



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G06F 17/60, H04N 1/00, 1/44	A1	(11) International Publication Number: WO 99/66442 (43) International Publication Date: 23 December 1999 (23.12.99)
(21) International Application Number: PCT/US99/13721 (22) International Filing Date: 17 June 1999 (17.06.99) (30) Priority Data: 60/089,687 17 June 1998 (17.06.98) US (71)(72) Applicants and Inventors: KRIZ, Carey [US/US]; 2652 Hidden Cove, Annapolis, MD 21401 (US). KUCHAR-CZYK, John [US/US]; Apartment 1406, 1117 Marquette Avenue, Minneapolis, MN 55403 (US). (74) Agent: LACY, Rodney, L.; Schwegman, Lundberg, Woessner & Kluth, P.O. Box 2938, Minneapolis, MN 55402 (US).	(81) Designated States: AU, CA, JP, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report.	

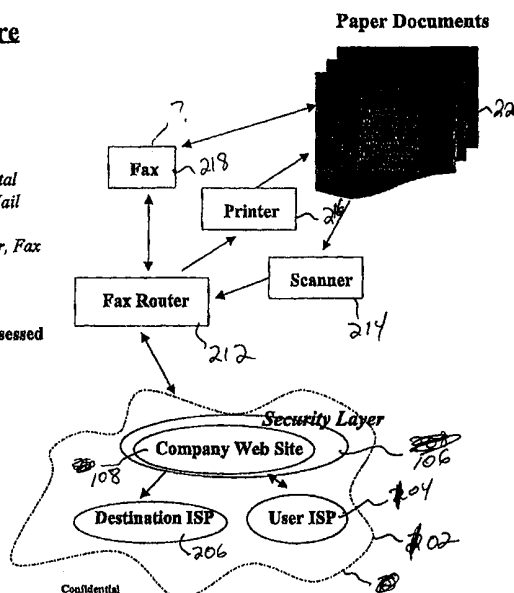
(54) Title: METHOD AND APPARATUS FOR ROUTING PAPER-BASED INFORMATION THROUGH THE INTERNET

Fax Router Architecture**Functions:**

Move from Paper to Digital
 Supports Get and Send Mail
 Supports Keyboard
 Supports Printer, Scanner, Fax

Target Price < \$50-90 per unit

Monthly usage and line charges assessed to user



(57) Abstract

Systems and methods for routing paper based information through a network such as the Internet are disclosed. In one embodiment, the system includes a device having an LCD display, a keyboard, and a connector for connecting a fax machine, scanner and printer to the device. In addition, the device includes a telephone connector for connecting the device to a network via an Internet Service Provider. In an alternative embodiment, a system is provided for scanning images via a fax machine and routing the image through the Internet as an e-mail.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

METHOD AND APPARATUS FOR ROUTING PAPER-BASED INFORMATION THROUGH THE INTERNET

Field of the Invention

5 The present invention relates generally to Internet information routing and more specifically to routing paper-based information through the Internet.

Background

10 Despite the promise of the paperless office, it is frequently the case that personal and business transactions involve the exchange of paper based documents. Frequently this exchange must take place over considerable distances. As a result, when a person wishes to send a document to a recipient, the sender typically must choose between make a tradeoff between the speed of delivery and the cost of delivery. For example, documents can be sent by courier or overnight mail if expedited delivery is required. In addition, the sender can fax the documents to a receiving party if time is of the essence. However both approaches have problems. First, overnight mail and courier can be relatively expensive. Faxing a document 15 can also be expensive if their are long distance charges involved in the transmission of the document. Furthermore, companies often wish to fax large quantities of documents, thereby increasing the telecommunications costs associated with the fax.

20 Thus there is a need in the art for routing paper based information that is inexpensive. The system should allow for the sending and receiving of paper-based documents in an electronic format. In addition, there is a need for such a system that allows for the use of a profile to filter messages. Furthermore, there is a need for such a system that provides for the secure transmission and receipt of paper-based information.

Summary of the Invention

25 The above-mentioned shortcomings, disadvantages and problems are addressed by the present invention, which will be understood by reading and studying the following specification.

30 An embodiment of the present invention is a system that provides industry and end users with the ability to route and create paper-based information resources through the Internet. The system provides for conversions between digital and paper-based information formats and supports electronic mail (E-mail), Fax and Direct-to-Consumer advertising. The embodiment also applies User Profile technology to allow selection and filtering of information based on data comprising user preferences.

One component of the system is a web site/transaction environment. The web site maintains user profiles, provides the ability to link to E-mail accounts, and provides storage for product information and discount programs. The web site also supports Fax Sessions, the transaction environment for managing the user to Internet sessions and the development of digital and paper resources.

Access points to the web site and other resources of the Internet are provided through conventional PCS, Fax machines, and hybrid Fax/PCS. These and other aspects of the invention are described in more detail below.

Brief Description of the Drawings

FIG. 1 illustrates an overview of various components of a system of the present invention;

FIG. 2 provides an overview of various components of an embodiment of the present invention using a Fax Router to access the system;

FIG. 3 provides an overview of various components of an embodiment of the present invention using a hybrid Fax/PC to access the system;

FIG. 4 illustrates an overview of routing paper-based information through the Internet according to an embodiment of the present invention;

FIG. 5 illustrates the user interface features of an embodiment of the present invention;

FIG. 6 illustrates the external connections of an embodiment of the present invention;

FIG. 7 provides a table of sample hardware components included in an embodiment of the present invention;

FIG. 8 provides a high level description of the message packet sent through the Internet according to an embodiment of the present invention;

FIG. 9 provides a high level view of the information flow from an input device to a phone connection according to an embodiment of the present invention;

FIG. 10 provides a high level view of the information flow from an Internet Service Provider to a destination according to an embodiment of the present invention;

FIG. 11 shows a summary view of the initial state of an Internet Message packet used in an embodiment of the present invention; and

FIG. 12 shows a summary view of the final state of an Internet Message packet used in an embodiment of the present invention.

Detailed Description

In the following detailed description of the preferred embodiments, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration specific embodiments in which the inventions may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that logical, mechanical and electrical changes may be made without departing from the scope of the present invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is defined only by the appended claims.

The detailed description is divided into four sections. The first section presents an overview of the system architecture of embodiments of the invention. The second section describes the Fax Router, according to an embodiment of the invention. The third section describes the data flow and message components of embodiments of the invention. In the fourth section, a conclusion of the detailed description is presented.

System Architecture Overview

Referring now to FIG. 1, a system level overview of a "Mailman" electronic mail (e-mail) access system according to an embodiment of the invention is presented. Three mechanisms for accessing e-mail are included which provide multiple methods of acquiring/sending electronic mail through the Internet, including:

- Standard PC Architecture
- Hybrid Fax/PC Device
- Fax Router.

In the first mechanism, the system provides an interface for a standard personal computer (PC) 116 to exchange e-mail with a Company web site 108.

In the second mechanism, a Fax Router 112 according to an embodiment of the invention exchanges e-mail with Company web site 108. In the third mechanism, a hybrid Fax/PC 110 exchanges e-mail with Company web site 108. The e-mail that is exchanged can include objects comprising images of scanned paper based documents.

The Company Web Site 108 provides multiple services according to various embodiments of the invention. In one embodiment of the invention, Company web site 108 can maintain a strict level of security through security layer 106, allowing user in push/pull settings to use the Fax Router 114 as a secure environment for mailing digitized objects from one location to another. In one embodiment of the invention a RSA style security technique is incorporated to support this function. However, the invention is not limited to an particular implementation of a security layer, nor is the security layer 106 a mandatory component.

The second major feature is the ability of the system to maintain user profiles. The profile feature is important because it allows the user to define unique characteristics of their Internet uses - highlighting the location of E-mail accounts, Fax Router Pull connections and interesting web locations. This feature can be expanded to allow for the addition of third part profiling products to support user options in the custom printing of information resources. Creating, for example, news briefs and market reports based on user requirements. A variation to the profile feature is the Classes option, allowing users to identify a collection of users they will mail to in parallel. This is important in cases of single author, multiple distribution points. For example, in supporting the needs of a community of specific chronic disease patients by a single specialist.

In one embodiment of the invention, Web Server 108 provides an archiving capability. Based on the type of the user service contract, the system user can use the Company Web Server as either its primary mail location or as a remote storage facility for Fax Router Objects. This will be particularly relevant in Push/Pull applications in which the users would like the Company Web Site 108 to function as its short and long-term archival facility.

Referring now to FIG. 2, a more detailed overview of a Fax Router system is shown. The Fax Router (FR) 112 will provide a handshake with the input device (scanner 214 or fax machine 114) and accept the fax data stream. The user will first indicate the destination address for the letter and establish a connection to the Company web site 108 (by pressing the a send key). The Fax Router 112 will indicate a "ready" condition and the user will then load their paper materials 220 into the fax machine and hit send, using a dummy phony number. This phone number will be read by the Fax Router and accept the fax data stream and send it directly to the Company Web site. At

the completion of the fax transmission, the Fax Router will read the end of the transmit signal from the Fax and close the letter. The clustering of the fax pages will be done at the Company Web site and routed to the appropriate destination ISP 202 or user ISP 104.

5 All of the operating software for the FR can be held on local storage. In one embodiment of the invention, revised versions of the system software will be automatically downloaded to the FR during the log-on procedure. In general the FR should be viewed as the user interface device of a distributed application with the application control resting on the Company Web Server. This relationship of the FR to
10 the Web Server is the Company's Fax Session. The information flow between the FR and the Web Server can be managed through a secure transaction processing facility 106.

The connection of a Fax/Scanner 114 to Fax Router 112 and to the Company Web site 108 is defined as a Fax Session. The complete cycle of accepting data,
15 appending it with user and system defined elements, amalgamating it to its final form and sending to over the Internet to its destination address are the technical components of the Fax Session. A Fax Session can also include a push/pull mechanism in the case of multiple Fax Routers being attached to the Internet, and in cases in which these other Fax Routers are being used in a polling state to search for Fax Router generated
20 messages.

Referring now to FIG. 3, a more detailed view of the Hybrid Fax/PC 110 is provided. Hybrid Fax/PC 110 provides the ability for a user to access Internet and Mail documents without using a personal computer. It supports scanning documents 314 through a scanner slot, and supports a keyboard for a user to provide input to the system.
25 In addition, it supports Get and Send mail functions described in detail below. Finally, is provides for paper output of incoming messages.

Returning now to FIG. 1, in an alternative embodiment of the invention, Internet-based Ads provide an advertising channel through the Internet that allows product and service manufacturers to communicate directly with consumers. All ads are
30 delivered through the Company web site 108 to Fax Router 112, PC 116, and Hybrid Fax/PC 110. These ads include:

- Ads targeted to user profiles/interests
- Discount programs

Referring now to FIG. 4, a description of “pushing” and “pulling” paper-based documents through the Internet according to an embodiment of the invention is presented. As described above, a Fax Router such as first Fax Router 410 provides users with a simple mechanism of pushing paper objects such as fax 412 into a digital environment -- using a Fax to digitize the data and the Company web site 108 to deliver the digital information to its target destination through a network 102 such as the Internet. In certain cases the destination address will represent a second Fax Router 414 location which may have been left in a “Get Mail” state. In this example the second Fax Router 414 will periodically poll the Company Web Site 108 searching for a new Fax Router objects, and when located, automatically download these objects and print them on the attached Printer/Fax. These E-mail messages are easily identified by the Fax Router as Mailman Objects due to the Mm ID field in the record. In this example, the Fax Router will then take the attached binary objects and convert them back to either a fax signal or a print object.

In addition, the Mm ID field will allow other vendors to define printable attachments for mail documents. In one embodiment of the invention the data objects can be stored in a loss-less format, such as a compressed BMP format. In an alternative embodiment of the invention, the data objects can be stored in a lossy compressed format, such as the JPEG format.

Design of the Fax Router

Referring now to FIG. 5, further details of the Fax Router 114 (FIG. 1) according to an embodiment of the invention are presented. FIG. 5 presents a top view of the Fax Router. Power On Light 524 indicates that the power has been connected and that the Fax Router (FR) has been turned on via the user depressing the “on” button 512. The FR will automatically dial into the Internet and log onto the Company Web Server. The Fax Session software will verify the users address (loaded in an EPROM) and user ID. If the Fax Session detects an error it will send a message back to the FR indicating an error code (xx) and a message “Unable to Connect xx”. If the connection is successful the Fax Session will send a message back to the FR indicating an active link has been established. The FR displays a message of “ready” to the user on display device 516.

Upon a successful power on sequence, the user has two options -- to get or send a message. The Get Mail key 510 sends a message to the Company Web Server

indicating that the user would like to receive their current mail messages. The Web Server will log onto the users E-mail account (either through a different ISP or maintained by the Company), and download only new and primary messages. All downloaded messages will be printed, including most attachments. Attachments generated by other FR devices can be printed. The Company's Web Server maintain a history file on the files it has downloaded to the user. The user can elect to re-receive mail messages it has previously received via a session command. The Get Mail session commands include: Print List of Mail Files, Print Mail File xx (xx referring to a file identifier), Print Mail File xx-xx (print a range of messages), Print New Mail, Look for Faxes, Look for Mail. The user will respond to all system queries generated during the Fax Session by either a keyboard input or by depressing the "Yes" or "No" buttons 504 and 506 respectively.

The user can also place the FR in a polling state by selecting the "Look for Faxes/Mail" command. In this state the FR replaces a conventional fax interface and allows the system to function in a push/pull state with other FR devices or mail objects.

A second option for the user is to send e-mail using Send Mail key 508. The session options begin with the user indicating the destination -- the user Internet address. After the user has typed in the destination address and hit the Enter Key on the alphanumeric keypad 518, they will be asked if they would like to send copies of the letter to other users. If the answer is "Yes", they will input the 2nd through N addresses using the "Yes" key 504 in between all responses. At the conclusion of the address list, the user will respond "no" and the Fax Session will indicate a ready to receive data. The system will ask whether the user will be inputting through either a fax machine or a scanner and will then display a message of "Begin Transmission" on display 516.

In one embodiment of the invention, the FR will use a simple LCD display 516 for communicating session status with the user. The display 516 will be scrollable and will maintain a blinking cursor on its current position. In one embodiment of the invention, scroll key 514 scrolls the display. The user can overtype user input areas by readjusting the location of the cursor. The system memory will be used to maintain a current list of the contents of the scrollable display of the session.

The card reader 502 provides a method of verifying a user ID. Users can be given a membership card that contains coded information on their membership ID and profile. This feature can be important in remote applications of the FR device and in

support of security features of the system.

In certain cases the user may have a need to halt the operations of the device by interrupting and closing the Fax Session. The Cancel Key 522 allows the user to, at any time, exit the current session prior to completion. The Fax Session will maintain an
5 internal log to indicate that the transmission was incomplete and allow the user to begin the session again and restores the state of the application to its pre-session status. The net effect of the Cancel Key operation is to eliminate the impact of that session's Get and Send Mail functions.

Referring now to FIG. 6, the external connections according to an embodiment
10 of the invention are presented. FIG. 6 presents a rear view of Fax Router 114. The FR will be designed to provide maximum growth potential. The basic configuration includes two separate forms of input -- either from a standard fax machine via fax port 604 or through a scanner attached to parallel connection 606. A printer port 608 has also been included to support cases where a fax is not being used as the primary method
15 of connection and a printer will serve as the output device. The phone connector 610 can be used to connect the FR to the Internet and will support modems having varying transmission speed, and direct twisted pair connections to local area networks.

The invention is not limited to the types of connections described above, and in alternative embodiments of the invention, other types of connectors and port allowing
20 the Fax Router to communicatively couple with input/output and networks are provided. For example, Universal Serial Bus connectors can be used in place of the connectors described above.

A standard power adapter 602 is also be included, which in one embodiment of the invention is a 9 volt power adapter.

FIG. 7 provides a list of components included in the internal hardware and
25 software of a Fax Router according to an embodiment of the invention. However, the invention is not limited to the components listed, and other components can be substituted. For example, the processor can be any form of processor, including Pentium processors, Merced Processors, and processors designed for embedded systems.
30 In addition, the display can comprise a display have more or less than 3 lines and 30 characters per line. Furthermore, the software is not limited to that shown, for example a version of the Windows operating system such as the Windows/CE operating system can be used instead of DOS. Finally, the system is not limited to 1 Megabyte of RAM,

the system can have more or less RAM as required by the operating system and applications running on the Fax Router. In addition, Flash Memory or Compact Flash Memory can be included in the system.

Data Flow and Message Components

5 Referring now to FIG. 8, a Fax Data Stream according to an embodiment of the invention is presented. The Mailman product will use the ability of the system to work with packets of fax data, incorporated as bit maps within the Mailman letter. The header for the letter will be defined by the user through the Fax Router and will be appended to the fax object. This combination of the header information with the bit map becomes
10 the message passed to the Company's web site 108 -- and routed to the user address. The final letter, defined as the Internet Message Packet, will contain three information components. These information sources, Fax/Scanner 802, Fax Router 804, and Web Server 806 combine to form the final Mailman letter.

The first component, Fax/Scanner Data 802 is presented at the initial entry point
15 for the system, which provides the conversion point for the paper into a digital format. The control of the Fax will rest with the Company's Web Server, allowing the Fax Router to act as a pass through for the digital data as it is generated by the fax machine and temporarily stored on the Internet.

The second component, Fax Router Data 804 is provided next. The process of
20 getting and sending mail begins with user performing a simple log-on to the Fax Router device. After typing in a destination address(s), the user will hit send and the Fax Router will log-on to the Internet and the Company's Web site. The Fax Router will identify all pages created by the fax session by appending the user's Internet Address along with the destination information to the Fax Router Data 804. The final data
25 element included in Data 804 is a unique identifier the "Mailman" ID. This will be used by other fax routers to identify a Mailman object and provide a way for the other Fax Routers to automatically print Fax Router generated messages.

Web Server Data 806 is provided next. The final source of information is the
30 Company's Web Server. While providing the session environment for the message, it will also append time stamps and advertising messages based on user preferences.

Referring now to FIG. 9, an illustration of the data and technology flow from an input device to a phone connection according to an embodiment of the invention is

presented. The technology flow 900 illustrates the physical connections at an input point (i.e. the location of a Fax Router). A fax device is connected via connection 902 to the Fax Router. The Fax router is in turn connected, in one embodiment of the invention, to a phone jack at the user's location through connection 904. The phone jack, in turn, is connected to a switched telephone network in one embodiment of the invention through connection 906.

The data flow 910 at the input location begins with a fax data stream comprising an scanned image of a document. The data flows at 912 to the Fax Router, which adds an appropriate source and destination Internet addresses. The data then flows at 914 to the Company web site 108.

Referring now to FIG. 10, a depiction of the hardware flow 1000 and data flow 1010 is shown, according to an embodiment of the invention. In this embodiment, there is a connection 1002 from a network such as a public switched telephone network (PSTN) to a phone jack. Web server 108 is connected to the phone jack via connection 1004.

Data flow starts at 1012 when an Internet Message Packet 1014 flows from Fax Router 114. Next, the data flows at 1016 through the Company web server 108, which appends additional messages or ads to the data packet, to produce a new data packet 1018.

Referring now to FIG. 11, an initial Internet Message Packet 1100 according to an embodiment of the invention is presented. Initial Internet Message Packet 1100 represents the state of the packet as it after it has been initially input, but before in has been processed by Company Web Server 108. In this embodiment, the initial state packet 1100 comprises Fax Router Objects 1102 and Fax/Scanner Objects 1104.

Fax/Scanner Objects 1104, also referred to as Input Device Objects comprises scanned image data 1106 for documents scanned by a fax or scanner. Fax Router Objects include the destination address for the message, the sender's address, and a Mailman Unique Identifier used to indicate that the message contains Fax Router Objects.

Referring now to FIG. 12, a final Internet Message Packet 1200 according to an embodiment of the invention is presented. Final Internet Message Packet 1200 represents the state of the packet after it has been processed by Company Web site 108 and forwarded to its destination. Web Site Objects 1202 are added to the packet, and include a data stamp indicating when the packet was received by the Company Web site

108, and any advertising or additional messages that the Company Web site desires to present to the user at the destination address. The advertising and other messages can be determined based on the sender's profile, the receiver's profile, or both. Input device objects section 1206 of the packet includes one or more input objects 1208 representing
5 image data for scanned documents. In one embodiment of the invention, multiple input objects 1208 are contained in Input Device Objects section 1206 of the packet.

Conclusion

As is evident from the above description, the systems and methods of the invention provide advantages not found in previous systems. These advantages include
10 the following:

1. Rapidly Accessing and Sending Mail

The post office and fax provide tested means of sending written and printed materials from one individual to another. The Fax Router according to an embodiment of the invention provides the consumer with the rapid advantages of the fax coupled
15 with the low cost of the Internet and the advantages of working with printed materials.

Based on the security network of the Company's Web Server, the Fax Router can also provide a level of legal support in the transmission of documents, unlike the current Internet.

2. Reducing the Communication Costs for Corporations

In an alternative embodiment of the invention, the Fax Router technology provides corporate accounts with an Internet-based system for moving fax materials and printed documents between corporate offices -- eliminating the cost of long distance services. In this embodiment, the Fax Router serves as a utility for "pushing" fax documents throughout the Company's Web server to a destination or receiving fax,
25 using a Fax Router to connect this remote fax to the Internet. The destination Fax Router will continuously poll the Internet for traffic targeted to the Internet ID (i.e. the Internet Protocol address) of the Fax machine.

This use of the Fax Router over a large geographic network provides the corporate account with a vehicle for avoiding long distance charges and, through the
30 Company Web server, with an additional storage environment for incoming faxes. In one embodiment of the invention, the Push/Pull process is managed in a secure

environment.

3. Accessing Written Information Based on User Profiles

The profile technologies of the Company's Web Server provides users with the ability to easily download specific materials targeted to their needs. In the case of the health care community, this could include information resources targeted to specific disease populations -- providing, for example, information on diet and exercise to diabetic patients as follow-up to a physician visit. In this case, the Company Web Server becomes an easy to use communication channel between a community provider and a select group of patients with specific medical needs. Coupled with the Fax Router, these profile technologies define an easy-to-use and cost effective means of working with large pools of chronic disease patients. The invention is not limited to health care materials and information targeted to other special interests can be provided using the systems and methods of the invention.

4. Rapidly Send Promotional Materials

Advertising is quickly becoming a major expense category for the many industries. The Internet provides a powerful means of establishing a direct linkage between the manufacturer and the consumer. The Company's Web Server, its user profiler and its Fax Router combine to form a unique advertising and distribution channel. Through the systems and methods of the invention, manufacturers have a cost effective utility for communicating with their target customers.

Although specific embodiments have been illustrated and described herein, it will be appreciated by those of ordinary skill in the art that any arrangement which is calculated to achieve the same purpose may be substituted for the specific embodiments shown. This application is intended to cover any adaptations or variations of the present invention. For example, several different form factors, electrical connections, and component configurations have been described and other variations are possible. Therefore, it is manifestly intended that this invention be limited only by the following claims and equivalents thereof.

What is claimed is:

1. A device comprising:

a housing supporting or containing:

a processor and a memory connected via a bus;

5 a keyboard operably connected to the processor;

a display operably connected to the processor;

a get mail button operably connected to the processor;

a send mail button operably connected to the processor;

a connector port for connecting a scanner;

10 a printer port for connecting a printer;

a fax port for connecting a fax machine;

a network interface port for interfacing with the Internet; and

means for sending and receiving e-mail messages to and from the Internet,

through the means for interfacing, and for printing received e-mail messages on a printer

15 operably connected to the printer port.

2. The device of claim 1, further comprising means for attaching electronic images of document files obtained from a scanner operably connected to the scanner port to e-mail messages to be sent over the Internet.

3. The device of claim 1, further comprising a card reader.

20 4. A computerized method for routing an image of a paper document, the method comprising:

receiving by a server the image from a source device;

storing the image on the server; and

sending the image to at least one target entity.

25 5. The method of claim 4, wherein the image is a fax image and the source device is a fax device.

6. The computerized method of claim 4, wherein the target entity is a fax device and wherein sending the fax document comprises sending the image to the target fax device when the target fax device polls the server through the network.

7. The computerized method of claim 4, wherein the target entity is an electronic mail recipient and wherein sending the fax document comprises inserting the digital image of the fax document into an electronic mail message sent to the electronic mail recipient.

8. A computerized system for routing an image of a paper document, the system comprising:

10 a persistent storage device; and
a server communicatively connected to a network and operable to perform the tasks of:

receiving the image from a source on the network,
storing the image on the persistent device, and
15 sending the image to at least one target device on the network.

9. The computerized system of claim 8, wherein the server includes a security component operative to determine if a user id associated with a sender of the image is authorized to access the server.

10. A computerized system for distributing information, the system comprising:
20 a persistent storage device; and
a server communicatively connected to the persistent storage device and operable to perform the tasks of:
storing a file comprising the information on the persistent storage device,
determining a target set of recipients for the information, and
25 sending the file comprising the information to the target set of recipients.

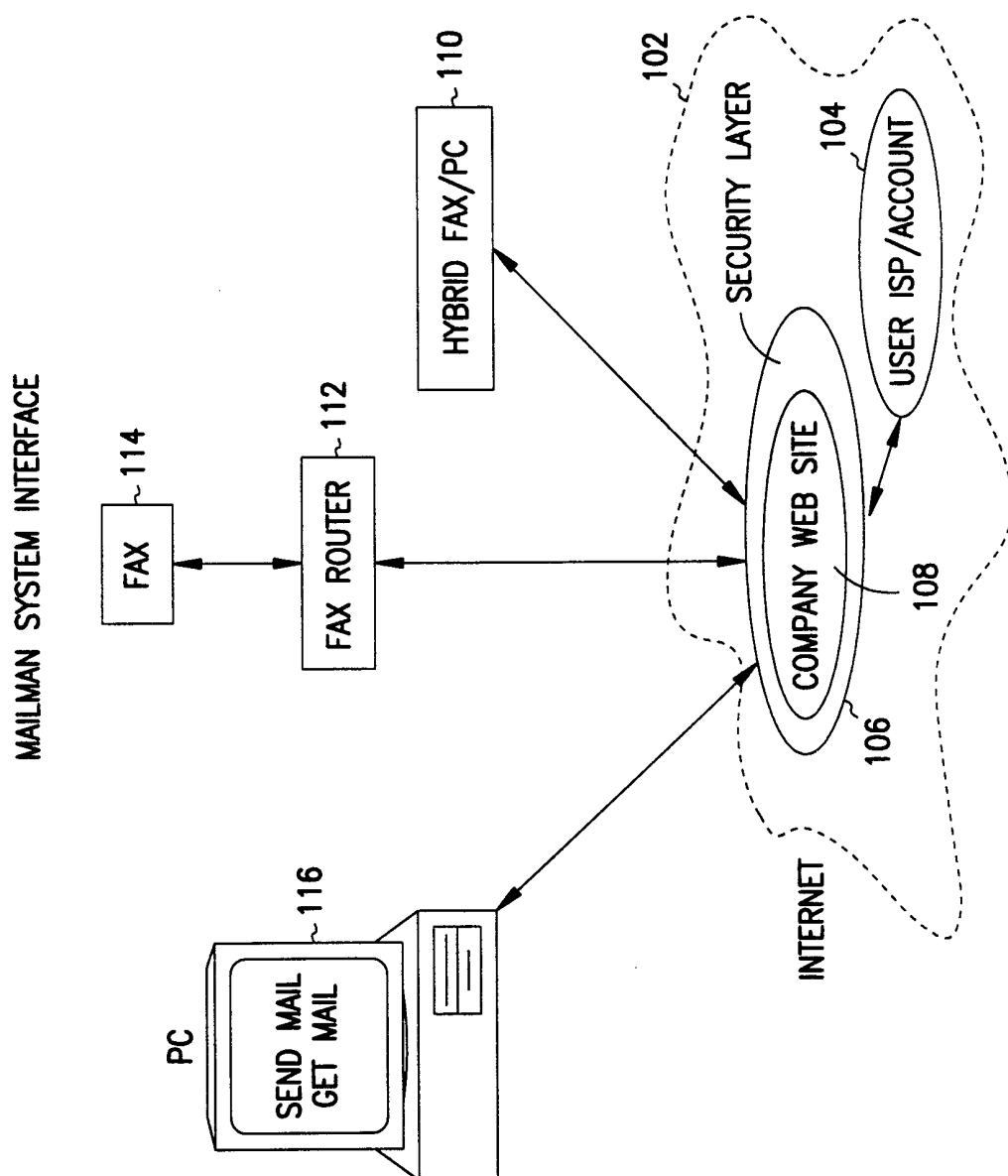
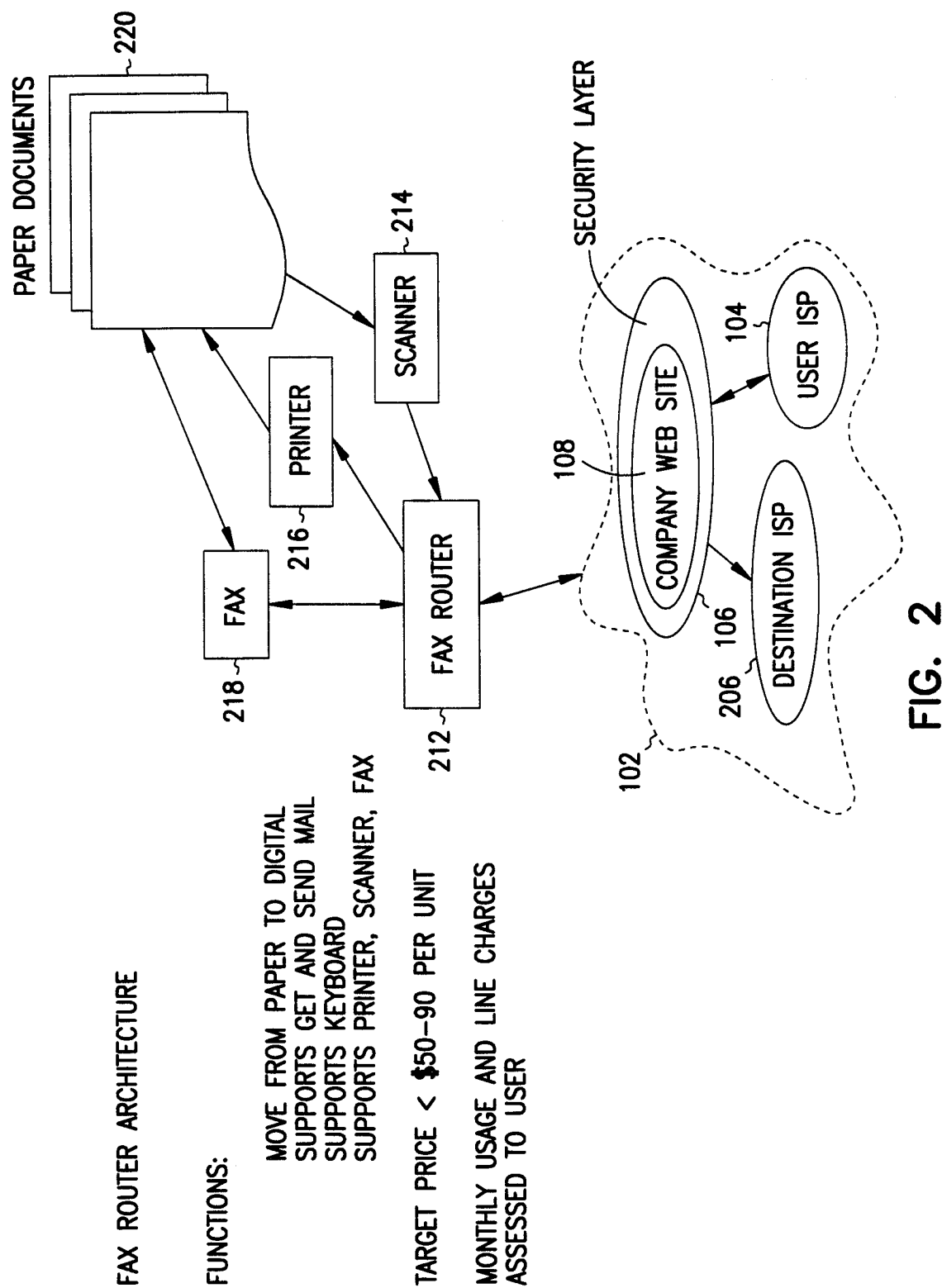


FIG. 1



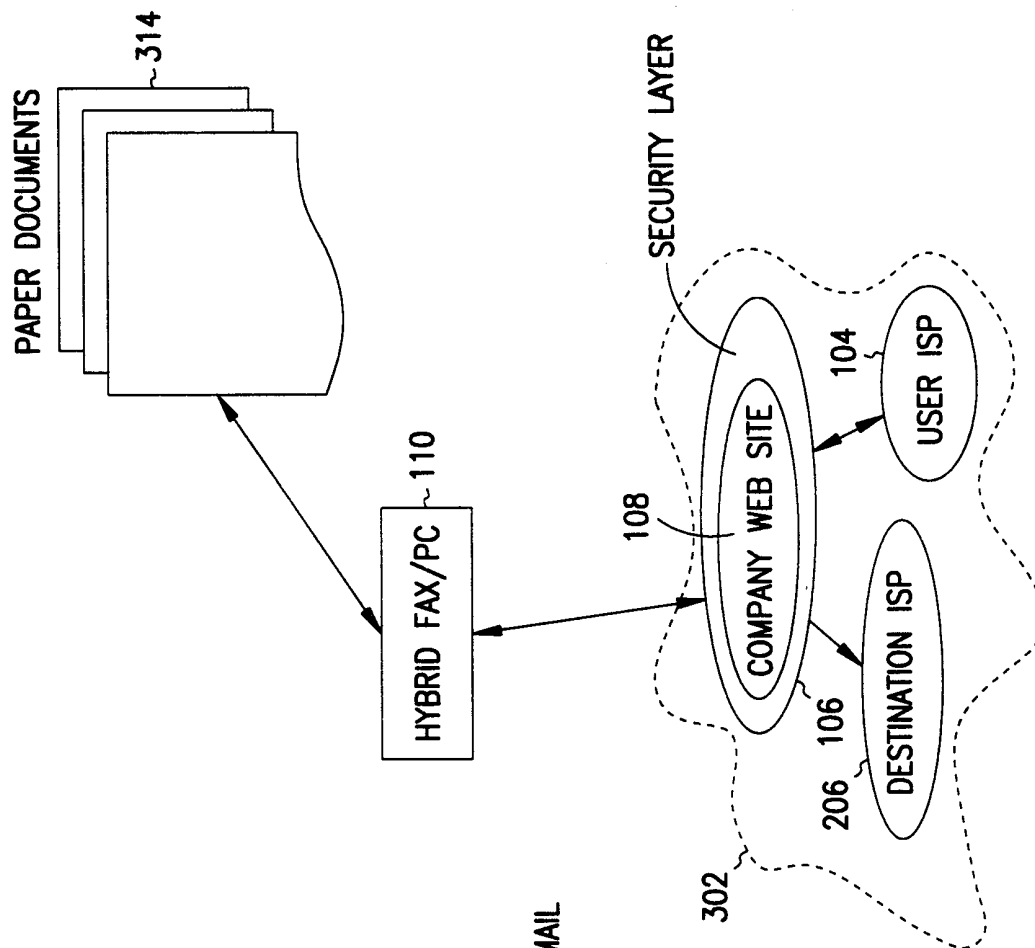


FIG. 3

HYBRID FAX/PC ARCHITECTURE

FUNCTIONS:

MOVE FROM PAPER TO DIGITAL
 SUPPORTS GET AND SEND MAIL
 SUPPORTS KEYBOARD
 SCANNER SLOT
 PAPER OUTPUT

ALLOWS USER TO ACCESS INTERNET AND MAIL
 DOCUMENTS WITHOUT USING A PC.

TARGET PRICE POINT OF \$150 PER UNIT

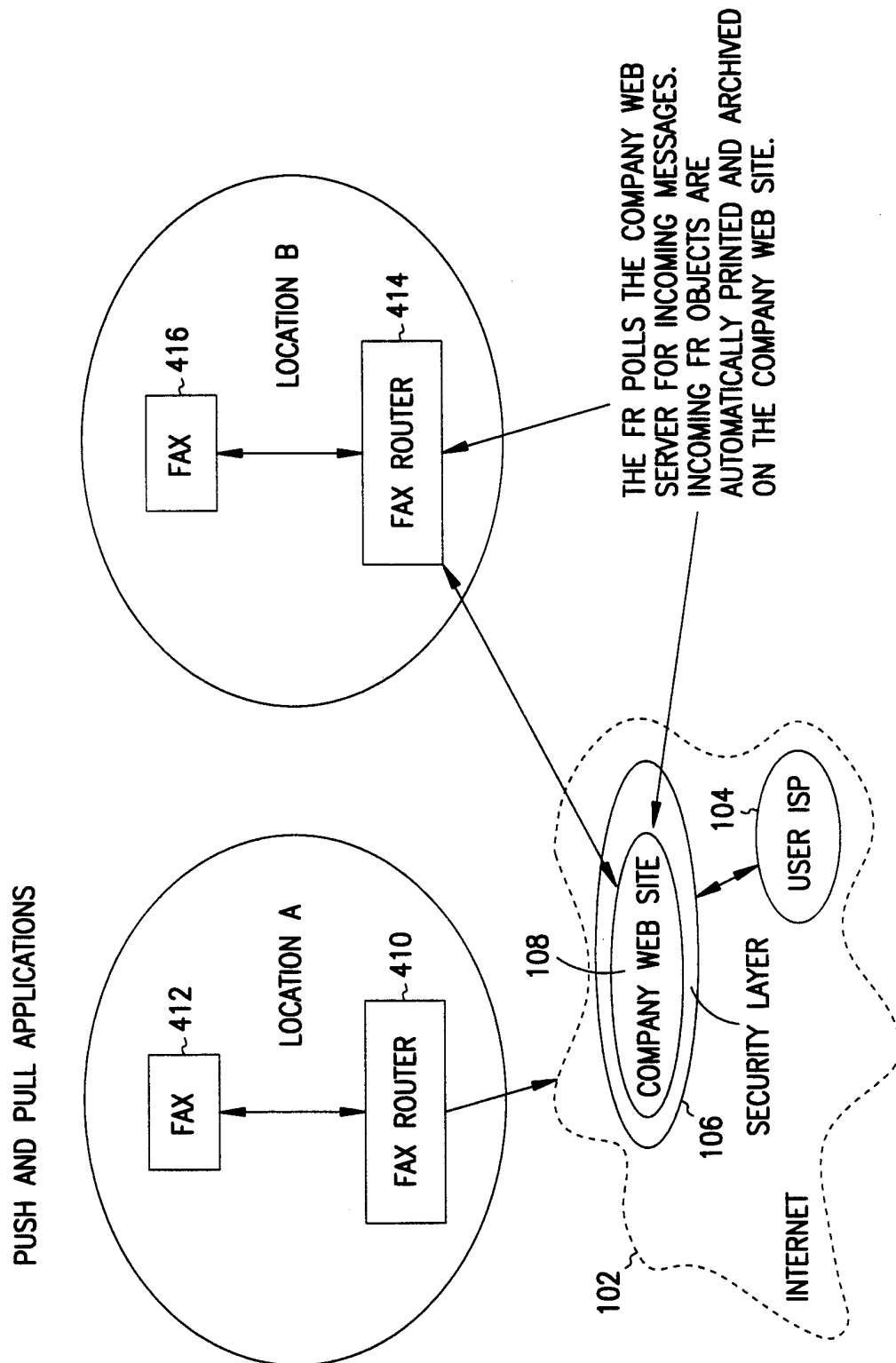


FIG. 4

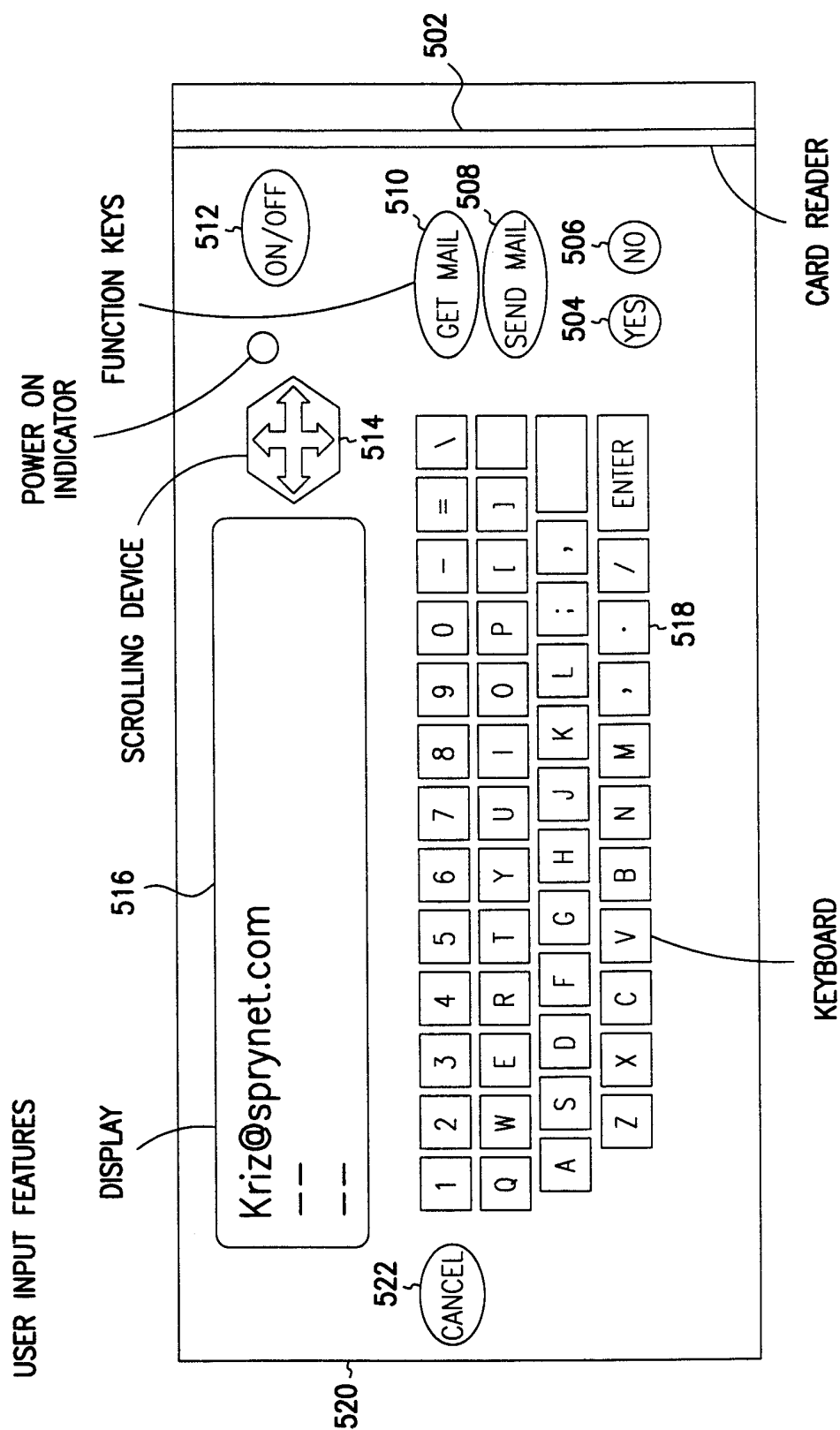


FIG. 5

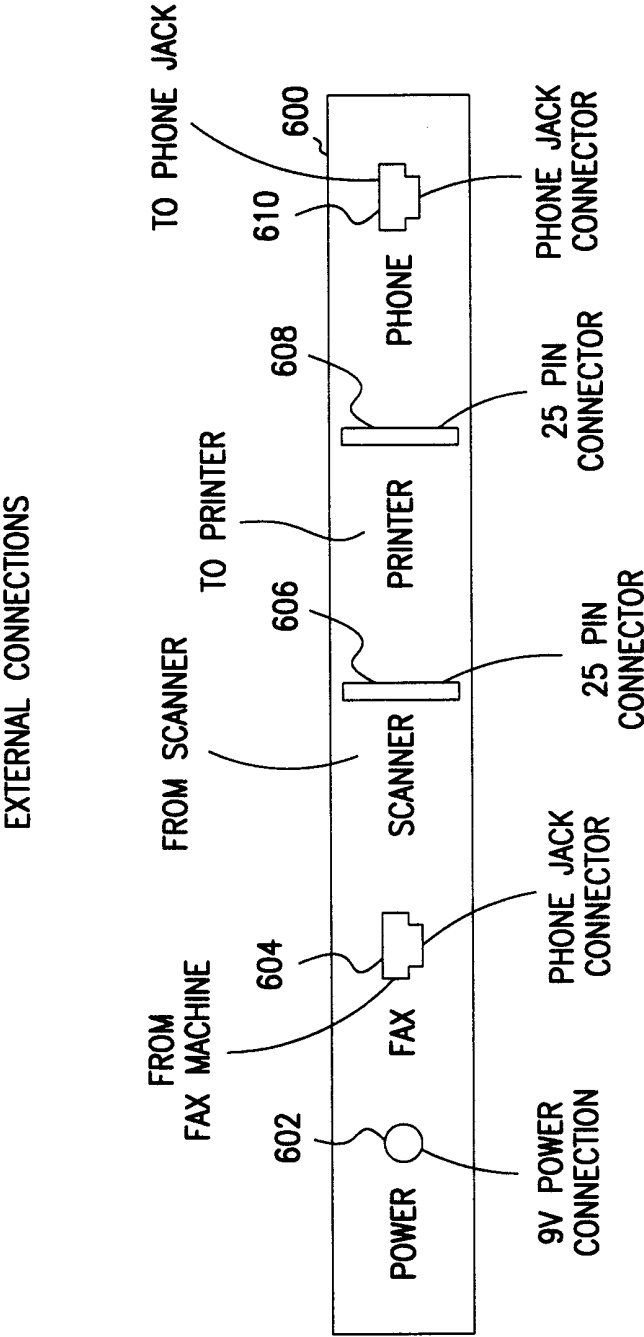


FIG. 6

INTERNAL HARDWARE/SOFTWARE

DISPLAY	LIQUID CRYSTAL 3 LINES, 30 CHARACTERS PER LINE
PROCESSOR	INTEL 80486, AMD, CYRIX
MEMORY	1 mg RAM EPROM
SUPPORT	COMMUNICATIONS IO 28.8 MODEM LINK KEYBOARD, FUNCTION KEYS CARD READER
SOFTWARE	DOS RSA SECURITY KEY

FIG. 7

COMPONENTS OF THE COMPANY'S
INTERNET MESSAGE PACKET--THE MAILMAN LETTER

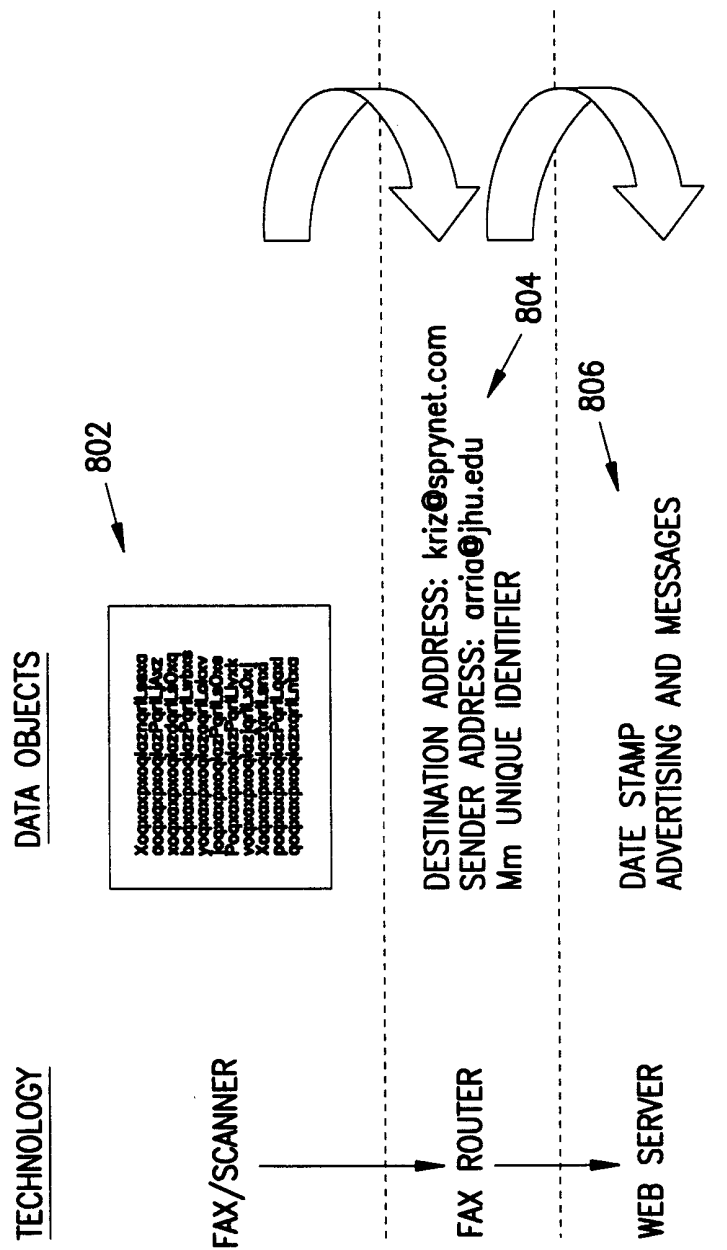


FIG. 8

INFORMATION FLOW FROM OUTPUT DEVICE TO PHONE CONNECTION

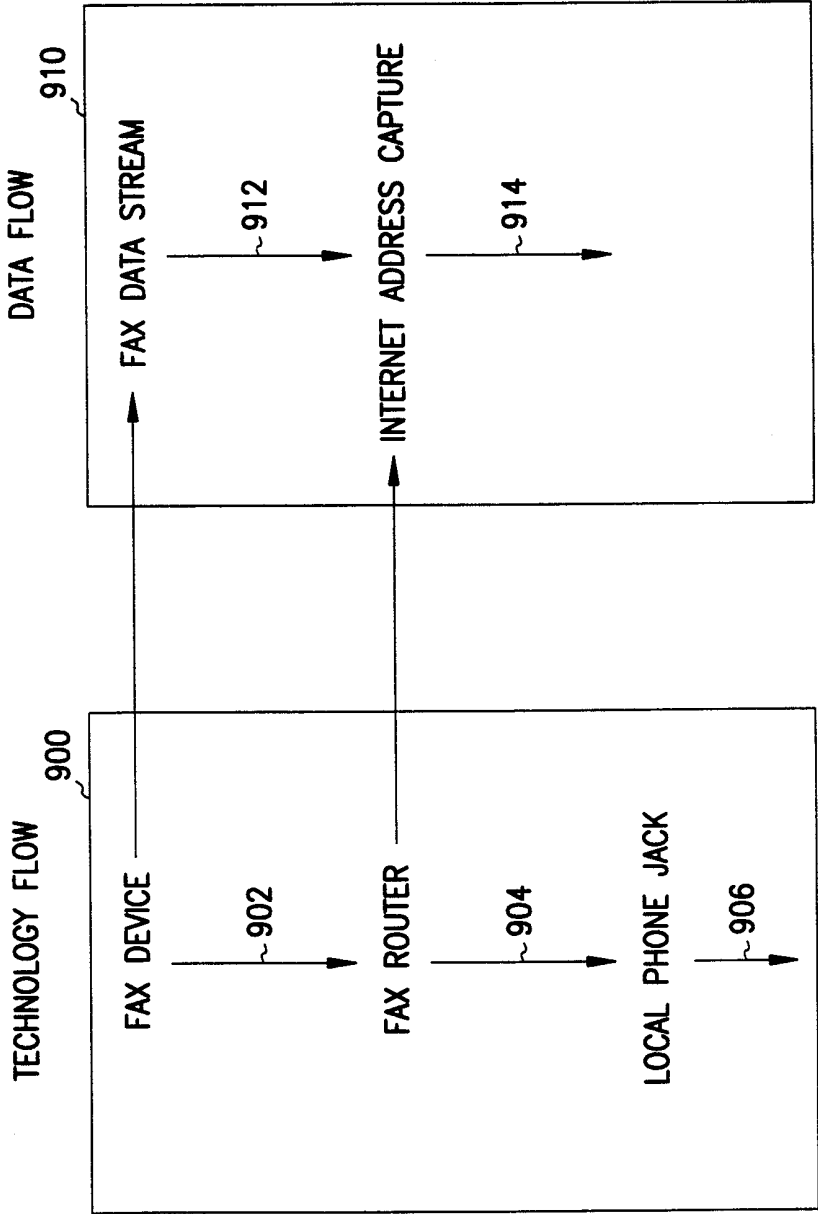


FIG. 9

INFORMATION FLOW FROM ISP TO DESTINATION

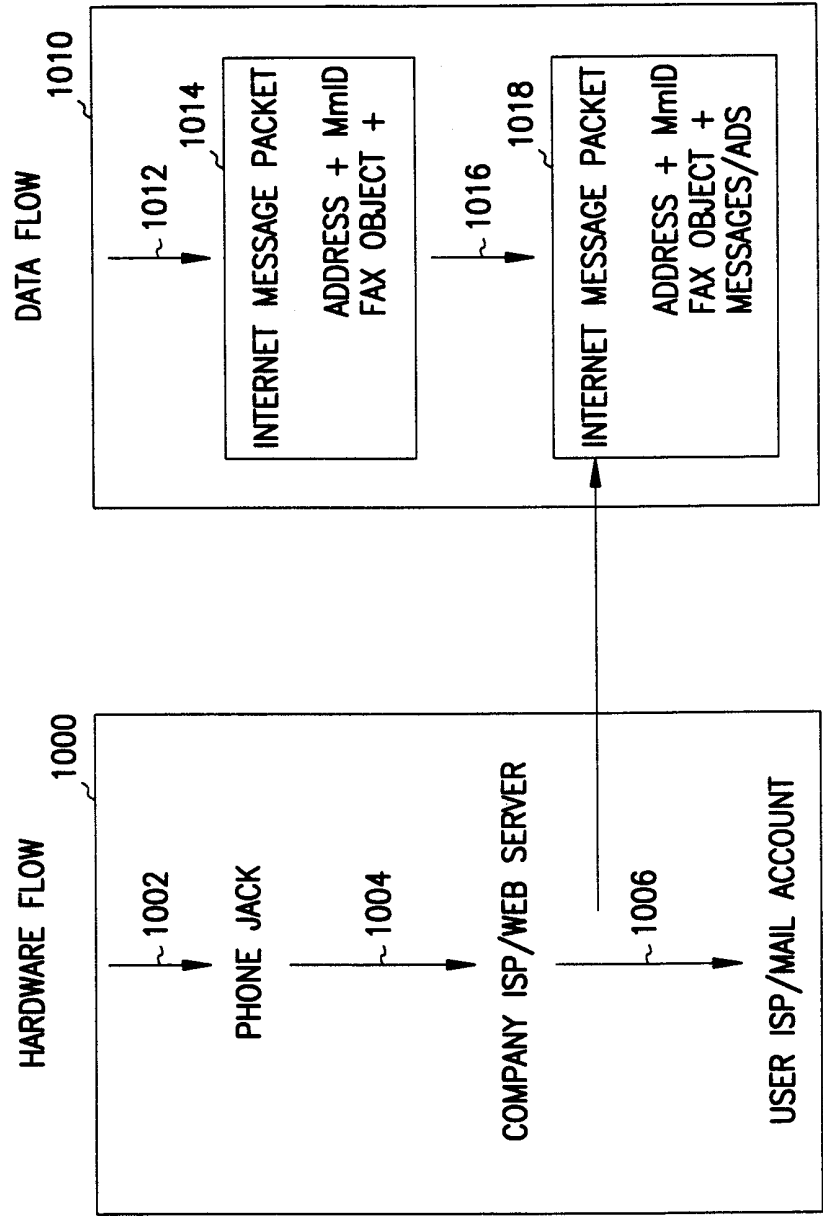


FIG. 10

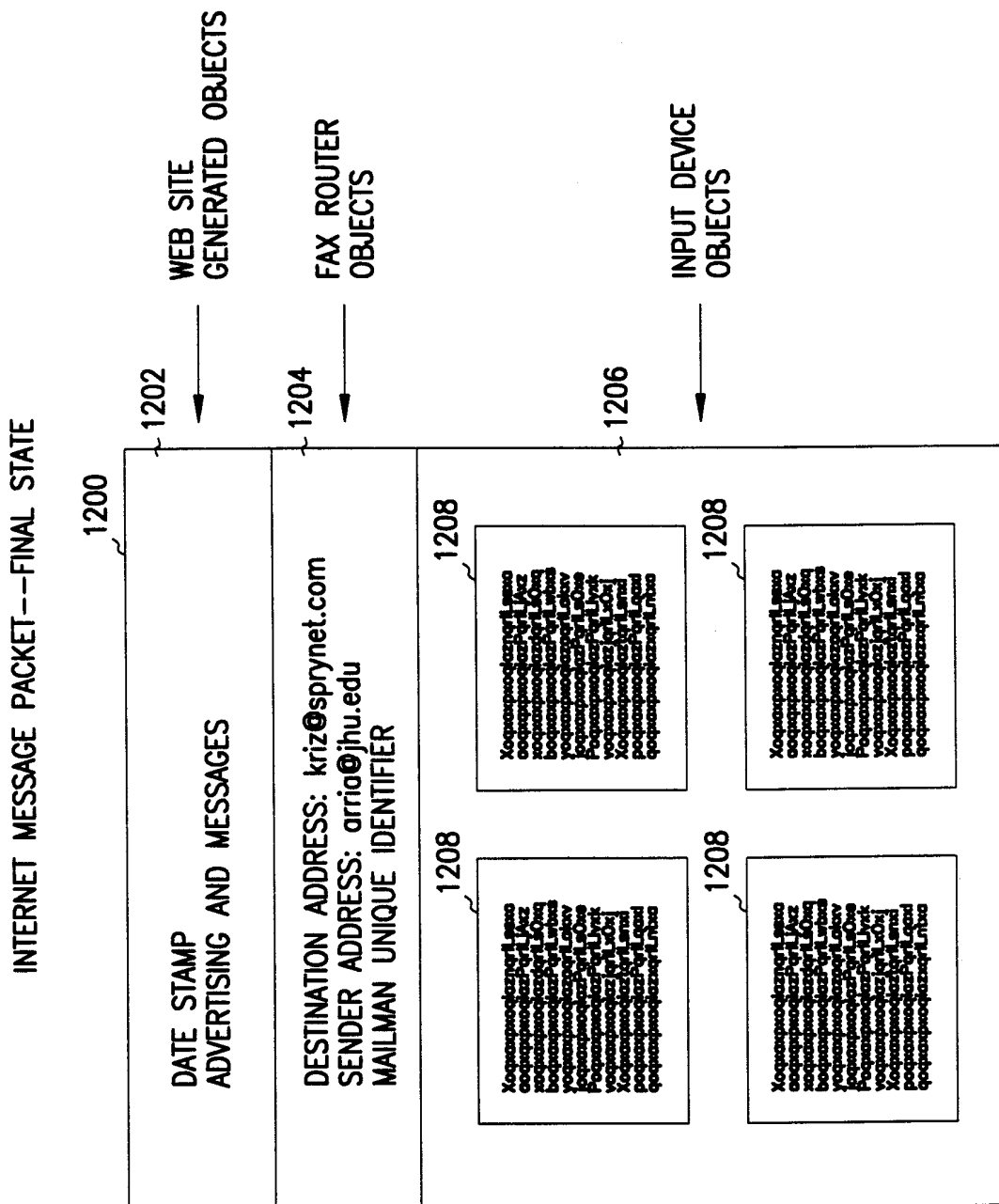


FIG. 12

INTERNATIONAL SEARCH REPORT

International Application No

PC 1/US 99/13721

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G06F17/60 H04N1/00 H04N1/44

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F H04N

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 10668 A (KULAKOWSKI ROBERT T) 20 March 1997 (1997-03-20)	1,2,4-8, 10
Y	abstract; figure 2 page 1, line 31 -page 4, line 6 page 5, line 16 -page 7, line 12 ---	3
Y	US 5 420 922 A (LUNDBLAD LEIF ET AL) 30 May 1995 (1995-05-30) abstract; figure 2 ---	3
X	WO 98 17041 A (BLOOMFIELD MARK C ;MATE ENTERPRISES LLC E (US)) 23 April 1998 (1998-04-23) abstract; figures 1-4 page 1 -page 4 --- -/--	1,4-8,10

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

16 September 1999

Date of mailing of the international search report

22/09/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

van der Weiden, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/13721

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KUN LIU ET AL: "COMPOUND DOCUMENT TRANSFER BETWEEN ELECTRONIC-MAIL NETWORK AND FACSIMILE TERMINALS" PROCEEDINGS OF THE REGION 10 CONFERENCE ON COMPUTER AND COMMUNICATI SYSTEMS (TENCON), HONG KONG, 24 - 27 SEPT., 1990, vol. 2, 24 September 1990 (1990-09-24), pages 644-648, XP000235953 INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS ISBN: 0-87942-556-3 page 644 ----	4-7
X	EP 0 801 492 A (MATSUSHITA ELECTRIC IND CO LTD) 15 October 1997 (1997-10-15) abstract; figure 5 ----	1,2,4
X	US 5 291 302 A (KENNEDY JAMES R ET AL) 1 March 1994 (1994-03-01) abstract; figure 4 ----	8,9
A	US 5 590 196 A (MOREAU THIERRY) 31 December 1996 (1996-12-31) column 3, line 30 - line 43 column 5, line 50 - line 60 column 9, line 60 -column 10, line 11 -----	3,9

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/13721

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9710668 A	20-03-1997	AU 7010596 A CA 2231830 A EP 0850532 A	01-04-1997 20-03-1997 01-07-1998
US 5420922 A	30-05-1995	SE 469461 B AU 650579 B AU 2740292 A CA 2081155 A DE 69215836 D DE 69215836 T EP 0542703 A ES 2097900 T JP 5347713 A SE 9103284 A	05-07-1993 23-06-1994 13-05-1993 08-05-1993 23-01-1997 03-04-1997 19-05-1993 16-04-1997 27-12-1993 08-05-1993
WO 9817041 A	23-04-1998	AU 4792097 A EP 0935879 A	11-05-1998 18-08-1999
EP 0801492 A	15-10-1997	NONE	
US 5291302 A	01-03-1994	US 4994926 A US 5459584 A CA 1329852 A EP 0360732 A JP 2192244 A AU 1444792 A CA 2101327 A EP 0572525 A WO 9214334 A	19-02-1991 17-10-1995 24-05-1994 28-03-1990 30-07-1990 07-09-1992 13-08-1992 08-12-1993 20-08-1992
US 5590196 A	31-12-1996	NONE	