50** and one or more electronic pages **32**.

The preferred content server module **50**, which is hereinafter referred to as the content server **50** is a standard Web server software system which serves electronic pages. The content server **50** may be, for example, Netscape's Internet Server software, Microsoft's Internet Server software or the like. Such server software is configured to process messages from the consumer computers **12** and display desired electronic pages. In particular, the server software sends copies of HTML pages to each consumer computer **12** which accesses the content provider computer **14**.

The electronic page module **32** within the content provider computer **14**, which is hereinafter referred to as the electronic pages **32**, provides an organizational structure for presenting information to the consumer. In addition, each electronic page **32** contains an advertisement insert **56**. The advertisement insert **56** is a place-holder configured to contain the customized advertisement **30** generated by the advertisement provider computer **18**. In the preferred embodiment, the electronic pages **32** are HTML documents which contain HTML encoding.

HTML encoding is a script encoding language which is used to define document content information. As is well known in the art, HTML is a set of conventions for marking portions of a document so that, when accessed by a browser, each portion appears with a distinctive format. The HTML indicates, or "tags," portions of the document (e.g., the title, header, body text, etc.). In the preferred embodiment, the

advertising insert **56** contains the advertisement request **26**. The advertisement request **26** references a content provider CGI script **64** which exists on the advertisement provider computer **18**. Preferably, the advertising request **26** is an HTML tag which identifies 1) the content provider script and 2) the content provider member code and 3) the Internet address or URL of the advertisement provider computer **18**.

As discussed in more detail below, when each content provider **14** registers with the advertisement provider computer **18**, the advertisement provider computer **18** creates a unique content provider member code. In addition, the advertisement provider computer **18** creates a custom content provider CGI script **64** which stores the content provider member code. This custom content provider CGI script **64** is hereinafter referred to as the content provider script **64**. When the advertisement provider computer **18** executes the content provider script **64**, the advertisement provider computer **18** identifies which content provider computer **14** is being accessed by a consumer computer **12**.

D. The Advertisement Provider Computer

The advertisement provider computer **18** shown in FIG. **4** maintains consumer information and generates customized advertisements **30**. In the preferred embodiment, the advertisement provider computer **18** is a website connected to the World Wide Web. Preferably, the advertisement provider computer **18** is a conventional computer which is equipped with a communications link to the Internet **33**. Preferably, the advertisement provider computer runs an appropriate operating system such as Unix, the Microsoft® Windows® 3.1, Microsoft® Windows **95**, Microsoft® Windows® NT, the Apples MacOS®, the IBM® OS/2® operating systems or the like. As is conventional, the preferred operating system includes a TCP/IP stack which handles all incoming and outgoing message traffic passed over the Internet **33**.

The advertisement provider computer **18** can, however, include a wide range of mechanisms for providing registration services and customized advertisement **30**. These devices may contain specialized operating systems which communicate with their respective communication medium using the appropriate communications protocols. For example, the advertisement provider computers **18** can include, a server within a computer network, a provider of video delivery systems, audio-visual media server, a television programming provider, a computer connected to a telephone switching network, a computer server in a wireless communication center and the like.

The advertisement provider computer **18** utilizes a variety of modules to store customer information and to generate customized advertisements **30**. The modules include a registration module **60**, an advertising module **62**, a registration database **68**, an advertisement database **70** and an accounting database **72**. The registration module **60**, as is discussed in more detail below, allows customers to register with the advertisement provider computer **18**.

In the preferred embodiment, the registration module **60** is an enhancement to a standard Web server. The standard Web server software may be, for example, Netscape's Internet Server software, Microsoft's Internet Server software or the like. Such server software is configured to process messages from the consumer computers **12**.

In the preferred embodiment, the registration module **60** further enhances the standard server software by providing software routines which (1) assign the consumer member codes **22**, (2) transfer each consumer member code **22** to the consumer computers **12**, (3) assign the content provider member codes, (4) create the content provider scripts and (5) transfer the advertising request **26** to the content provider computers **14**. This enhanced functionality is preferably implemented with the content provider scripts or alternatively, is integrated with the server software. For example, the enhancements can be integrated as application programming interfaces which are combined with the Netscape Server Application Programming Interface (NSAPI) or the Microsoft Internet Server Application Program Interface (ISAPI).

When a consumer computer **12** or a content provider computer **14** first accesses the advertisement provider computer **18**, the registration module **60** displays registration information. In particular, the server software displays copies of HTML pages to each consumer computer **12** and content provider computer **14** which desires to register with the advertisement provider computer **18**.

Thus, when a consumer registers with the advertisement provider computer **18**, the registration module **60** displays a HTML document which prompts the consumer to enter demographic data. The demographic data can contain a wide variety of information, including, but not limited to, age, sex, income, career, interests, hobbies, consumer preferences, the account number of the consumer's Internet provider, other account information, etc. Once the consumer enters the demographic data, the registration module **60** stores the demographic data as a profile in the registration database **68**.

The registration module **60** also, as explained in more detail below, assigns the consumer a consumer member code **22**. The registration module **60** not only stores the consumer member code **22** in the registration database **68**, but also sends a copy of the consumer member code **22** to be stored in a cookie on the consumer's computer **12**.

When a content provider registers with the advertisement provider computer **18**, the registration module **60** displays a HTML document which prompts the content provider to enter demographic data. The demographic data includes, but is not limited to, the content provider's website address, the name of the content provider, the type of products and services sold by the content provider, the size of the content provider, the content provider's account information, etc. Once the content provider enters the demographic data, the registration module **60** stores the data in the registration database **68**.

The registration module **60** also assigns the content provider a content provider member code **54**, stores the content provider member code **54** in the registration database **68**, creates the custom content provider scripts **64**, creates the advertisement request **26**. The registration module **60** also is configured to send the advertisement request **26** to the content provider computer **14**.

Preferably, the registration database **68** is implemented with Structured Query Language (SQL) code. The structured query language is a language standardized by the International Standards Organization (ISO) for defining, updating and querying relational databases. For example, the registration database can be implemented with any number of commercial database programs including Microsoft® Access, Oracle's relational database products and the like.

Focusing now on the advertising module **62** illustrated in FIG. **4**, the advertising module **62** processes messages from the consumer computers **12**. In the preferred embodiment, the advertising module **62** is a standard Web server. The advertising module **62** may be, for example, Netscape's Internet Server software, Microsoft's Internet Server software or the like. Such server software is configured to process advertisement requests **26** from the consumer computer **12**.

In the preferred embodiment, the advertisement requests **26** are embedded into the content provider's electronic documents **32**. When the consumer computer **12** receives the advertisement requests **26**, the consumer computer **12** executes the advertisement request **26**. In the preferred embodiment, the advertisement request **26** is an HTML tag which directs the consumer computer **12** to establish a communication link with the advertisement provider computer **18**. In addition, the HTML tag in the advertisement request **26** directs the advertising module **62** to execute the content provider script **64** associated with the accessed content provider **14**.

The advertising module **62** executes the content provider script **64** and obtains the content provider member code. In addition, the advertising module **62** uses the content provider member code **54** to obtain information about the content provider. In addition, the advertising module **62** obtains the consumer member code **22** from the consumer computer **12**.

The advertising module **62** uses the consumer member code **22** to obtain a consumer profile from the registration database **68**. As discussed in more detail below, the advertising module **62** then uses the consumer profile to select an appropriate advertisement from the advertisement database **70**. In another embodiment, the advertising module **62** uses both the consumer profile and the content provider information to select an appropriate advertisement from the advertisement database **70**. The advertising module **62** then sends a customized advertisement **30** directly to the consumer computer **12** to be incorporated into an electronic page **32** from the content provider computer **14**.

Focusing now on the advertisement database **70** illustrated in FIG. **4**, the advertisement database **70** contains numerous advertisements which have been designed for different types of consumers. For example, one version of an advertisement can be directed to selling fruit juice to children. Other versions of the advertisement, can be directed to selling the same fruit juice to teenagers, adults, or different demographic groups. The different versions of the advertisements are organized in the advertisement database **70** into different demographic categories which can be defined by the advertisement provider.

In addition, in the preferred embodiment, the advertisements are HTML compatible, such that an advertisement can contain hyper-links to other information. These hyper-links can contain for example, the URL of another content provider computer **14** which contains more information about the advertised product, sales pitches, electronic catalogs, purchase order forms and the like. For example, if after viewing a customized advertisement **30**, a consumer wishes to obtain additional information about an advertised product or service, the consumer can simply select the hyper-link in the custom advertisement **30** and be immediately transported to a different content provider computer **14** which contains more advertising information.

In the preferred embodiment, the advertisement database **70** is implemented with Structured Query Language (SQL) code. The structured query language is a language standardized by the International Standards Organization (ISO) for defining, updating and querying relational databases. For example, the advertisements can be organized and stored in the advertisement database **70** with any number of commercial database programs including Microsoft® Access, Oracle's relational database products and the like.

The advertisement provider computer **18** stores advertisement audit information in the accounting database **72**. In the preferred embodiment, the advertisement audit information includes which advertisements are viewed by consumers, how often the advertisements are viewed, which consumers have viewed an advertisement, the number and type of advertisements a particular consumer has viewed, which content providers are requesting customized advertisements, the number and type of advertisements which are being displayed by a particular content provider computer **14**, etc.

Maintaining a record of the advertisement audit information in the accounting database **72** provides a number of advantages. For example, because the accounting database **72** maintains a record of which advertisements have been viewed by consumers, advertisers can be billed based on actual delivery of the advertisements to pertinent consumers. Furthermore, advertisers can be billed based on how often a targeted demographic group views the advertisements.

In addition, the ability to monitor the number of advertisements displayed by a particular content provider computer **14** provides a number of advantages. For example, the advertisement provider can pay the content provider based on the volume of advertisements actually displayed by the content provider computer **14**. This frees the content providers from having to generate advertising data, from having to individually contact advertisers, from having to negotiate advertising payment fees, and from having to maintain an advertising administrative staff.

Furthermore, because the preferred embodiment also is capable of storing a consumer's Internet provider account number in the registration database **68**, the preferred embodiment can monitor the number of advertisements viewed by consumers associated with a particular Internet provider **34**. Accordingly, the invention can pay an Internet provider **34** based on the number of advertisements viewed by its consumers. The Internet providers **34** can then use this advertising revenue to reduce consumer access fees. Alternatively, the preferred embodiment can pay a consumer for viewing advertisements by crediting a consumer's Internet provider account.

In addition, because the preferred embodiment also is capable of storing a consumer's digital cash account, the preferred embodiment can pay the consumer with digital cash each time the consumer views an advertisement. This allows the consumer to obtain digital cash which the consumer can use to purchase other goods and services offered for sale on the Internet **33**.

IV. Registration And Customized Advertisement Processing

FIG. **4** also illustrates flow of information when (1) a consumer registers with the advertisement provider computer **18**, (2) a content provider registers with the advertisement provider computer **18**, and (3) processing a customized advertisement **30**. The data flow sequence for the consumer registration process is illustrated with event A. The data flow sequence for the content provider registration process is illustrated with event B. The data flow sequence for the customized advertisement processing is illustrated with events C through F.

A. Consumer Registration

With reference to event A, the consumer computer **12** registers with the advertisement provider computer **18** by first establishing a communications link with the advertisement provider computer **18**. The flow diagram corresponding to event A is illustrated in FIG. **5**. Beginning in a start state **500** in FIG. **5**, the preferred embodiment of the present invention proceeds to state **502**. In state **502**, the consumer directs his consumer computer **12** to communicate with the advertisement provider computer **18**. In particular, during state **502**, the consumer inputs the URL of the advertising provider computer **18** into his consumer browser **40**. The

consumer browser **40** then establishes a link with the registration module **60**.

Upon establishing a link with the registration module **60**, the registration module **60** displays a HTML document which invites the consumer to input demographic information. Proceeding to state **504**, the consumer enters information which includes, but is not limited to, age, sex, income, career, interests, hobbies, consumer preferences, the account number of the consumer's Internet provider **34**, other account information, etc.

Proceeding to state **506**, the registration module **60** assigns the consumer a consumer member code **22**. Each consumer is assigned a separate consumer member code **22**. Preferably, the consumer member code **22** comprises letters and numbers which uniquely identify the consumer. In the preferred embodiment, the registration module **60** assigns the consumer member code **22** with a CGI script which generates unique consumer member codes **22**.

Proceeding to state **508**, the registration module **60** stores the consumer member code **22** and the consumer's demographic data in the registration database **68**. In the preferred embodiment, the registration module **60** uses standard structured query language instructions to add the consumer data and the consumer member code **22** to the registration database **68**.

Proceeding to state **510**, the registration module **60** then transfers the consumer member code **22** to the consumer computer **12**. In the preferred embodiment, the registration module uses standard HTTP transfer procedures to transfer the consumer member code **22** to a cookie on the consumer computer **12**.

Proceeding to state **512**, the consumer browser **40** in the consumer computer **12** receives the consumer member code **22** and stores them on a computer accessible media. In the preferred embodiment, the consumer browser stores the consumer member code **22** in the consumer browser's Cookie. Proceeding to end state **514**, the consumer computer **12** disconnects from the advertisement provider computer **18**.

B. Content Provider Registration

With reference to event B illustrated in FIG. **4**, the content provider computer registers with the advertisement provider computer **18** by first establishing a communications link with the advertisement provider computer **18**. The flow diagram corresponding to Event B is illustrated in FIG. **6**. Beginning in a start state **600**, the preferred embodiment of the present invention proceeds to state **602**. In state **602**, the content provider directs his content provider computer **14** to establish a communications link with the registration module **60** in the advertisement provider computer **18**.

Upon establishing a communications link with the registration module **60**, the registration module **60** displays a HTML document which invites the content provider to input demographic information. Proceeding to state **604**, the content provider enters information which includes, but is not limited to, the content provider's website address, the name of the content provider, the type of products and services sold by the content provider, the size of the content provider, the content provider's account information, etc.

Proceeding to state **606**, the registration module **60** assigns the content provider a content provider member code **54**. Each content provider is assigned a unique content provider member code **54**. Preferably, the content provider member code **54** comprises letters and numbers which uniquely identify the content provider. In the preferred embodiment, the registration module **60** assigns the content provider member code **54** with a CGI script which generates unique content provider member codes **54**.

Proceeding to state **608**, the registration module **60** stores the content provider member code **54** and the content provider demographic data in the registration database **68**. In the preferred embodiment, the registration module **60** uses standard structured query language instructions to add the content provider member code **54** and content provider data to the registration database **68**.

Proceeding to state **610**, the registration module **60** then creates the content provider script **64**. Each content provider script corresponds to one of the content providers. In the preferred embodiment, the content provider script **64** contains the content provider member code. During state **610**, the advertisement provider computer **18** creates the advertising request **26**. Preferably, the advertising request **26** contains an HTML tag which identifies the URL of the advertising provider computer **18** and the content provider script assigned to the content provider. The registration module **60** uses standard HTTP transfer procedures to transfer the advertising insert **56** to the content provider computer **14**.

Proceeding to state **612**, the content provider computer **14** stores a copy of the advertisement request **26**. Moving to state **614**, the content provider computer **14** creates HTML electronic pages **32** which incorporate the advertising insert **56** and the advertisement request **26**. The advertisement insert **56** defines the location where the customized advertisement **30** will appear in an electronic page **32**. The advertisement request **26**, on the other hand, references the content provider script **64** existing on the advertisement provider computer **18**. The electronic pages **32** also include the information the content provider desires to convey to the consumers. Proceeding to end state **616**, the content provider computer **14** disconnects from the advertisement provider computer **18**.

C. Customized Advertisement Processing

As show in the high level data flow diagram of FIG. **4**, events C through F illustrate the process of displaying customized advertisements **30** in the preferred embodiment of the present invention. In event C, the consumer computer **12** establishes a communications link with the content provider computer **14**. In event D, the content provider computer **14** sends the electronic page **32** to the consumer computer **14**.

In event E, the consumer computer **12** processes the advertisement insert **56** in the electronic page **32**. As explained above, the advertisement request **26** is an HTML tag which identifies the URL of the advertisement provider computer **18** and the content provider script **64** existing in the advertisement provider computer **18**. When the consumer browser module **40** processes the advertising insert **56**, the advertising insert **56** directs the consumer browser module **40** to establish a communications link with the advertisement provider computer **18**.

Upon establishing the communications link, the HTML tag in the advertising insert **56** directs the advertising module **62** to execute the identified content provider script **64**. The advertisement provider computer **18** obtains the content provider member code from the content provider script **64**. In addition, the advertising module obtains the consumer member code **22** from the consumer computer **12**.

In event F, the advertisement provider computer **18** uses the consumer member code **22** to access the consumer's profile in the registration database **68**. The advertisement provider computer **18** processes the consumer preferences and selects an appropriate advertisement from the advertisement database **70**. The advertisement provider computer **18** then sends the customized advertisement **30** directly to the

consumer computer **12**. The consumer's computer then merges and displays the electronic page **32** and the customized advertisement **30** to the consumer. In addition, during event F, the advertisement provider computer **18** stores the advertising audit information which specifies which advertisement was sent to the consumer computer **12**, which consumer computer **12** received the advertisement, which consumer viewed the advertisement and which Internet provider **34**, if any, provided Internet **33** access to the consumer computer **12**. As discussed above, this information is stored to the accounting database **72**.

The operational states which occur during Events C through F will now be discussed in detail. FIG. **7** illustrates a flow chart of the operational states which occur when displaying a customized advertisement **30** to a consumer. Beginning in a start state **700**, the consumer accesses the communications system in state **702**. In the preferred embodiment, the consumer invokes the consumer browser **40** on his or her computer. The consumer then directs the consumer browser **40** to access the URL of the desired content provider computer **14**.

Proceeding to state **704**, the consumer browser **40** uses the TCP/IP Internet protocols to establish a communications link with the content server **50** in the content provider computer **14**. The content provider computer **14** then uses the HTTP protocols to transfer an electronic page **32** to the consumer computer **12**.

Proceeding to state **706**, the consumer browser **40** processes the electronic page **32**. While processing the electronic page **32**, the consumer browser encounters the advertising insert **56** with its HTML tag. The advertising insert **56** directs the consumer computer **12** to send an advertisement request **26** to the advertisement provider computer **18**. In the preferred embodiment, the HTML tag in the advertising insert **56** contains the URL of the advertising provider computer **18** and the content provider script **64** assigned to the content provider **14**. Thus, the advertisement request **26** establishes a communications link with the advertisement provider computer **18** and invokes the identified content provider script **64**.

Proceeding to decision state **708**, the advertising module **62** in the advertisement provider computer **18** directs the consumer browser module **40** to send a copy of the Cookie which contains the consumer member code **22**. The advertising module **62** extracts the consumer member code **22** from the Cookie and determines whether the consumer has registered with the advertisement provider computer **18**. If the Cookie does not contain a consumer member code **22**, the advertising module **62** proceeds to state **710**. However, if the Cookie does contain a consumer member code **22**, the advertising module **62** proceeds to state **712**.

At state **710**, the advertising module **62** fills the advertising insert **56** with an advertisement which directs the unregistered consumer to register with the advertisement provider computer **18**. If the consumer has registered with the advertisement provider computer **18**, the advertising module **62** proceeds to state **712**. In state **712**, the advertising module **62** processes the advertisement request **26**. This will be discussed in more detail below in reference to FIG. **8**.

After the advertisement provider delivers the customized advertisement to the consumer of state **712**, the consumer receives the customized advertisement in state **714**. During state **714**, the consumer combines the customized advertisement with the electronic page that was requested by the consumer.

Proceeding to decision state **716**, the consumer views the electronic page **32** and the customized advertisement **30**. To the consumer, the electronic page **32** appears to contain the customized advertisement **30**. During decision state **716**, the consumer can decide to obtain additional information about the advertised goods or services by selecting the customized advertisement **30**. In the preferred embodiment, the customized advertisement **30** contains a hyper-link to more advertising information. If the consumer is not interested in the advertised goods or services, the consumer proceeds back to state **704** and begins the process of viewing another electronic page **32**.

During decision state **716**, if the consumer continues to view the electronic page **32**, the advertising module **62** continues to update the customized advertisements **30** that are seen on the consumer's computer **12**. For example, if a consumer views a particular electronic page **32** for more than a minute, the advertising module **52** can send a new customized advertisement **30**.

If the consumer desires to obtain more information about a good or service appearing in a customized advertisement **30**, the consumer selects the customized advertisement **30** and proceeds to state **718**. When the consumer selects the customized advertisement **30** during state **718**, the consumer control module **42** sends a message to the advertising module **62** that the consumer has selected the customized advertisement **30**. In response, the advertising module **62** stores the message in the accounting database **72**.

The advertising module **62** can use such information to determine which advertisements are effective. In addition, the information allows the advertising module **62** to monitor what goods and services the consumer particularly desires. Furthermore, the advertising module **62** can charge the advertisers additional amounts whenever a consumer seeks to obtain additional advertising information. The advertising module **62** can then distribute the revenue as a bonus to the content providers and consumers. This gives the consumers additional incentive to seek more information about advertised goods and services.

Proceeding to decision state **720** the consumer decides to access other content provider computers **14** or to stop browsing the Internet **33**. If the consumer desires to access other content provider computers **14**, the process moves back to state **704**. However, if the consumer desires to end browsing the Internet **33**, the process moves to end state **722** wherein the consumer browser **40** is exited.

In FIG. **8**, a detailed flow chart of the operational states which occur during process **712** are shown. Beginning in a start state **712**, the advertising module proceeds to state **800**. In state **800**, the advertising module **62** uses the consumer member code **22** to access the corresponding consumer preferences stored in the consumer's profile in the registration database **60**. The advertising module **62** then processes the consumer preferences to determine the appropriate customized advertisement **30**. In the preferred embodiment, the advertising module **62** uses well known advertising techniques to categorize the consumer into a particular demographic group based on the consumer's preferences. In another embodiment, the advertising module **62** identifies advertisements which correspond to specific preferences. In yet another embodiment, the advertising module **62** focuses on a subset of advertisements and then selects the most appropriate advertisement in the subset. In still other embodiments, the advertising module can be programmed to accommodate special sales and advertising promotions.

Proceeding to state **802**, the advertising module **62** selects and retrieves the customized advertisement **30** from the advertising database and sends the customized advertisement **30** to the consumer. In the preferred embodiment, the

customized advertisement **30** is stored in a HTML format, and the advertising module **62** uses the HTTP protocol to send the customized advertisement **30** to the consumer computer **12**, where the customized advertisement **30** is displayed within the electronic page sent to the consumer computer.

Proceeding to state **804**, the advertising module **62** accesses the accounting database **72** and debits the appropriate advertiser account, credits the content provider account and credits the appropriate consumer account. In particular, the advertising module **62** stores the advertising audit information in the accounting database **72**. The advertising audit information includes the consumer member code **22** and the content provider member code **54**.

With the advertising audit information, the advertising module **62** determines which advertiser should pay for the customized advertisement **30** and debits the appropriate advertiser account. In addition, the advertising module **62** credits the content provider's account. Still further, the advertising module **62** credits the appropriate consumer account. In the preferred embodiment, the advertising module **62** also credits the consumer's Internet provider account number. Thus, the consumer's access charges are reduced each time a consumer views a customized advertisement **30**.

In other embodiments, the advertising module **62** also credits a consumer's digital cash account each time the consumer views a customized advertisement **30**. The consumer can then use the digital cash to purchase goods and services offered for sale on the Internet **33**.

Upon updating the accounting database **72**, the advertising module proceeds to end state **810** where it waits until the next advertisement request **26**.

V. Other Embodiments

FIG. **9** shows an alternative embodiment of the present invention wherein the advertisement provider computer **18** sends the customized advertisement **30** to the content provider computer **14**.

Upon receiving the customized advertisement, the content provider incorporates the customized advertisement **30** into an electronic page **32**. The content provider computer **14** then forwards the electronic page **32**, combined with the customized advertisement **30** to the consumer computer **12**. The consumer computer **12** then displays the electronic page **32** and customized advertisement **30** to the consumer. Because transferring the customized advertisement **30** from the advertisement provider computer **18** to the content provider computer **14** happens prior to sending the electronic page **32** to the consumer, the electronic page **32** appears to the consumer like all other electronic pages **32** on the Internet **33**, except that it contains the customized advertisement **30** which has been pre-selected for that consumer.

The embodiment shown in FIG. **9** allows the customized advertisements **30** to be incorporated directly into the content provider's offerings. Thus, in addition to integrating the customized advertisements **30** in to an electronic page **32**, the content provider computer **14** can integrate the customized advertisements **30** into offerings such as on-line games, video programming, internet radio, virtual reality environments and the like.

For example, assuming the content provider computer **14** offers consumers on-line games such as interactive car races. In this example, the content provider computer **14** can integrate the customized advertisements **30** into signs and billboards which appear in the interactive game. In other embodiments, the content provider computer **14** can integrate the customized advertisements **30** into three dimensional worlds defined by the Virtual Reality Modeling Language (VRML 1.0). VRML 1.0 is a draft specification for the design and implementation of a platform independent language for virtual reality scene description. VRML 1.0 was released on May 26, 1995. For instance, the content provider computer **14** may display a three-dimensional mall, shopping center or city which displays customized advertisements **30** on virtual reality posters and billboards.

In another embodiment illustrated in FIGS. **10** and **11**, the interactive communication system **10** includes the consumer computer **12**, the content provider computer **14** and the advertisement provider computer **18**. In Event A, the consumer computer **12** establishes a communication link with the content provider computer **12**, the consumer computer **12** then sends the consumer's member code **22** to the content provider computer **14**. A unique communications module **52** in the content provider is invoked each time a consumer computer accesses an electronic page **32**. The communications module **52** interacts with the content server **50**. In this embodiment, the communications module **52** is a content server plug-in and thus, plug-in tags can be programmed to invoke the communications module **52**.

Once invoked, the communications module **52** directs the content server **50** to obtain the consumer's member code **22** when a consumer accesses the content server **14**. Preferably, the consumer member code **22** is part of the information transmitted with the cookie from the consumer computer **12**. Thus, the communication module **52** analyzes the information stored in the cookie and determines the consumer member code **22**.

In event B, the content provider computer **14** sends an advertisement request **26** to the advertisement provider computer **18** via the communication medium **20**. The advertisement request contains the consumer member code **22** and the content provider member code **54**. When the content provider computer **14** obtains the consumer's member code **22**, the content server **50** passes the consumer's member code **22** to the communication module **52** which analyzes the consumer member code **22** in order to determine whether the consumer has registered with the advertisement provider computer **18**.

The communications module **52** analyzes the consumer member code **22** by determining whether it conforms to a defined format. If not, the communications module **52** directs the content provider computer **14** to display the electronic page without a customized advertisement. If so, the communications module **52** proceeds directs the content server **50** to establish a communications link with the advertisement provider computer **18**.

Thus, in this embodiment, the content provider computer **14** contains its own copy of the content provider member code **54**. Furthermore, the advertisement provider computer does not execute a content provider script **64** when accessed by the content provider **14**. Rather, the content provider **14** in this embodiment, sends a copy of the content provider member code **54** to the advertisement provider along with every advertisement request **26**.

In event C, the advertisement provider computer **18** uses the consumer's member code **22** stored in the advertisement request **26** to access the consumer's profile in the registration database **68**. Based on the consumer's profile, the advertisement provider computer **18** selects an appropriate customized advertisement **30**. The advertisement provider computer **18** then sends the customized advertisement **30** to the consumer computer **12**.

In this embodiment, the advertising module **62** in the advertisement provider computer **18** runs a single program

for every content provider computer **14** and incorporates the content provider member code **54** into the program being run. In this manner, the advertisement provider knows the identity of the consumer computer via the consumer's member code **22** and the identity of the content provider computer **14** via the content provider's member code **54**.

In event D, the content provider **14** sends the requested electronic page **32** to the consumer computer **12**. Located in the consumer computer **12** is a software plug-in on the consumer computer **12** called the consumer control module **42** which merges the electronic page **32** and customized advertisement **30** into a single document. Preferably, the consumer control module **42** is a plug-in that works in conjunction with the consumer browser **40**.

In other embodiments, the consumer control module **42** in the consumer computer **12** is adapted to receive a Java plug-in from the content provider computer **14** which creates a separate window which can display customized advertisements **30** on the consumer computer **12**. The Java programming language is a robust, secure, architecture-neutral, portable, general-purpose programming language developed by Sun Microsystems. Java supports programming for the Internet **33** in the form of independent Java "applets". Additional information about the Java programming language can be obtained at http://www.sun.com.

In another embodiment, the consumer computer **12** stores the customized advertisements **30** on the advertising storage medium **44**. Rather than receiving a copy of the customized advertisement **30** over the Internet **33**, the consumer control module **42** receives an advertisement command which directs the consumer control module **42** to retrieve the customized advertisement **30** from the advertising storage medium **44**.

Focusing now on the flow charts illustrated in FIGS. **7** and **8**, the advertising module **62** in the advertisement provider computer obtains the appropriate advertisement command from the advertisement database **70** during state **804**. The advertising module then sends the advertisement command to the consumer computer **12** in state **714**.

During state **714**, the consumer control module **42** combines the customized advertisement **30** identified by the advertisement command with the electronic page **32** and displays them to the consumer. As stated above, because current communications systems transfer data at much slower rates than local storage devices, the consumer computer **12** can retrieve a customized advertisement **30** from the advertising storage medium **44** much faster than obtaining the advertisement directly from the advertisement provider computer **18**. Accordingly, a short advertisement command can be sent which specifically retrieves a particular advertisement from the advertising storage medium, which significantly reduces transmission times and response times across the communication medium **20**.

VI. Conclusion

While certain preferred embodiments of the invention have been described, these embodiments have been presented by way of example only, and are not intended to limit the scope of the present invention. For example, although described herein with reference to the Internet **33**, the customized advertisement system and methodology can be used in other types of interactive communication systems. Accordingly, the breadth and scope of the present invention should be defined only in accordance with the following claims and their equivalents.

What is claimed is:

1. An advertisement provider computer for customizing advertisements to be transferred via the internet, comprising:

a registration module executable at an advertisement provider computer, said registration module configured to allow a consumer to register consumer demographic information, and configured to allow a content provider to register content provider information;

an advertising module executable at said advertisement provider computer, said advertising module configured to select an advertisement based on said consumer demographic information and configured to transfer said advertisement to said consumer; and

an accounting database, wherein said advertisement provider computer is configured to access said accounting database to bill an advertiser and credit said content provider when said advertisement is transferred to said consumer.

2. The advertisement provider computer according to claim **1**, wherein said registration module is further configured to create an advertisement request and to transfer said advertisement request to said content provider.

3. The advertisement provider computer according to claim **2**, where said advertisement request comprises an advertisement provider computer identifier and a content provider script.

4. The advertisement provider computer according to claim **2**, wherein said registration module is further configured to assign a consumer identification code to said consumer, and configured to transfer a consumer identification code to said consumer.

5. The advertisement provider computer according to claim **4**, wherein said advertising module is further configured to accept said advertisement request and said consumer identification code from said consumer.

6. The advertisement provider computer according to claim **1**, wherein said content provider information comprises content provider demographic information, and wherein said advertisement is selected based on both said consumer demographic information and said content provider demographic information.

7. The advertisement provider computer according to claim **1**, further comprising:

a registration database configured to store registration information; and

an advertisement database configured to store advertisement information.

8. The advertisement provider computer according to claim **1**, wherein said advertisement provider computer is further configured to access said accounting database to credit said consumer when said advertisement is transferred.

9. The advertisement provider computer according to claim **1**, wherein the advertising module is further configured to track consumer activities.

10. The advertisement provider computer according to claim **9**, wherein said consumer activities relate to said advertisement, and wherein said accounting database is further configured to update billing information based on said consumer activities.

11. The advertisement provider computer according to claim **1**, wherein said advertisement provider computer is associated with a website which is comprised of a plurality of computers.

12. A method of providing a customized advertisement, comprising:

registering a consumer and consumer demographic data at an advertisement provider computer;

registering a content provider and content provider data at said advertisement provider computer;

receiving a request for an advertisement at said advertisement provider computer;

accessing with said advertisement provider computer, a database of advertisements which associates an advertisement with one or more advertisers;

selecting with said advertisement provider computer, at least one of said advertisements from said database of advertisements based on said consumer demographic data;

transferring said selected advertisement from said advertisement provider computer to said consumer through the internet;

providing a bill from said advertisement provider computer to the associated advertiser, said bill based on said selected advertisement; and

providing a credit from said advertisement provider computer to said content provider, said credit based on said selected advertisement.

13. The method according to claim **12**, wherein said request identifies at least said advertisement computer, said content provider, and said consumer.

14. The method according to claim **12**, wherein said content provider data comprises content provider demographic data, and wherein said selection of at least one advertisement is based on both said consumer demographic data and said content provider demographic data.

15. The method according to claim **12**, further comprising providing a consumer credit from said advertisement provider computer to said consumer, said consumer credit based on said selected advertisement.

16. The method according to claim **12**, further comprising tracking activities of said consumer.

17. The method according to claim **16**, further comprising updating one of said bill, said credit, and said consumer credit, based on said activities.

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