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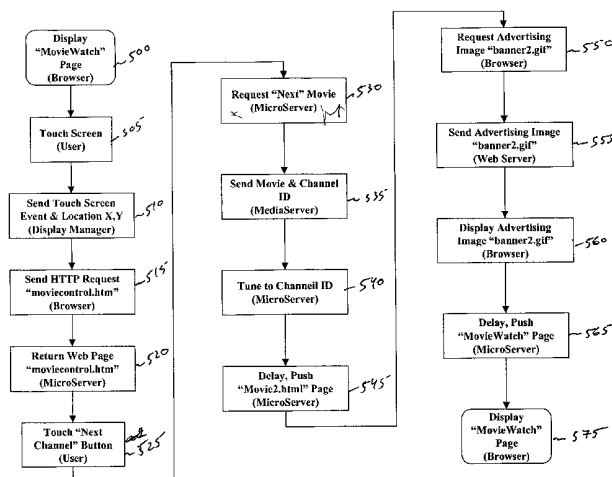
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(54) Title: SYSTEM AND METHOD FOR COLLECTING DEMOGRAPHICS FROM AND DELIVERING BANNER ADVERTISEMENTS TO A PLURALITY OF SUBSCRIBERS



(57) Abstract: A system that enables the presentation of banner advertisements when a television viewer changes channels (500), or a sponsor directs, also provides for the collection of demographic profiles for the subscriber population (550). When banner advertisements are presented, they are selected from a pool according to an advertising category based on the demographic profile. When the television viewer selects the banner advertisement, either by way of a touch screen (505) or a remote control, a web browser retrieves the referenced web page and eclipses the underlying video entertainment presented on the screen (560). A subscriber reception unit provides the intelligence and hardware foundation that allows a web browser to control the reception of video content and the overlay of graphic web pages. A micro-server, hosted in the subscriber unit, enables local control of the hardware, including channel, volume, video color and contrast, through HTML scripting in web pages tailored for the system (520).

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SYSTEM AND METHOD FOR COLLECTING DEMOGRAPHICS FROM AND DELIVERING
BANNER ADVERTISEMENTS TO A PLURALITY OF SUBSCRIBERS.

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RELATED APPLICATIONS

10 This application claims priority to it's provisional parent "SYSTEM,
METHOD, AND ARTICLE OF MANUFACTURE FOR COLLECTING
DEMOGRAPHICS FROM AND DELIVERING BANNER DVERTISEMENTS
TO A PLURALITY OF SUBSCRIBERS" filed on August 29, 2000 and having
received an application number of 60/228,579.

15

FIELD OF THE INVENTION

The present invention relates to the broadcast industry, the evolving arena
of interactive television, and the delivery of demographically targeted
20 commercial messages.

BACKGROUND OF THE INVENTION

The broadcast industry develops revenue by selling advertising time. In the
25 prior art, broadcasters prescribe the programming that a particular channel
will carry. Television viewers, or subscribers tune to various channels until
they find a program that suits their taste and interest. Advertising sponsors
buy segments of time wherein they proclaim the virtues of their product or
service or perhaps convey some other message. The advertisements that
30 they present are called "spots".

The industry has remained fundamentally unchanged for decades. Program
plans for channels are constantly modified in hopes of capturing a larger

segment of the viewing audience. The larger the audience, the more valuable advertising spots become. Advertisers purchase spots in prime program intervals in hopes of maximizing the exposure of their advertisements. This, of course, presupposes that the prime time slots have
5 the largest viewer audiences.

Even still, the advertising sponsors have very little control over the types of viewers that will see their ads. Very little has been achieved in segmenting the advertising venue along demographic lines. Such segmentation would
10 maximize the chance that advertisements would be seen by interested parties rather than by a disinterested mass.

No matter how advertisements are targeted, the habit of most television viewers is to actually change channels when a commercial comes on.
15 Either that, or they make a quick trip to the refrigerator for the proverbial "cold one". With television viewers either "channel surfing" or leaving the room when a commercial airs, the actual utility, and the associated value of traditional advertising is of questionable worth.

20 The prior art has attempted to provide some level of audience segmentation. This has thus far been achieved by creating specialty channels. Specialty channels would ordinarily cater to some segment of the viewing public. Examples of specialty channels would include channels for auto care and a home owners channel. With this type of segmentation, the advertising
25 sponsors could choose to purchase ad spots on only those channels that are viewed by people interested in their message.

This type of segmentation has one very fatal flaw. By segmenting the audience according to specialty channels, advertising sponsors are not
30 assured that a single interested consumer is in fact tuned into that channel. It's pretty clear that even the most devoted racing enthusiast won't tune into the Indy channel every time they want to watch television. The problem,

then, is that the racing oriented commercial advertisements will go unseen in this scenario. Despite these types of fundamental defects in segmented advertising, this has remained the only viable means of reaching a particular demographic given the broadcast nature of television.

5

The television advertising market has traditionally fallen into two camps; on-air broadcast and cable. The on-air broadcast channels evolved in large metropolitan cities throughout the nation. In this venue, an on-air television station would need to sell advertising spots that they had available on their one channel. This, of course, limited the number of advertisements that could be aired in a given time period. And if the on-air channel was affiliated with a national network, some of the available spots were dedicated to the national television audience. Cable television companies were even more limited.

15

Generally, by the time a cable television company distributed an on-air channel to its subscribers, there was no opportunity to insert any local advertising content. To remedy this problem, cable television channels carry independent programming that allows the cable television system operator to present local advertising content. In either of these cases, the availability of advertising time slots was limited, if not by the content providers that demanded a minimum percentage of the available broadcast time for programming, then by the upper tier of the advertising domain, that being the network affiliated television channels.

25

One problem with the prior art, then, is the limited availability of advertising spots to carry traditional video commercial messages. National television networks, local on-air stations and cable television operators all compete for the available advertising bandwidth. But these are not the only business entities that would like to present commercial content to the viewing audience. Small, private television distribution systems, called SMATV

30

systems, would profit immensely from the ability to present advertisements to their subscribers.

Typical SMATV systems are installed and maintained in limited residential complexes, such as apartment buildings and assisted living centers for the elderly. Other SMATV systems are installed in institutional settings; hospitals and hotels are just two examples of these. The cost associated with installing and maintaining such systems, especially in the institutional setting, is prohibitive in light of the relatively small size of the subscriber base and in light of the fact that there is no bandwidth available to carry advertisements that the SMATV operator could sell. These costs can be handsomely offset by the SMATV system operators if only they could sell commercial spots to advertising sponsors. Unfortunately, by the time the entertainment content reaches these third tier distribution mechanisms, the available advertising bandwidth has already been allocated.

It is unfortunate that the SMATV system operators are not afforded an opportunity to present advertising content to their subscribers. The reason that this is so disheartening is that at this third tier of the television distribution chain, SMATV system operators can more readily track the interests and spending propensities of their subscribers. In a hospital setting, for instance, the hospital can target advertisements for a particular pharmaceutical product directly to a patient in need of that particular remedy. An apartment complex that has a high population of young single adults could present advertisements for night clubs and sports cars. These SMATV systems can serve as the ultimate audience segmentation means, even to the point of directing a particular advertisement to a single viewer having a specific demographic profile.

The SMATV system operators are also best situated to provide advanced entertainment products to their subscribers. Because the subscriber base for a typical SMATV system is smaller than that of a cable television system

- serving a residential neighborhood, true on-demand video services and interactive television systems can be deployed. These system, though, have a large initial installation cost. Recurring costs for maintenance and entertainment content are also significant. These costs are simply too high
- 5 to be paid for directly by the consuming subscriber base. Again, advertising revenue would provide SMATV system operators the incentive to promote the introduction of these advanced entertainment services. This, of course, is to everyone's benefit and pleasure.
- 10 The prior art advertising medium is based on the presentation of video segments to a broadcast audience. This has another very significant disadvantage. The nature of the prior art medium could not support an interactive capture of an interested viewer. There simply did not exist a means to allow any one television viewer to interactively request additional
- 15 information or to indicate a level of interest in the product.

SUMMARY OF THE INVENTION

The present invention is a system, method and article of manufacture that provides the capability to present Internet-style banner advertisements on
5 either a standard television receiver or a special display unit. This is an alternative to the standard video oriented advertisements presented to television viewers, or *subscribers*. Using commercially available components, augmented with custom software scripts, the present invention pushes an Internet-style banner advertisements onto the subscribers screen
10 whenever the channel is changed, or whenever the advertising model requires. Using either a remote control or, in some institutional settings a touch sensitive panel that overlays the display, the television viewer can select the banner add while it is on the screen. This invokes a fully interactive advertising paradigm. Once the banner ad is selected, the TV
15 screen displays a referenced web page that can present graphic content or video clips that further convey the sponsor's message.

The present invention can be utilized in a host of venues. Three of these are: 1) traditional cable television systems that service residential homes as
20 a public utility; 2) small, private television systems that service housing units such as apartment complexes; and 3) institutional settings such as hospitals or nursing care facilities. This list of applications for the present invention is meant to be illustrative and not exhaustive.

25 The present invention utilizes commercial-off-the-shelf (COTS) components for most of its hardware and software elements. These COTS products are augmented with unique and novel use of the hyper text markup language (HTML) to coordinate the presentation of television together with the display of banner ads to the subscriber whenever the subscriber changes channels
30 or on other events deemed significant by the advertising sponsors.

Each subscriber to the system must have a reception unit. This subscriber reception unit provides the hardware necessary to selectively view entertainment content while banner advertisements are pushed onto the entertainment screen. The subscriber reception unit comprises a central processing unit that executes a web browser and a micro-server, both of which rely on the foundation of a window oriented operating system. The subscriber reception unit further comprises a network interface and an isochronous-channel receiver. In the preferred embodiment, the network interface is an Ethernet device that is augmented with a diplex filter. The diplex filter enables the subscriber reception unit to use the same cable for network communications and for reception of isochronous data streams. In the embodiment described, the isochronous channel is comprised of a radio frequency (RF) receiver that tunes to an RF channel. The selected RF channel is modulated with a multi-state signal such as quadrature amplitude modulation.

The subscriber reception unit receives a digital content stream, by way of the isochronous channel, that is in a compressed form. In the present embodiment, the digital content stream is encoded in a variant of the MPEG standard. The subscriber reception unit further comprises a display controller. The display controller comprises at least one memory plane dedicated to the presentation of video entertainment. The display controller comprises a dedicated interface that accepts the compressed content stream and a hardware extraction means that reconstitutes the video content. The reconstituted video content is then forwarded to the video memory plane and is ultimately presented to the subscriber.

The display controller further comprises at least one memory plane dedicated to the presentation of graphics generated by the CPU. The graphics are generated by the web browser as it paints the content of web pages received from web servers. The web pages are crafted to enable the presentation of banner advertisements as overlays onto the video memory

plane. This is done by selectively using IMAGE and REFERENCE commands in a hyper text markup language (HTML) description of the web pages. Fully black images referenced by the IMAGE command are used as transparency portals that allow the subscriber to view the video image below
5 the graphics memory plane. Banner advertisements are called by the IMAGE command as well. These are not black and are not transparent. Once painted by the web browser, the banner advertisements are visible as overlays on top of the video image.

10 In an alternative embodiment, the subscriber reception unit display controller comprises only one memory plane. In this alternative, the CPU accepts the compressed entertainment content, executes a software algorithm that reconstitutes the video content and combines the video with any CPU generated graphics. The montage is then directed to the single memory
15 plane from which it is then presented to the subscriber.

To further the utility of the present invention, banner advertisements can be presented to subscribers based on their demographics. Subscribers in this sense can be any person or collection of persons that purchase television
20 content from a provider. Hence, the term subscriber can mean a household that pays a subscription fee to the local cable television system operator, or in an institutional setting, a subscriber can be a patient that is laying in bed recovering from his ailments. Residents in an apartment complex served by a SMATV system are also considered to be subscribers. Again, this list of
25 potential users is for illustration purposes and is not intended to limit to scope of the present invention.

The subscriber reception unit can drive either a custom display device, such as a patient display unit in a hospital, or it can drive a normal television
30 receiver. For use with a patient display unit, the subscriber reception unit further comprises a patient isolation block that provides a galvanic barrier to preclude excessive current from reaching the patient.

The subscriber reception unit further comprises a remote control or touch screen interface. This interface enables the subscriber reception unit to receive indications from the user regarding the activation of "hot-spots". The web browser executing in the subscriber reception unit associates hot-spots with hyper-links created by the HTML REFERENCE command included in web page descriptions.

The system further comprises a plurality of patient display units. These comprise a display screen that is used to present video and graphics to the user and a touch screen that can detect screen touches. The screen touches are used as a means of navigating menu pages displayed on the screen.

Demographics are accumulated by the system through the use of web page based questionnaires. The questionnaires are used to solicit information about the subscriber. In a hospital setting, the information can relate to the persons' ailment. In a domestic setting, the web page questionnaires would solicit information about income level and buying propensities. Before a subscriber is asked to provide the demographic data, a disclaimer is presented. The disclaimer notifies and requires the subscriber to acknowledge that the demographic data collected will be used to target advertisements. The web pages used for the questionnaires can be based on active server page technology. The demographics collection is conducted by a web server connected to the plurality of subscriber reception units by means of a computer network.

Once the demographics are collected they are stored in a subscriber data base. The banner ads that are presented to a subscriber are targeted to that subscriber based on the demographic indicators stored in the subscriber database. To ensure that the demographics are up to date, the system will cause demographic profiles to expire on a periodic basis or

based on certain events that may pertain to a particular application. In homes, the demographic profiles can be set to expire monthly, quarterly or on any definable period. In an institutional setting such as a hospital, the demographic profiles expire when the previous patient subscriber is
5 replaced by a new patient.

This feature enables advertising sponsors to purchase advertising spots (i.e. banner space) for specific types of viewers rather than by the type of content carried on the channel (i.e. audience segmentation achieved through the
10 use of specialty channels). In a viewer group environment (e.g. hospital, resort, campus, or special event venue) advertising sponsors can purchase spots for very specific viewer characteristics. For instance in a hospital, a leading diaper manufacturer may wish to purchase all advertising spots for the maternity care area.

15 The system further comprises a media server that is used to store and disseminate entertainment content on demand and a web server that is used to store web pages. The web server responds to web page requests from the plurality of web browsers executing in the plurality of patient
20 subscription units. The system further comprises a network gateway that enables access to any external network, such as the Internet, by any one of the plurality of subscriber reception units. The system further comprises a local computer network that is used by the patient subscription units to communicate with the web server, the media server and the gateway. The
25 system further comprises an isochronous distribution means, in the preferred embodiment this is an RF distribution system that carries multi-state modulated data streams from the media server to the plurality of subscriber reception units.

30 Presentation of the banner advertisements according to the teaching of the present invention is initiated when the subscriber changes viewing channels, when a new movie is started, or when the sponsoring advertisers so desires.

In the case of channel changing, a web page, hosted by the micro-server, is called. The channel change web page comprises a control script that sends a request to the media server to change channels. In response, the media server changes the content stream to carry the new programming channel.

- 5 The channel changing web page script further comprises an IMAGE reference that calls a banner advertisement according to the demographic profile for the subscriber. The channel changing script further comprises a delay after which a completely blank (black) transparent web page is loaded to enable unobstructed viewing of the program content. Even if the user
10 changes channels again before the delay expires, a subsequent web page is loaded by the browser. This subsequent web page continues to reference the same banner advertisement. This ensures unavoidable exposure to the banner advertisements irrespective of channel surfing habits.

- 15 A sponsor can chose to have their banner advertisements presented when an on-demand movie is started. In this case, the browser loads a movie start web page. The movie start web page comprises a graphic IMAGE reference to the sponsors banner graphic. The movie start web page further comprises a script that directs a movie start command to the media server,
20 selects the movie content from the isochronous channel and includes a blank (black) transparency image. The movie start web page further comprises a delayed loading of a new web page that comprises an IMAGE reference to a completely black image that allows for unobstructed viewing of the movie.

25

- The invention further comprises web pages that comprise banner advertisements that include a reference to a sponsors web site. When the subscriber selects the banner advertisement, either through a touch screen or remote control selection, the web browser executing in the subscriber
30 reception unit loads the web page referenced by the graphic image. The reference is accomplished by way of an HTML REF command. As a refinement to this technique, the graphic image used for the banner

advertisement references an intermediate page that comprises a script that pauses the presentation of entertainment content and a direct call to the sponsors web page.

- 5 Finally, the present invention comprises a method of providing varying levels of entertainment content to subscribers and a means to charge subscription fees based on the level of content selected. Using a server-client architecture, the invention comprises a suite of web pages that present a plurality of entertainment packages that the subscriber can purchase. In the
- 10 present embodiment, three levels of entertainment can be selected by the subscriber, each with a cumulative increase in programming content. The web browser executing in the subscriber reception unit then calls additional web pages that allow the collection of credit card numbers and telephone numbers. The web server receives either a credit card number or a
- 15 telephone number. The web server will the authorize the subscribers account by contacting the credit card company or the telephone company to obtain an authorization number. Once the transaction has been approved, the subscribers account is activated. Alternatively, the subscriber can be billed at the end of the subscription period. Receiving the authorization
- 20 number from a credit card or telephone company is an optional step. In the case of institutional users, the web server can send a transaction to a institutional billing system.

25

BRIEF DESCRIPTION OF THE FIGURES

The foregoing aspects are better understood from the following detailed
5 description of one embodiment of the invention with reference to the
drawings, in which:

Fig. 1 is a pictorial view of a television system made integral to a bed;

10 Fig. 2 is a block diagram that depicts the components that are used to
deliver demographically targeted advertisements;

Fig. 3 is a block diagram of the subscriber reception unit;

15 Fig. 4 is a data flow diagram that depicts the software processes and data
flows that are needed to present demographically targeted banner
advertisements;

Fig. 5 is a block diagram that illustrates the three major functional elements
20 in a system according to the present invention;

Fig. 6 is a pictorial diagram that depicts the manner in which menus are
pushed on top of a black screen by the browser;

25 Fig. 7 is a pictorial diagram that depicts the manner in which menus are
used to select entertainment content and how banner advertisements are
pushed onto the graphics screen by the browser;

Fig. 8 is a flow diagram that depicts the processes used by the browser, the
30 micro server, the media server, the web server and the display manager to
present menus, select and present entertainment content and push banner
advertisements;

Fig. 9 is a pictorial diagram that illustrates the method of introducing banner advertisements whenever the user changes channels;

- 5 Fig. 10 is a flow diagram the presents the process flow needed to present banner advertisements when the user changes channels;

- Fig. 11 is a flow diagram that depicts the process used by the present invention to register subscribers before allowing the subscriber to have
10 access to entertainment content;

Fig. 12 is a flow diagram that continues the depiction of the process of registering subscribers;

- 15 Fig. 13 is a pictorial representation of a welcome page used in the present embodiment in a hospital application;

Figs. 14 through 16 are pictorial representations of a typical disclaimer; and

- 20 Fig. 17 is a pictorial representation of a typical survey form presented by the system to a patient in a hospital.

DETAILED DESCRIPTION OF THE INVENTION

Institutional Use

A hospital is just one example of a SMATV system installed in an institutional setting. The dissertation presented here is not intended to limit the application of the present invention to any given venue. Modern hospitals are constantly challenged by budget constraints. In an effort to cater to the creature comforts of their patients, hospitals generally provide each patient with their own television set. Even this basic amenity puts a financial strain on the hospital to the extent that most hospitals only provide basic broadcast television to their patients. In fact, many hospitals throughout the United States actually impose a daily surcharge on patients that want to watch television.

Given the fact that most hospitals can't even afford to provide basic television to their patients, its not hard to see that hospital budgets could never absorb the added expense of providing enhanced entertainment services to their patients. Even the addition of basic cable television network channels would be prohibited from a cost perspective. The present invention addresses the need to provide patients with expanded entertainment content options while simultaneously reducing the financial obligation that such expansion would impose on the hospital or other institution. Ordinarily, the costs that result from this type of expansion would include maintenance of the televisions, the cable infrastructure and the new program delivery equipment that would need to be installed in the hospital. This added overhead can not be avoided if expanded entertainment services are to be delivered to each patient or institutional resident.

The present invention actually provides dedicated patient displays units (PDUs) at each bedside. These PDUs give patients access to broadcast television, standard cable television network programming, premium cable channels and video-on-demand entertainment. The cost of the equipment

and the cost of the content ultimately presented to the patients is supported by a combination of subscription fees charged to the patients and revenue derived from advertisements presented to patients by sponsoring companies that provide products and/or services.

5

Specifically, the present invention defines the methodology for charging patients a modest subscription fee for expanded cable services, a somewhat higher fee for premium cable channels, and for allowing patient to purchase videos on a pay-per-view basis. The present invention also allows the patient to pay for access to the Internet. These revenues are augmented by revenues generated through the sale of advertising opportunities in the hospital.

The present invention also includes an apparatus that facilitates the presentation of demographically targeted advertisements to patients based on their ailments. The apparatus also provides a means to present Internet styled banner advertisements to patients while they are channel surfing. These capabilities support a revenue stream that pays for the initial installation of patient terminals at each bedside and also provides a recurring revenue stream for maintenance of the equipment and for the acquisition of entertainment content.

This is one of the essential features of the present intention. In the institutional setting, the hospital itself can not disseminate any health related demographics of a patient. The reason that the hospital can not disseminate these demographics is not a technical hurdle. Rather, federal and state privacy statutes prohibit hospitals from breaching the confidence of their patients. If not for this survey capability, the demographics of the patients' ailments could not be used to target advertisements due to privacy concerns. The privacy issue is circumvented by the fact that patients in the hospital voluntarily provide information to the system relative to their medical condition. Of course, patients are first warned that the information that they

provide will be used to select advertisements that they will see on their patient terminals during the course of their stay at the hospital.

Residential Use

- 5 Although this technology has been originally targeted for hospitals, it can easily be adapted to a more general audience. This technology enables cable television system operators to gather demographic information about their subscribers. The patients in a hospital or the subscribers of residential cable television services voluntarily provide demographic data that is
- 10 ultimately used to target advertising content, be it in the form of banners or traditional video segments.

System Overview

- Reiterating, the technology described here is applicable not only in the
- 15 institutional setting, but can be readily exploited in any private entertainment network, such as a SMATV system, or in a public utility cable television service. However, in the interest of brevity, we discuss application of this technology in a hospital setting. Where there are significant technical departures for other applications, these are fully described.

- 20
- Fig. 1 shows a traditional hospital bed 5 that includes a special console 10 mounted to one of the two bed rails 15. The operation of this console is not significant to the present invention. What is important to note is that the console 10 serves as a receptacle for a patient display unit 20. When the
- 25 patient does not want to use the patient display unit 20, it folds away into the console. This is but one embodiment for the display apparatus that a patient could use. The patient could just as effectively use a regular television set that is situated opposite the bed, or in any position that suits the patients' comfort. The advantage of a specialized display is the ability to
- 30 provide a touch screen 25 device that is placed in front of the display screen. This enables the system to sense when the user "touches" web page menu elements.

The patient display unit 20 provide three basic functions; 1) it displays video and graphic data to the patient; 2) it includes a touch sensitive panel; and 3) it includes hard actuators that the patient uses to change program channels, adjust volume and manipulate menus that are presented on the video screen. In a domestic setting, or in a less sophisticated institutional environment, a standard television set could be used. In that case, the television would not have a touch screen for menu operation and navigation. In lieu of the touch screen, a remote control could be used to select menu items presented on the television screen.

Figure 2 illustrates how the patient display unit 20 is merely an element of a complete entertainment system comprising an media server 30, a standard HTTP web server 35, a computer network 40, and a subscriber reception unit 45. The entertainment system can further comprise a radio frequency distribution system for distribution of high bandwidth entertainment content such as digital video. The subscriber reception unit 45 can drive either a patient display unit 20 or it can be configured to drive a conventional television (TV) receiver 50. Where the subscriber uses a conventional television receiver, the preferred control mechanism is a remote control 55 as previously described.

In basic operation, each subscriber is presented with digital video content that can be selected from menus. Whenever the subscriber make a request to change the program channel, the media server 30 is commanded to direct the requested video content to that subscriber.

Suffice it to disclose that the media server 30 is capable of delivering a plurality of digital content streams to a plurality of subscribers. The HTTP web server 35 is a conventional server capable of serving up web pages upon demand. The gateway 60 is a conventional network gateway that enables access to external computer networks such as the Internet.

Subscriber Reception Unit

Figure 3 presents the preferred embodiment of a subscriber reception unit 45. The subscriber reception unit 45 comprises: high-performance central
5 processing unit 64 (CPU), in this case an AMD K6 operating at 450 MHz; a Socket 7 to PCI bridge chip; and some amount of random access memory. The subscriber reception unit (SRU) 45 further comprises: network interface chip 65, digital television tuner 70; multi-state demodulator 75; and field
10 programmable gate array (FPGA) 80. It should be noted that the actual hardware components that are selected for the CPU and its related peripherals are not crucial to the invention so long the aggregate capability to process incoming digital video signals is provided.

A significant aspect of the present invention is that the subscriber reception
15 unit 45 further comprises display controller 85 and sound chip 95. Both of these peripherals are augmented by display memory 90 and sound memory 100, respectively. The present invention relies on a minimum level of capability from the display controller 85 and its associated memory 90. Specifically, the preferred embodiment of display controller 85 includes
20 separate memory planes for the presentation of video and graphics. Also, the preferred embodiment of display controller 85 will have a separate interface for graphic data (graphic data interface 110) that is generated by software executed by CPU 64, and a separate interface for video (video data interface 115). Further, the preferred embodiment of display controller
25 85 will include hardware circuitry that decompresses video data arriving at video data interface 115 in some standard compression scheme such as MPEG.

Departing from the preferred embodiment of display controller 85 and it's
30 associated display memory 90, one acceptable alternative embodiment would not have a separate video data interface. In that alternative, compressed video data would be processed by a software de-compressor

executed by the CPU 64. In this alternative embodiment, the CPU 64 would drive the decompressed video into the display controller using the graphic data interface.

- 5 One additional embodiment would dispense with separate video memory planes for the presentation of video and graphic data. In that case, the CPU 64 would create a graphic montage incorporating the decompressed video into any other graphic image rendered by CPU 64. The montage graphic would then be driven into the display controller via the graphic data
10 interface.

- Unique to an institutional setting where the user is a hospital patient, subscriber reception unit 45 further comprises patient isolation block 105. The purpose of patient isolation block 105 is to enable a galvanic barrier
15 between the patient display unit 20 and earth ground as required by design safety standards such as IEC 601-1.

- Any and all ancillary circuitry in the present embodiment have been included in the field programmable gate array (FPGA) 80. In the present
20 embodiment, the FPGA includes circuitry to control an FLASH memory, serial input/output (I/O), timers and other miscellaneous functions such as interrupt vectoring for the CPU 64.

Overview of SRU Interaction

- 25 The SRU 45 is, in essence, a very capable computing element that is available to service the subscriber to which it is assigned. The SRU 45 can be analogized in many respects to a powerful personal computer with multi-media capability. The fundamental notion of television has been totally abandoned by the present invention. In the present invention, the
30 presentation of entertainment content is accomplished under control of software elements executing in the SRU 45, the HTTP server 35 and the media server 30.

Fig. 4 presents the various software elements that are executed on the three hardware platforms. The HTTP server 35 executes a common web server application software 140. The web server software 140 responds to
5 requests for web pages that it receives over a first TCP/IP connection 150 from a browser software element 145 that is executing in the SRU 45. The browser can request entertainment content directly from a media server control application 142 by way of a second TCP/IP connection 160. In the alternate, the browser can route a media request through a local micro
10 server 165. To do so, the browser established a third TCP/IP connection 170.

Irrespective of how the browser routes the request for media content, the browser uses the third TCP/IP connection 170 to call a selection of
15 intelligent web pages that are hosted by the micro server 165. These web pages cause the micro server 165 to send a tuning command to the digital TV tuner 70 integral to the SRU 45 and to command the multi-state demodulator 75. These actions enable the SRU to select a media stream that arrives on an isochronous channel 175. When the web browser routes
20 the media request addressed to the media server application 142 through the micro server 165, the micro server 165 creates a fourth TCP/IP connection 180 that it uses to forward the media request from the browser 145.

25 In response to the media request originated by the browser 145, the media server 30 will initiate a stream of digital entertainment content. In the preferred embodiment, the digital content stream is funneled to the SRU using an isochronous channel. The media content arrives by way of the isochronous channel 175. In the present embodiment, the isochronous
30 channel is carried as a portion of a quadrature amplitude modulated signal on an RF television channel. The micro server 165 commands the TV tuner 70 to select the appropriate RF channel that is then demodulated by the

multi-state demodulator 75. The digital stream recovered by the multi-state demodulator 75 is then directed to a display controller 85. The display controller 85 accepts the media content and presents it to the user. This is described in more detail below.

5

The SRU 45 is controlled globally by an operating system software element 190. In one embodiment, the operating system 190 is used by the web browser 145 to display web pages on the user's screen by means of graphical user interface calls 195. These substance of these calls is greatly simplified here, since these calls are transparent to the integration of a commercial web browser overlaying an operating system. In the current embodiment, the web browser is Netscape while the operating system is Windows 98. Any web browser and any operating system with the capabilities required for implementation of the present or like embodiment can be used.

15

The operating system uses driver facilities, such as a touch screen driver 200 and a mouse driver 205 to detect user selections of web page elements presented to a user. These web page elements, or hot spots 210 are then communicated to the web browser 145. The web browser can then respond to these user selections by loading other web pages accessible by the first TCP/IP connection 150 from the web server software 140 or web pages hosted on the micro server 165 by using the third TCP/IP connection 170. Alternatively, the web browser 145 can retrieve web pages from any web server that can be accessed either by way of the local computer network 40 or by way of the gateway 60.

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The touch screen driver 200 can accept finger touches on the touch screen or button events from hard-wired switches that the user can actuate. Each of these types of events is forwarded to the mouse driver 205 integral to the operating system. The events then cause the web browser to load special pages. In the case of a button event, such as that associated with volume

30

control, the web browser is directed to a web page hosted on the micro server 165. This web page will then manipulate the sound generation hardware (95 and 100) on the SRU 45.

- 5 The system described here relies on the web browser's 145 ability to load any web page from any web server, either within the local facility or over the Internet. These features enable the user to access the world wide web or any server connected to the Internet.

10 *Software Architecture*

- Fig. 5 depicts the three functional layers that comprise the system from the standpoint of the software elements. These are a user interface layer 240; a controller layer 250; and a content source layer 260. In order to flexibly provide expanded entertainment services and to support viewer specific
15 advertising within an interactive environment, the present invention utilizes commercially available off-the shelf technology integrated in a unique manner.

- The user interface layer 240 provides each user a video display 26 and
20 pointing device, either a mouse, a touch screen 25 or a remote control 55. The user interface layer 240 comprises the equipment, both software and hardware, that a user needs to interact with the system. A user in this context can be either a patient in a hospital, a cable television subscriber in a residential setting, or any other natural person using the system for
25 entertainment or information access purposes.

- The controller layer 250 can be local or distributed, but must have the underlying architecture to support simultaneous video and graphics display. This requires a display controller 85 that has at least a graphics plane 286
30 and a video plane 287 servicing the video display 26. The control layer must also have the ability to interpret and act upon user input from a TV remote control or a touch screen. This capability is provided by a web

browser 145 and a micro server 165. The web browser 145 and the micro server 165 communicate with each other and with other servers using a TCP/IP protocol stack 270.

- 5 Within the control layer 250, the pointing device manager 280 receives input from the user through the remote control 55, touch screen 25 or other dedicated buttons that may be integral to the patient display unit 20. This user input is passed to the web browser 145 with additional information like the identifier of the remote control button that was pressed or the location
- 10 the user touched the touch screen 25. This allows the web browser 145 to determine what the user wants to do based on the button they pressed or location touched on the touch screen 25. The display manager 285 can display both graphic and video content to the user through the video display 26. The display manager 285 allows separate control of graphics and video
- 15 planes (286 and 287), but combines the output of both before sending them to the video display 26. In this case, the web browser 145 sends graphic information to the display manager 285, and the micro server controls video information arriving by way of the isochronous channel 175. The web browser pulls web content from the web server 140 to get graphics for
- 20 advertising banners or other information. The micro server 165 communicates with the media server 142 for video selections requested by the user. The micro server 165 is also utilized in controlling local video resources such as tuners and volume actuators.
- 25 The content source layer 260 is comprised of a plurality of content servers. There is at least a single web server application 140 and a single media server control application 142 that source web pages or streaming content, respectively. The content source layer 260 provides the video and internet information the web browser 145 needs to satisfy user requests. The media
- 30 server 142 contains digital video selections that can be requested by the user. There can be many media servers 142 in the system. The number of media servers 142 is based on the amount of movie selections that system

operators, such as cable TV companies or hospitals want to offer the users. Though not shown in this diagram, the media server can provide streaming video derived from live broadcasts.

- 5 Fig. 5 depicts the general architecture of the system that will provide the specified capability. It overlooks many hardware and network details that are necessary for implementation, but can be provided in a number of acceptable ways. For instance, the interface between the TCP/IP stack and the media server can be local or accessible over a network.

10

Web Scripting

- The system architecture described herein enables a large number of intelligent interactive features that personalize the traditional television and internet experiences. These features are not all described in this section,
- 15 but a few key use cases illustrate how the central elements of this architecture can be leveraged to provide personalized advertising, video-on-demand, and Internet browsing. A novel aspect of this system lies in how it combines off-the-shelf Internet technologies with television capabilities. Specifically, the system behaves like an Internet browser through the touch
- 20 screen 25 and graphics plane 286 and like a television through the video plane 287.

- The web browser 145 and micro server 165 seamlessly orchestrate the internet and television capabilities to create a more intelligent and interactive
- 25 viewing environment. Furthermore, utilization of the micro server technology enables these features through popular hyper text mark-up language (HTML) authoring that is ubiquitous and easy to use. Moreover, it supports natural HTML extensions to easily facilitate local resource control, such as changing channels and menu navigation. Through use of the micro server
- 30 165, almost any HTML extension can be added to facilitate local resource control and personalized information requests. Even so, the inherent

capabilities of HTML contribute significantly to the personalizing features of the present invention.

A key aspect of the present invention's architecture lies in capabilities revolving around HTML. HTML is the layout and interactive script language that underlies all web pages. The HTML language is large and contains a lot of capability that need not be discussed here. Luckily, we are only interested in two, "HREF" and "IMG". "HREF" is used to enable a hotspot associated with text or graphic images on a web page. When the web browser 145 receives input from the pointing device manager 280 it checks to see if a hotspot was selected. If it was, the browser processes the HREF associated with the hotspot. The HREF could be a request for another web page or a command to the micro server 165 or web server 140. "IMG" is used to display any graphic file at a specific location on the screen. The image can be a button, a picture, or any icon. The image can come from anywhere the browser can request information from. This means that the image can come from a different place than the original web page, as long as it can be accessed by the web browser 145.

20 *Menu Paradigms*

Fig. 6 shows the images shown on the display screen 26 and abbreviated HTML script associated with activating the screen menu. Initially, the display screen 26 displays a blank image (www.microserver.com/blank.gif) that has an associated HREF to the main menu in the micro server 165:

25 www.microserver.com/mainmenu.html

The blank image 300 is just a black graphic image that simulates the "off" status for the video display 26. Since the blank image is displayed on the entire screen, the web browser 145 executes the HREF wherever the screen is touched. When the user touches the screen 302, the web browser 145 sends a request to the micro server 165 for the main menu page, as

indicated in the HTML script 305. The micro server 165 responds by sending the requested page:

www.microserver.com/mainmenu.html

- 5 The browser receives the page and displays it 310. Part of the HTML script for the main menu movie option is also shown 315. The "Movie Menu" option sends a request to the micro server 165 for the movie menu page, when selected:

www.microserver.com/moviemenu.html

10

Intelligent Banner Advertisements

Banner Advertisements as Movie Overlays

- Providing banner advertisements when a movie is selected by the user is a novel extension of the steps shown in Fig. 6. Web pages are used to display the movie menu, provide commands to start the movie, and display the advertising banner. The "HREF" tag can be used to send processing requests to a web server 140 or micro server 165. In this case, an "HREF" tag is used to send a request to the micro server 165 to start playing a movie. In addition to starting the requested movie selection, the micro server 165 can respond by pushing an appropriate web page to the browser. The web page can consist of advertising, useful messages to the user, or both. Since the web page can contain "IMG" references to anywhere the web browser 140 can access, the advertising can come from the micro server 165, web server 140, or from the World Wide Web via a gateway (Fig. 2, Ref: 60).

- Fig. 7 illustrates how the present invention provides advertising when a movie is selected. The movie menu is initially displayed with "hotspots" for each movie selection 320. When a movie is selected, the associated HREF is processed 325. In this case, it makes a request for the Movie 1 web page and a command to start the movie. The micro server 165 responds by

5 sending the associated web page, and processes the start command. The movie #1 web page contains an "IMAGE" reference to an advertising banner. In this case, the advertising banner is located on the web server 140 at a specific location for patient #1. When the web browser 145 receives the web page from the micro server 165, it automatically makes a request for the advertising image from the web server 140 and displays it when the image arrives. The advertising banner 330 is pushed on top of the video for Movie #1 335. Of course, the video image is displayed by way of the video plane 287 managed by the display manager 285. The IMAGE
10 reference in the banner script 340 actually causes the browser 145 to display the banner advertisement.

The micro server 165 starts Movie #1 by controlling local hardware in the SRU 45 and requesting that a movie be started by the media server 142.
15 After the micro server 165 detects that a movie is playing, it can push a new web page to the browser that has no advertising, a full-screen transparent image, and an HREF to a "Movie Control" menu. The micro server 165 can be easily programmed to delay sending the "Movie #1" page. Like the user scenario shown in Fig. 6, the transparent image 300 will cover the whole
20 screen. Therefore, the "Movie Control" menu will be displayed whenever the screen is touched. The "Movie Control" menu can have HTML that supports changing channels, volume, or for navigating to other menus. The web pages previously described are created rather easily and the HTML author does not need to have a working knowledge of the underlying processing.
25 The simplicity for users and managers of this system is an important attribute created by the present architecture. The utilization of off-the-shelf web components like the web browser 145, the micro server 165, the web server 140 and the media server 142 are largely responsible for creating a friendly environment.

30

Fig. 8 is a flow diagram that details the processing and commands exchanged between the web browser 145, the micro server 165, the display

manager 285, the media server 142 and the web server 140. The processing starts with the user movie menu displayed (step 350). When the user selects a movie, in this example Movie #1, (step 355), the display manager 285 sends the event with the "X,Y" location of the touch event to
5 the browser 145 (step 360). The browser 145 associates the "X,Y" location with the Movie 1 button on the menu and makes the associated HTTP request for the indicated HREF (www.microserver.com/movie1.html) (step 365). The micro server returns the requested web page (movie1.html) (step 370).

10

At this point two threads of processing occur simultaneously and each thread is driven by the browser 145 and the micro server 165, respectively. Since the micro server 165 returns a web page (movie1.html) that has an "IMG" reference, the browser 145 requests the image from the web server
15 140 (step 410). The web server 140 returns the requested image and the browser 145 displays it. At the same time, the micro server 165 sends a request for Movie 1 to the media server 142. The media server 142 sends the movie and channel ID back to the micro server 165 (step 385). The micro server 165 commands the display manager 285 to tune to the
20 appropriate channel, in order to view the movie on the display screen 26 via the video plane 287 (step 390). When the display manager 285 detects that the movie has started, it notifies the micro server 165 that entertainment has started (step 400). The micro server 165 can then delay for a short time or immediately push a "MovieWatch" page to the browser 145 (step 405). The
25 MovieWatch page is displayed by the browser 140 (step 407). The MovieWatch page contains a transparent image that allows unobstructed movie viewing while providing an HREF object reference.

This feature also works with standard TV Remote control devices. The
30 pointing device manager 280 within the controller 250 interprets messages coming from the remote control 55 and passes them to the browser 145 for a meaningful response. The browser 145 associates the key identification

with the appropriate screen object. If the screen object is an image that has an associated HREF, the browser sends an appropriate HTTP request. Since all of the TV remote control messages come through the display manager, the browser is independent of the specific type of pointing device, and the selection process shown in Figure 8 will work with a TV remote as well as a Touch Screen.

Presenting Banner Advertisements when Channels are Changed

Fig. 9 is a pictorial diagram that illustrates the method of introducing banner advertisements whenever the user changes channels. The movie, or television channel is initially playing without any advertising banners 425. This screen has a transparent image that has a "HREF" link to the "Movie Control" menu 430:

`www.microserver.com/moviecontrol.htm`

When the user touches the touch screen, the transparent image is replaced with a channel surfing image 435. This channel surfing image has hot spots for selecting the next channel and for adjusting the volume of the audio tracks. Other menu items can also be presented such as adjusting color saturation of the display or selecting a secondary audio channel. These variants can be included to accommodate special needs that may arise. The screen still has the same movie control HREF 440.

In response to the user selecting a channel change hot spot, the present invention will cause new programming content to be presented to the user 445. Contemporaneously, or with some appropriate delay, the present invention will then push a banner advertisement to the browser 145. The browser 145 will then present the banner to the user 450.

Fig. 10 is a block diagram the presents the process flow needed to present banner advertisements when the user changes channels. The display screen will normally present a movie, or entertainment content from a TV

channel (step 500). When the user touches the touch screen 25 (step 505), the event is sent to the browser through the display manager (step 510). The associated HTTP request is sent to the micro server (step 515). The micro server returns the Movie Control web page (step 520) and the browser displays the page. The Up and Down buttons used for changing channels on the Movie Control Screen have associated HREF requests to the micro server. When the user selects the Up or Down buttons (step 525) for movie channels, an HTTP request is sent to the micro server with a command to go to the next or previous movie or TV channel (step 530).

10

The micro server requests the appropriate movie from the media server. The media server will respond with a movie and channel ID (step 535) and the micro server directs the SRU 45 hardware to tune to the appropriate channel ID (step 540). Since the user may choose to view more movies before making a final selection, the Movie Control menu is left on the screen for a short period of time (step 545). If the user does not touch the screen within the allotted time, the micro server sends the appropriate movie page to the browser. The movie page contains a link to the appropriate advertising banner that could be located on the micro server, web server, or World Wide Web (steps 550 and 555). Once the browser receives the banner image, it presents it to the user (step 560). After a short delay, the micro server pushes the original "MovieWatch" page to the Browser (steps 565 and 575).

15

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25 *Advertising Banner Injection*

The present invention features two distinct means of injecting banner advertisements into the realm of video presentation. In the prior art, web pages could inject banner advertisements only when the user called up a new web page. This strategy works well for the classic web surfing paradigm, but is of no value to television. In an institutional setting such as hospitals, the only time a patient would see an internet-style banner advertisement is during web surfing, not while watching television.

30

The methods taught here provide for the presentation of banner advertising when the user is watching video entertainment such as television or on-demand video. In the present embodiment, advertising banners are presented to the users screen whenever the channel is changed or whenever an on-demand movie is started. The selected channel is on the viewable screen, and the advertising is presented in the banner area. An advertisement banner will persist regardless of the channel changing habits of viewers. Though not discussed in detail here, the present invention uses similar embodiments to present advertising banners to the viewer at periodic intervals or time indexes. This means that the micro server 165 can be programmed to push banner advertisements to the browser 145 whenever the advertising model defined by a sponsor requires.

To take this application a step further, the advertising sophistication may rise to a level that values advertisement targeting associated with the type of movie a user is viewing as well as other characteristics. This type of one-to-many-many relationship with regards to viewer-movie-commercial can be supported by this system in a number of ways. In such a configuration, the system provider could provide advertising opportunities where the type of movie being watched suggests the present interest or mood of the viewer. The system provider may offer premium advertising spots during new release movies and economy movie spots during classic movies. Though the authoring labor to create web pages supporting this high-level advertisement targeting increases, the system architecture of the present invention supports this feature without alteration.

In the case where the viewer decides to select another movie while the advertising banner is still displayed, the specific advertising banner page must have a link to a movie control page. Enabling this type of viewer choice is entirely up to the web page designer, and it can easily be prohibited by eliminating links to a movie control page within the advertising

banner web page. However, this would constrain viewers in a new way and probably be very frustrating for even casual channel surfers. On the other hand, if a movie control web page with the advertising banner is not provided, then the advertiser loses exposure when a plain movie control page is displayed. Providing persistent advertising banners that are displayed even while channel surfing requires more web pages and associated labor but provides unavoidable advertising exposure.

Sponsor Web Page Links

In the present embodiment, each banner advertisement that is presented to the user comprises not only the visual image file for the advertisement, but also includes an HREF that references a web page that the sponsor would have the user access if the user so chooses. The present invention, then, presents banner advertisements using the standard web browser facilities as described herein. When the user selects the banner advertisements, either by way of the touch screen or a remote control, the browser will request the web page that the sponsor has affiliated with the banner advertisement. In this case, the user will no longer see the entertainment content, but will be presented with the sponsor's web page. The user will then migrate from a video viewing session to an Internet browsing session. The browser will maintain the history of web pages presented to the user so that when the user instructs the browser to return to the previous web page, the browser will again present movie content according to the teachings of the present invention. In the case where the subscriber is viewing a pay-per-view movie, the banner advertisement page could call an intermediate web page that includes scripting to *pause* the presentation of entertainment content. Returning from the advertiser's web site, another intermediate web page would be used to resume presentation of the pay-per-view content.

30

Subscriber Fees

Demographics Collection

- As has been demonstrated by the detailed description thus far, the
- 5 presentation of banner advertisements can be based on various drivers, one of which is the preferences and spending propensities of the plurality of users using the system, i.e. the demographics of a particular user. In the traditional television advertising paradigm, the broadcast nature of the medium could not enable the presentation of advertisements to television
- 10 viewers based on demographics. Given the capabilities of the present invention to deliver advertisements that can be directed at just one user, a method for the collection and maintenance of demographic data for each user becomes a necessity.
- 15 In the institutional setting, the ability to collect demographic data for each resident, such as a patient in a hospital or a senior citizen in an assisted living center, will enable the institution to direct banner advertisements according to subscribers' health care needs. In an apartment complex, banner advertisements could be directed based on other demographics
- 20 such as profession, sporting or hobby interests. In either case, the availability of demographic data will mean that the banner impression can be sold to advertising sponsors for more money.

- One of the fundamental problems associated with the collection of
- 25 demographics is that the viewer has little to no incentive to provide the information. This problem is overcome by offering subscribers a financial reward for filling out a survey that is presented to them on the TV screen, or on a custom display device such as the PDU 20. In order to maintain the demographic data current, the present invention adopts the notion of having
- 30 registered viewers. When a viewer selects entertainment content from a menu, the present invention determines if the subscriber demographics need to be freshened. If so, the user is again requested to fill out the

demographic profile questionnaire. The system can accept any periodic cycle for freshening the demographic profile for a user. In the hospital setting, the system is informed when a new patient arrives. In the residential forum, the system automatically collects new demographics on a quarterly basis.

Fig. 11 is a flow diagram that depicts the process used by the present invention to register subscribers before allowing the subscriber to have access to entertainment content. The web browser 145 is initially set to call a welcome page (step 580). The welcome page can reside either in the micro server 165 or in the web server 140. In this example, the welcome page is stored in the web server 140. The web server 140 responds to the request by providing a welcome page (step 585).

Fig. 13 is a pictorial representation of a welcome page used in the present embodiment in a hospital application. The web browser 145 displays the welcome page to the user (step 590). The user, which is also referred to as a subscriber can then select a menu item from the welcome page. In this example, the welcome page presents the user with nine choices: TV; Cable; Premium; Games; Movies; Internet; Help; Health; Video Phone.

Fig. 11 shows that once the user has selected the desired entertainment content (step 595), the selection is returned by way of an HREF to the web server 140. The web server uses active server pages that consult a data base of subscribers. The result of this query indicates if the subscriber demographic profile does not exist or has expired (step 600). In the event that the subscriber has not been registered, or the applicable demographic profile has waxed stale, the web server 140 pushes a disclaimer page to the browser 145 (steps 605 and 610). The browser then displays the disclaimer page (step 615). The user can then accept or reject the disclaimer page (step 620).

Fig. 12 is a flow diagram that continues the depiction of the process of registering subscribers. If the user chooses to reject the disclaimer, then the web server 140, again through the application of active server pages, allows the subscriber to view entertainment (step 625 and fork 630). If the subscriber accepts the disclaimer, the web server pushes a questionnaire to the web browser 145 (steps 635 and 640). The web browser 145 will then display the questionnaire to the subscriber (step 645). The web server 140 will wait for a response from the user (step 650). Once the response has been sent, the web server will determine if the questionnaire has been fully completed (step 655). If this is not the case, the web server will push the partially completed form back to the web browser for display to the user. Once a fully completed form is received, the web browser will signal that the subscriber is entitled to a financial reward in exchange for filling out the demographic profile (step 655 and fork 660).

Figs. 14 through 16 present a pictorial representation of a typical disclaimer. The disclaimer used in a hospital will advise the patient of their right to privacy and the fact that commercial sponsors are willing to subsidize their entertainment experience during their hospital stay in exchange for filling out a questionnaire regarding their health concerns. The disclaimer further advises the patient that the demographic data will be used to target specific advertisements to them personally. The disclaimer must be tailored to meet any special statutory or other legal requirements associated with other applications.

Fig. 17 is a pictorial representation of a typical survey form presented by the system to a patient in a hospital. The present embodiment of the system uses active server pages to form an interactive questionnaire. This form comprises a plurality of queries 665 that, once responded to, form the basis of a patient demographic profile. The web browser 145 displays the interactive questionnaire to the user. Once the user has touched the submit button, the contents of the active server page is conveyed to the web server

140. The web server will then store the collected information in a database. The profiles stored in the data base are then used to direct specific advertising content to a plurality of users (i.e. subscribers).

- 5 The methodology and apparatus for the collection of demographics described here is applicable not only to the collection of information for hospital patients, it is also applicable in the domestic environment. In applying the present invention to the domestic setting, subscribers are presented a series of demographic query forms on a periodic basis. The
- 10 home television subscriber can be rewarded for providing the demographic data in much the same fashion as a hospital patient. By completing the query forms, the home subscriber receives a credit on their subscription account. Of course, the subscriber must ascent to the provision that the demographic data collected by the present invention will be used to target
- 15 advertisements to the subscriber.

Subscription Fees

- In an institutional setting such as hospitals, the registration process may be augmented by requiring the subscriber to pay the SMATV operator a
- 20 subscription fee for some enhanced programming features. For instance, in the present embodiment, each patient is given an opportunity to select from three entertainment packages. In the present embodiment, each patient is allowed free access to broadcast television.

- 25 A first entertainment package can be purchased for a modest fee and includes expanded television programming. This expanded television service includes cable television channels such as Discovery, TNN, TNT, and the like. A second entertainment package that the patient in a hospital can purchase includes premium channels in addition to the expanded
- 30 television service. These include HBO, ShowTime and the like. A final deluxe entertainment package gives the patient access to the Internet,

access to several video-on-demand movies and the ability to play select video games.

One novel feature of the present invention, in addition to the multi-tiered entertainment packages that are made available to the patient, is the means that the system uses to charge the patient for the entertainment packages. In most institutional settings, the subscriber does not have cash to pay for the services. In fact, it would be a logistical challenge to accept cash for the expanded entertainment packages. The present invention allows the patient subscriber to pay for the entertainment packages in one of three ways: 1) by entering a credit card number; 2) by billing through the hospital; and 3) by billing through their telephone carrier.

Where the patient uses a credit card to pay for entertainment services, the web browser 145 is used to display a credit card entry form. The web server 140 uses active server page technology to accept the credit card, authorize the payment and then allow the patient to access the entertainment. If the patient chooses to do so, they may pay by billing to their home phone number. In this case, the web browser 145 uses active server pages to obtain the patients' phone number. In order to validate the transaction, the web server communicates with the local telephone company to charge the phone number. As an added security feature, the patients' last name, as obtained from the hospital registration computer, must match the name on the telephone number billing account.

Charging the patient through the hospital billing system is somewhat more complicated. In this event, the web server 140 must further comprise an interface to the hospitals' billing system. Using this additional interface, the web server 140 may first receives authorization from the hospital billing system. This authorization step is not required, but can be included as a means to reduce bad debt losses that would be incurred if open credit was simply given to a hospital patient.

- Using the present invention in the domestic environment is also possible. The small SMATV system operator that is serving a large apartment complex could use the subscription forms to charge apartment dwellers for pay-per-view video-on-demand presentations. In this application, the subscription forms could be simplified so that the subscriber need only indicate acceptance of the charges. Or, if the SMATV system operator so desired, apartment dwellers could be required to pay for movies by credit card. The subscriber database could be further comprised of a field that indicates if a subscriber has poor credit. Based on this field, the web server 140 would determine if the subscriber should be required to provide credit-card information or if the SMATV system operator is willing to charge the movie fee to the subscribers' open account.
- Once the subscriber has selected a level of entertainment, an account database resident in the web server is updated to reflect account authorization. Whenever the subscriber selects entertainment, the account database is consulted to determine if the subscriber can have access to that service. This is accomplished by using a plurality of welcome pages analogous to that described in Fig. 13. Each of the plurality of welcome pages comprise references to movie start pages, channel changing pages, or other pages that reference the desired content. A binary succession of web pages is provided according to the table below.

Page No.	Games	Cable	Movies	Premium	Internet
0	No	No	No	No	No
1	No	No	No	No	Yes
2	No	No	No	Yes	No
3	No	No	No	Yes	Yes
4	No	No	Yes	No	No
5	No	No	Yes	No	Yes
6	No	No	Yes	Yes	No
7	No	No	Yes	Yes	Yes

8	No	Yes	No	No	No
9	No	Yes	No	No	Yes
10	No	Yes	No	Yes	No
11	No	Yes	No	Yes	Yes
12	No	Yes	Yes	No	No
13	No	Yes	Yes	No	Yes
14	No	Yes	Yes	Yes	No
15	No	Yes	Yes	Yes	Yes
16	Yes	No	No	No	No
17	Yes	No	No	No	Yes
18	Yes	No	No	Yes	No
19	Yes	No	No	Yes	Yes
20	Yes	No	Yes	No	No
21	Yes	No	Yes	No	Yes
22	Yes	No	Yes	Yes	No
23	Yes	No	Yes	Yes	Yes
24	Yes	Yes	No	No	No
25	Yes	Yes	No	No	Yes
26	Yes	Yes	No	Yes	No
27	Yes	Yes	No	Yes	Yes
28	Yes	Yes	Yes	No	No
29	Yes	Yes	Yes	No	Yes
30	Yes	Yes	Yes	Yes	No
31	Yes	Yes	Yes	Yes	Yes

The binary progression of welcome web pages provides for every combination of paid services that a subscriber can choose. In the present embodiment, the web server account database includes a field that indicates

5 what welcome page ought to be presented to a subscriber when that subscriber begins using the system. The welcome page presented to the user will include valid references to other web pages that allow the user to gain entry to the authorized entertainment. If the subscriber selects entertainment that has not been authorized, the web page that is presented

10 to that subscriber will include an reference to a web page that displays a message to the subscriber indicating that additional purchases of entertainment content will be required before that content can be provided. The apology web page further comprises references to a web page that allows the subscriber to accept additional charges and a reference to the

subscribers original welcome page so that other validly authorized entertainment can be selected.

Alternative Embodiments

- 5 While this invention has been described in terms of several preferred embodiments, it is contemplated that alternatives, modifications, permutations, and equivalents thereof will become apparent to those skilled in the art upon a reading of the specification and study of the drawings. It is therefore intended that the true spirit and scope of the present include all
10 such alternatives, modifications, permutations, and equivalents.

- In the realm of the SRU 45, the present embodiment includes two display memory planes; one is used to present graphics and a second is used to display video content arriving from an external source. In an alternative
15 embodiment, only one plane could be used for both video and graphics. In this type of an embodiment, the CPU in the SRU would be responsible for overlaying the banner ads on top of a video image and delivering the mosaic to the single graphic memory plane.

- 20 Payment for services has been described as being accomplished by credit card, subscriber telephone number or through a third party billing system such as a hospital patient billing system. One alternative that the inventors have considered includes a means for collecting cash from the subscriber and then authorizing the patient account using a supervisory terminal. The
25 supervisory terminal would communicate with the web server 140. The supervisory terminal would run a web browser so that the appropriate active server pages could be retrieved from the web server to effect account authorization.

30

CLAIMS

We claim:

1. A method for presenting advertisements to subscribers comprising the
5 steps of:
 - presenting a content selection menu to a subscriber using a web
browser wherein the content selection menu comprises a web page
comprising a hotspot referencing an entertainment content source;
receiving a hotspot selection for the entertainment content reference;
10 retrieving an entertainment presentation web page for the selected
hotspot wherein the entertainment presentation web page comprises
a image porthole for presenting content and an ad-image reference
pointing to an advertisement storage location;
initiating the presentation of entertainment content so that the
15 entertainment content is visible to the subscriber in the image
porthole;
retrieving an advertisement stored in the advertisement storage
location pointed to by the ad-image reference; and
presenting to the subscriber the advertisement stored in the
20 advertisement storage location pointed to by the ad-image reference
using a web browser.
2. The method of Claim 1 further comprising the steps of:
 - initiating a timer after either the advertisement stored in the
25 advertisement storage location is presented to the subscriber or the
entertainment presentation web page has been presented to the
subscriber;
waiting until the timer has expired;
retrieving a full-view presentation web page a wherein the full-view
30 presentation web page comprises an image porthole for presenting
content and a hotspot pointing to either a second entertainment

content presentation web page or to the content selection menu web page; and
presenting the full-view presentation web page to the subscriber using the web browser.

5

3. The method of Claim 1 wherein the presentation web page further comprises a hotspot pointing to an advertisement content source and further comprising the steps of:

receiving a hotspot selection for the advertisement content source;
10 retrieving an advertisement web page for the selected advertisement content source wherein the web page for the selected advertisement content source comprises a hotspot for directing the web browser to the entertainment presentation web page; and
presenting the advertisement web page to the subscriber.

15

4. The method of Claim 1 wherein the entertainment presentation web page further comprises a hotspot pointing to a second entertainment presentation web page further comprising the steps of:

retrieving a second entertainment presentation web page for the
20 selected hotspot wherein the second entertainment presentation web page comprises a image porthole for presenting entertainment content and an ad-image reference pointing to the advertisement storage location;
initiating the presentation of a second entertainment content so that
25 the second entertainment content is visible to the subscriber in the image porthole;
retrieving the advertisement stored in the advertisement storage location pointed to by the ad-image reference; and
presenting the advertisement stored in the advertisement storage
30 location pointed to be the ad-image reference using a web browser.

5. The method of Claim 1 wherein the step of presenting a content selection menu to a subscriber comprises the steps of:
- launching a web browser on a subscriber reception unit;
 - retrieving a content selection web page from a server wherein the
5 server is either a micro-server executing in the subscriber reception unit or a file server attached by computer network to the subscriber reception unit; and
 - allowing the web browser to interpret the content selection web page and display a graphical representation of the content selection web
10 page to the subscriber.
6. The method of Claim 1 wherein the step of initiating the presentation of entertainment content comprises the steps of:
- retrieving the entertainment presentation web page from a micro-
15 server executing on a subscriber reception unit or from a server connected to the subscriber reception unit by means of a computer network wherein the entertainment presentation web page is an intelligent page comprising scripting directives;
 - 20 sending a signal to a content cache to begin transmitting entertainment content to the subscriber reception unit using a selected content stream from a plurality of available content streams wherein the signal is sent to the content cache as a result of executing scripting directives comprising the entertainment presentation web page; and
 - 25 controlling entertainment reception equipment in the subscriber reception unit to receive the selected content stream from a plurality of available content streams by executing the scripting directives comprising the entertainment presentation web page.
- 30 7. The method of Claim 6 wherein the step of controlling entertainment reception equipment in the subscriber reception unit is controlled by scripting directives in an intelligent web page and comprises the steps of:

establishing a logical network connection from the content cache to the subscriber interface unit by configuring a network controller to receive an isochronous content stream or
tuning a tuner to a radio frequency channel and selecting a program
5 identification to select one content stream from amongst a plurality of content streams in that radio frequency channel or
establishing protocol driven data channel from the content cache to the subscriber reception unit to receive a content stream; and
directing the received content stream to a display device.

10

8. The method of Claim 1 wherein the step of retrieving an entertainment presentation web page comprises the steps of:

identifying the subscriber that is requesting entertainment;
consulting a subscriber database to determine if the subscriber has
15 consented to the use of demographic attributes to direct advertisements to the subscriber;
if the subscriber has consented to the use of demographic attributes in directing advertisements to the subscriber,
consulting a subscriber demographic data base for demographic
20 attributes for the subscriber;
selecting an advertisement according to the subscriber's demographic attributes;
consulting a database of advertisements to acquire an ad-image reference pointer corresponding to the selected advertisement; and
25 creating a presentation web page comprising a image porthole for presenting content and an ad-image reference pointing to an advertisement storage location.

9. The method of Claim 1 wherein the step of retrieving an entertainment presentation web page comprises the steps of:

30 identifying the subscriber that is requesting entertainment;

- consulting a subscriber demographic data base for a list of demographic attributes for the subscriber;
selecting an advertisement according to the demographic attributes;
consulting a database of advertisements to acquire an ad-image
5 reference pointer corresponding to the selected advertisement; and
creating a presentation web page comprising a image porthole for presenting content and an ad-image reference pointing to an advertisement storage location.
- 10 10.A method for acquiring subscriber demographics comprising:
identifying when a subscriber's demographic data needs to be updated by consulting a subscriber database and determining the date when demographic data was last updated and comparing that date with an expiration threshold;
15 if the expiration threshold has expired,
retrieving a survey web page from a server or a micro-server wherein the survey web page comprises a questionnaire suitable for collecting demographic data from the subscriber;
presenting the survey web page to the subscriber;
20 accepting results from the survey web page into the subscriber database; and
updating the update date for the subscriber in the subscriber database.
- 25 11.A method for acquiring subscriber demographics comprising:
retrieving an incentive web page that comprises a message indicating that the subscriber will receive a benefit in exchange for responding to a survey;
presenting the incentive web page to the subscriber using a web
30 browser;

retrieving a survey web page from a server wherein the survey web page comprises a questionnaire suitable for collecting demographic data from the subscriber;
presenting the survey web page to the subscriber;
5 accepting results from the survey web page into a subscriber database; and
crediting a benefit to an account corresponding to the subscriber.

12. The method of Claim 11 further comprising the steps of:

10 retrieving a disclaimer web page that comprises a message to the subscriber that demographic data will be used as one factor in selecting advertisements that will be presented to the subscriber and further comprises an acceptance button and a decline button;
presenting the disclaimer web page to the subscriber; and
15 accepting either an acceptance event or a decline event from the disclaimer web page into the subscriber database.

13. A method for accepting varying levels of entertainment subscriptions comprising the steps of:

20 retrieving a new subscriber web page wherein the new subscriber web page comprises selection buttons for one or more subscription levels; and
presenting the new subscriber web page to the new subscriber;
accepting the state of the selection buttons into a subscriber
25 database.

14. The method of Claim 13 further comprising the steps of:

retrieving a payment authorization web page wherein the payment authorization web page comprises a subscriber name field and a
30 payment selection field where the payment selection field comprises any of either an institution residence identification number, a credit card entry field or a phone number entry field;

presenting the payment authorization web page to the subscriber;
accepting the state of the selection field from the payment
authorization field; and
if the payment authorization field state indicates that the subscriber
5 has selected an institution residence identification number, presenting
an institution billing web page to the subscriber; and dispatching a
message to the institution billing system that comprises a transaction
amount and a residence identification number;
if the payment authorization field state indicates that the subscriber
10 has selected credit card payment, presenting a credit-card
authorization web page to the subscriber; and accepting a credit card
number from the credit-card authorization web page; and
if the payment authorization field state indicates that the subscriber
has selected phone number entry, presenting a phone number
15 authorization web page to the subscriber; and accepting a phone
number from the phone number authorization web page.

15. The method of Claim 14 further comprising the step of
communicating with a credit-card processing service to post a
20 transaction if the payment authorization field state indicates that the
subscriber has selected credit card payment.

16. The method of Claim 14 further comprising the step of
communicating with a phone number billing system to post a
25 transaction if the payment authorization field state indicates that the
subscriber has selected phone number entry.

17. A subscriber reception unit comprising:
memory for storing sequences of program instructions;
30 processor that executes program instructions stored in the memory;
network interface that enables the processor to communicate with
other computing devices across a computer network;

display controller comprising a display memory and graphics controller wherein the graphics controller partitions the display memory into an entertainment plane and a graphics plane and further comprising a display interface for driving a graphical display unit;

5 cursor selection and activation device for detecting when a user selects a hotspot on a graphical display unit being driven by the display controller;

program sequence stored in the memory comprising a windowed operating system that manages graphical interfaces in the graphics

10 plane of the display memory, provides network protocol for establishing communication channels to other computing devices using the network controller, manages the cursor selection and activation device so as to provide hotspot selections to other program sequences stored in the memory and provides graphical interface

15 support to other program sequences stored in the memory;

program sequence stored in the memory comprising a micro-server that is capable of executing program scripts in intelligent web pages;

program sequence stored in the memory comprising a browser capable of interpreting web page authored in a markup language and

20 rendering a graphical representation of a web page into the graphics plane of the display memory either directly or through graphical interface support provided by the operating system program sequence;

content selection web page stored in the memory or retrieved from an

25 external computing device by means of a communications channel established by the operating system wherein the content selection web page comprises a hotspot pointing to an entertainment content source that is interpreted by the web browser and rendered to the graphics plane of the display memory;

30 entertainment presentation web page stored in the memory or retrieved from an external computing device by means of a communications channel established by the operating system

- wherein the entertainment presentation web page is rendered by the web browser in response to the web browser receiving a hotspot indication from the operating system or directly from the cursor selection and activation device that corresponds to the hotspot on the content selection web page that references the entertainment presentation web page and wherein the entertainment presentation web page comprises a image porthole for presenting entertainment content, an ad-image reference and scripting directives that are executed by the web browser in order to initiate presentation of entertainment content in the entertainment plane of the display memory; and
- ad-image stored in the memory or retrieved from an external computing device by means of a communications channel established by the operating system that is retrieved by the web browser according to the ad-image reference and rendered by the web browser into the graphics plane of the display memory either directly or through graphical interface support provided by the operating system.
18. The subscriber reception unit of Claim 17 further comprising:
- timer that is initiated by the web browser after the web browser has rendered the entertainment presentation web page or the ad-image referenced by the ad-image reference or both the entertainment presentation web page and the ad-image referenced by the ad-image reference; and
- full-presentation web page comprising an image porthole stored in the memory or retrieved from an external computing device by means of a communications channel established by the operating system and that is retrieved by the web browser when the timer expires and rendered to the graphics plane of the display memory either directly or through graphical interface support provided by the operating system.

19. The subscriber reception unit of Claim 17 wherein the entertainment presentation web page further comprises a hotspot referencing an advertisement content source and wherein the web browser retrieves the advertisement content according to the reference and renders the advertisement content to the graphics plane of the display memory either directly or through graphical interface support provided by the operating system after having received a hotspot indication from the operating system or directly from the cursor selection and activation device that corresponds to the hotspot referencing the advertisement content source.
20. The subscriber reception unit of Claim 17 further comprising:
second entertainment presentation web page that is retrieved by the web browser either from the memory or from an external computing device by means of a communications channel established by the operating system wherein the second entertainment presentation web page comprises an image porthole for viewing entertainment content and a script of directives executed by the web browser to initiate presentation of a second entertainment content and wherein the second entertainment web page further comprises an ad-image reference.
21. The subscriber reception unit of Claim 17 wherein the content selection web page stored in the memory or retrieved from an external computing device is managed by the micro-server executing in the subscriber reception unit or a filer server attached to the subscriber reception unit by a computer network, respectively.
22. The subscriber reception unit of Claim 17 wherein the scripting directives that are executed by the web browser in order to initiate presentation of entertainment content comprise:

script for sending a signal to a content cache to initiate transmission of entertainment content to the subscriber presentation unit using one of a plurality of available contents stream channels; and
script for controlling entertainment reception equipment in the
5 subscriber reception unit and directing the reception equipment to receive entertainment content on the one content stream channel selected from a plurality of available content stream channels and wherein the scripts for sending a signal to the content cache and for controlling the entertainment reception equipment are directed by the
10 web browser to the micro-sever executing in the subscriber reception unit and wherein the micro-sever executes the script directives.

23. The subscriber reception unit of Claim 22 wherein the script for controlling entertainment reception equipment in the subscriber reception
15 unit comprises:

script for establishing a logical network connection from the content cache to the subscriber reception unit by configuring the network controller to receive an isochronous content stream or
script for tuning a radio frequency tuner to a channel carrying a
20 plurality of content stream and selecting one content stream from amongst the plurality of available content streams or establishing a protocol driven data channel from the content cache to the subscriber reception unit to receive a content stream; and
script for directing the incoming content stream to the display
25 controller.

24. The subscriber reception unit of Claim 17 wherein the entertainment presentation web page further comprises:

script of directives for identifying the subscriber requesting
30 entertainment;

script of directives for consulting a subscriber database to determine if the subscriber has consented to the use of demographic attributes to direct advertising content to that subscriber;
script for selecting an advertisement based on the subscriber's
5 demographic attributes if that subscriber has consented to the use of demographic attributes for that purpose; and
script for retrieving a reference pointer for an advertisement image corresponding to the selected advertisement and replacing the ad-image pointer in the entertainment presentation web page with the
10 retrieved reference pointer for the an advertising image.

25. The subscriber reception unit of Claim 17 wherein the entertainment presentation web page further comprises:

script of directives for identifying the subscriber requesting
15 entertainment;
script for selecting an advertisement based on the subscriber's demographic attributes; and
script for retrieving a reference pointer for an advertisement image corresponding to the selected advertisement and replacing the ad-
20 image pointer in the entertainment presentation web page with the retrieved reference pointer for the an advertising image.

26. The subscriber reception unit of Claim 17 further comprising a survey web page stored in the memory or retrieved from an external computing
25 device by means of a computer network wherein the entertainment presentation web page further comprises:

script of directives that identifies the subscriber requesting entertainment;
script of directives that consults a subscriber database to determine if
30 the demographic attributes for that subscriber have expired or are not available; and

script of directives that redirects the web browser to the survey web page if the demographic attributes for that subscriber have expired or are not available and wherein the survey web page is an active web page comprising a questionnaire that accepts results from the survey web page and directs the results to a subscriber database.

27. The subscriber reception unit of Claim 17 further comprising a survey web page stored in the memory or retrieved from an external computing device by means of a computer network wherein the entertainment presentation web page further comprises:

script of directives that identifies the subscriber requesting entertainment;

script of directives that consults a subscriber database to determine if the demographic attributes for that subscriber have expired or are not available;

script of directives that redirects the web browser to the survey web page if the demographic attributes for that subscriber have expired or are not available and wherein the survey web page is an active web page comprising a questionnaire that accepts results from the survey web page and directs the results to a subscriber database and wherein the survey web page further comprises an incentive notice to the subscriber indicating that the subscriber will receive a benefit for completing the survey ; and

script for conferring a benefit to the account corresponding to the subscriber if the subscriber completed the survey.

28. The subscriber reception unit of Claim 17 further comprising a survey web page stored in the memory or retrieved from an external computing device by means of a computer network wherein the entertainment presentation web page further comprises:

script of directives that identifies the subscriber requesting entertainment;

script of directives that consults a subscriber database to determine if the demographic attributes for that subscriber have expired or are not available; and

5 script of directives that redirects the web browser to the survey web page if the demographic attributes for that subscriber have expired or are not available and wherein the survey web page is an active web page comprising a questionnaire that accepts results from the survey web page, a disclaimer that informs the subscriber that demographic data collected by the survey will be used to direct advertisements to
10 the subscriber and an accept and decline button pair and directs the results to a subscriber database only if the subscriber activates the accept button.

29. The subscriber reception unit of Claim 17 further comprising a new
15 subscriber web page stored in the memory or retrieved from an external computing device by means of a computer network wherein the entertainment presentation web page further comprises:

script of directives that identifies the subscriber requesting entertainment;

20 script of directives that consults a subscriber database to determine if the subscriber is registered in a subscriber database; and
script of directives that redirects the web browser to a new subscriber web page if the subscriber is not registered in the subscriber database and wherein the new subscriber web page is an active web
25 page comprising a questionnaire that accepts subscriber information comprising one or more of subscriber name, address, phone number or level of entertainment purchased and directs the subscriber information to a subscriber database.

30 30. The subscriber reception unit of Claim 17 further comprising new subscriber web page and one or more of institution billing web page, card authorization web page, phone number entry web page all of which may

be stored in the memory or retrieved from an external computing device by means of a computer network wherein the entertainment presentation web page further comprises:

- 5 script of directives that identifies the subscriber requesting entertainment;
- script of directives that consults a subscriber database to determine if the subscriber is registered in a subscriber database;
- script of directives that redirects the web browser to a new subscriber web page if the subscriber is not registered in the subscriber
- 10 database and wherein the new subscriber web page is an intelligent web page comprising a questionnaire that accepts subscriber information comprising one or more of subscriber name, address, phone number, level of entertainment purchased and payment mode and directs the subscriber information to a subscriber database and
- 15 wherein the new subscriber web page further comprises:
 - script of directives that redirects the web browser to an institution billing web page if the payment mode for the subscriber indicates that billing is to be made to an institution;
 - script of directives that redirects the web browser to a credit
 - 20 card authorization web page if the payment mode for the subscriber indicates that billing is to be made to credit card; and
 - script of directives that redirects the web browser to a phone number entry web page if the payment mode for the subscriber
 - 25 indicates that billing is to be made to a phone number.

31. The subscriber reception unit of Claim 30 wherein the institution billing web page further comprises:

- data entry field for residence identifier;
- 30 script of directives to accept a subscriber residence identifier from the subscriber using the data entry fields; and

script of directives that causes a message to be sent to an institutional billing system that reflects the amount of transaction together with subscriber information accepted by the new subscriber web page.

5

32. The subscriber reception unit of Claim 30 wherein the credit card authorization web page further comprises:

data entry fields for credit card number, name and expiration date;
script of directives to accept credit card number, name and expiration
10 date from the subscriber using the data entry fields; and
script of directives to record the credit card number, name and expiration date in a subscriber database.

33. The subscriber reception unit of Claim 32 wherein the credit card
15 authorization web page further comprises:

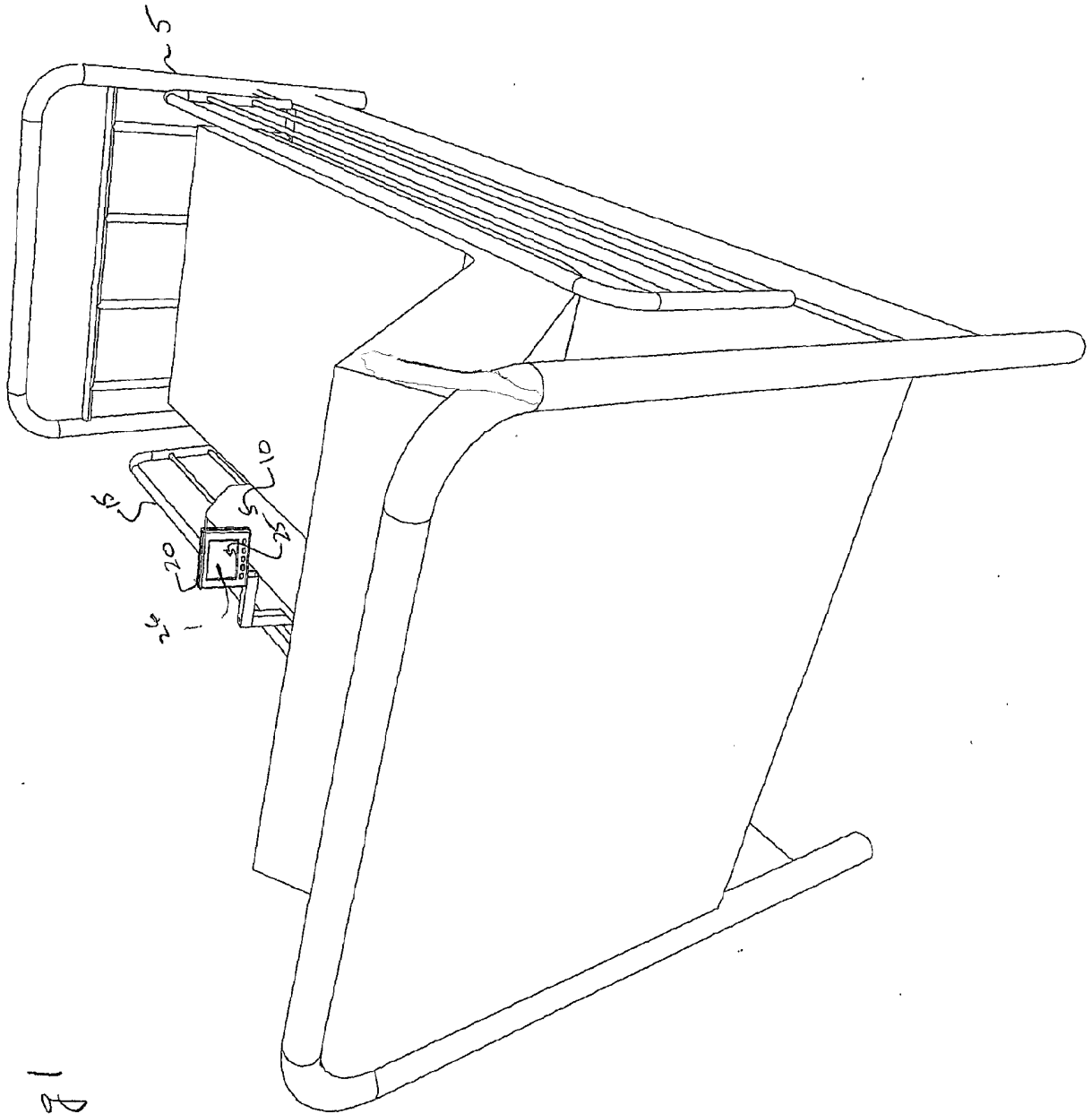
script of directives to communicate with a credit card processing center in order to post a credit card transaction.

34. The subscriber reception unit of Claim 30 wherein the phone number
20 entry web page further comprises:

data entry fields for name and telephone number;
script of directives to accept name and telephone number from the subscriber using the data entry fields; and
script of directives to record the name and telephone number in a
25 subscriber database.

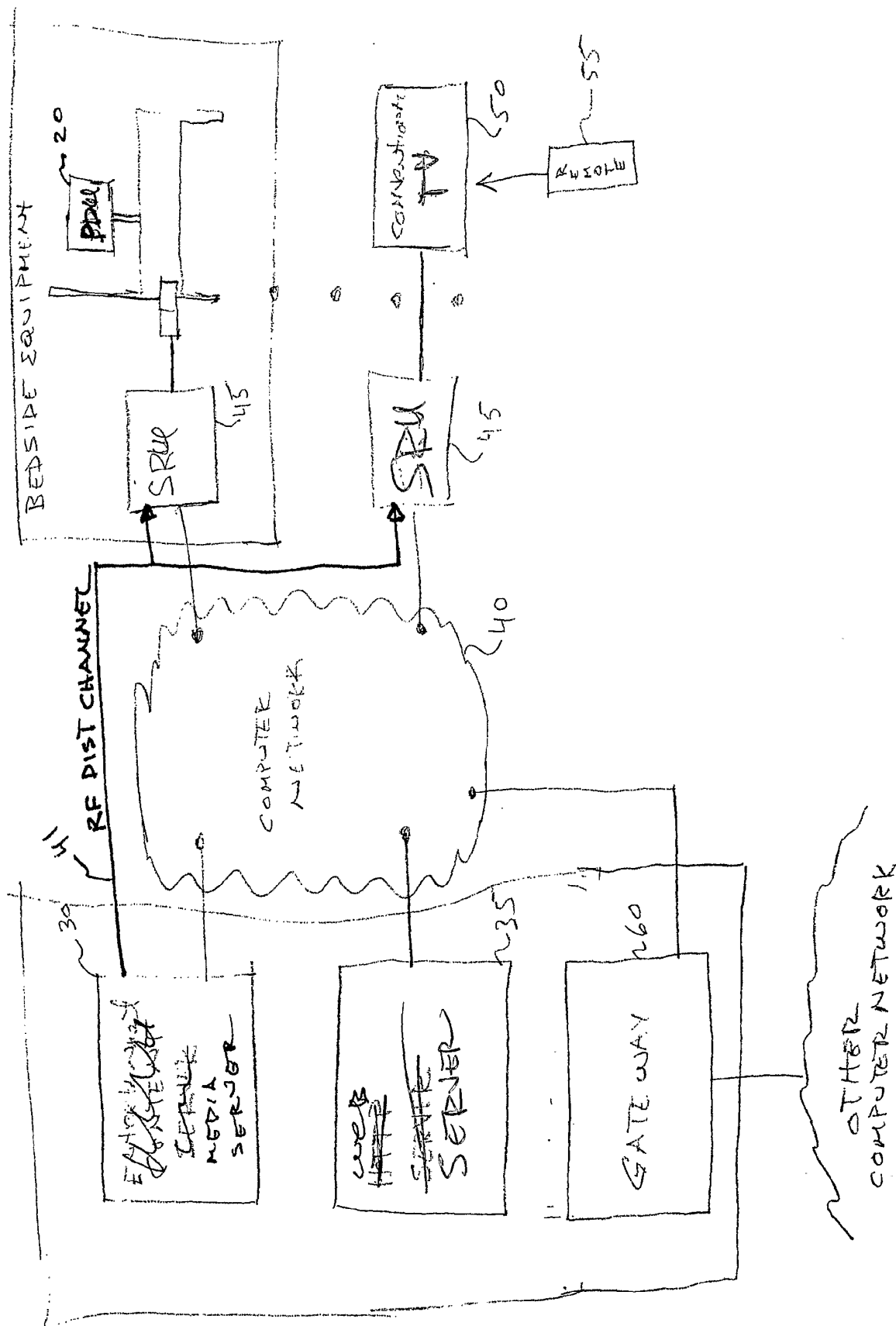
35. The subscriber reception unit of Claim 34 wherein the phone number
entry web page further comprises:

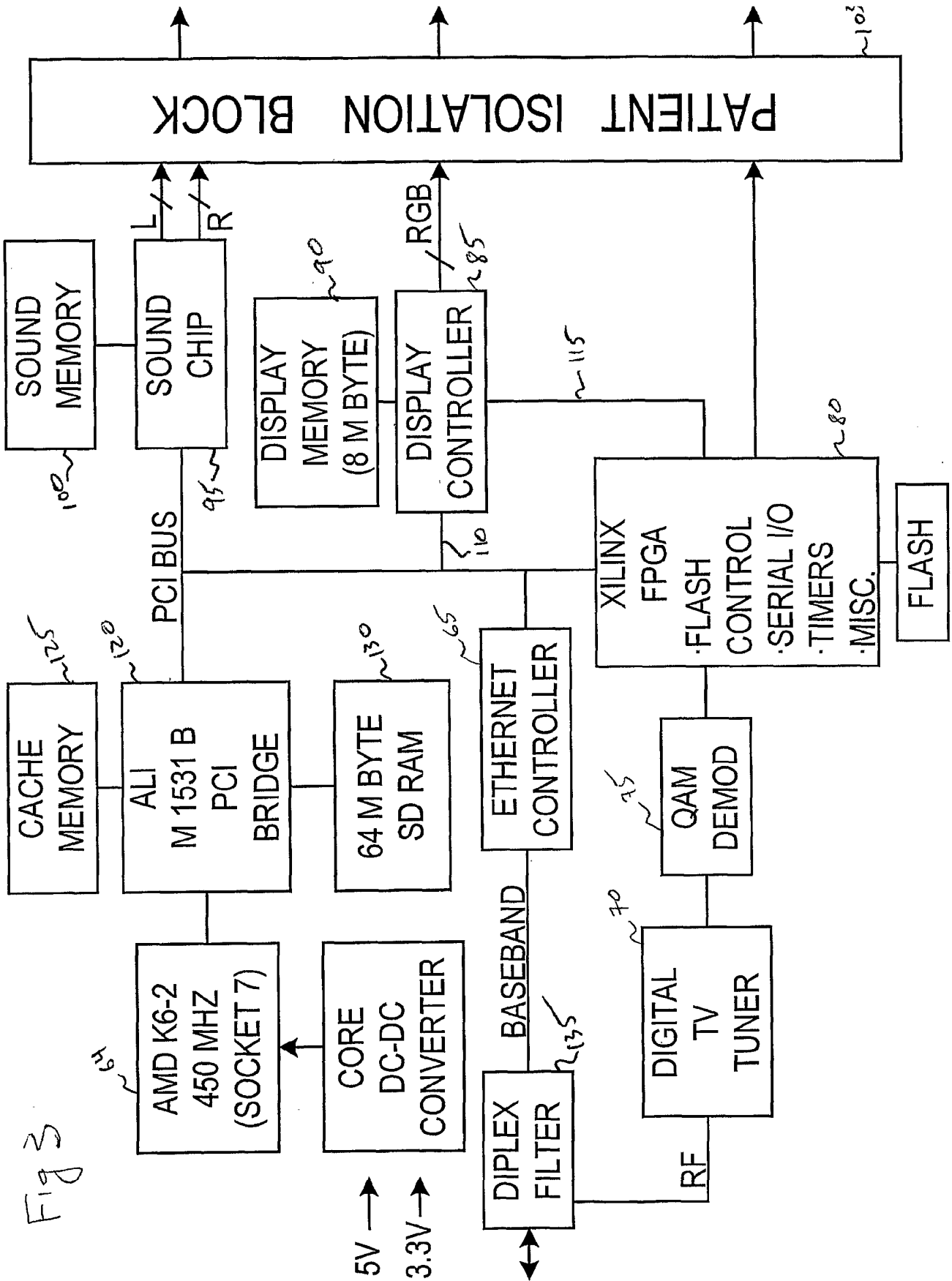
script of directives to communicate with a telephone company billing
30 center in order to post a third-party charge to the subscribers telephone account.

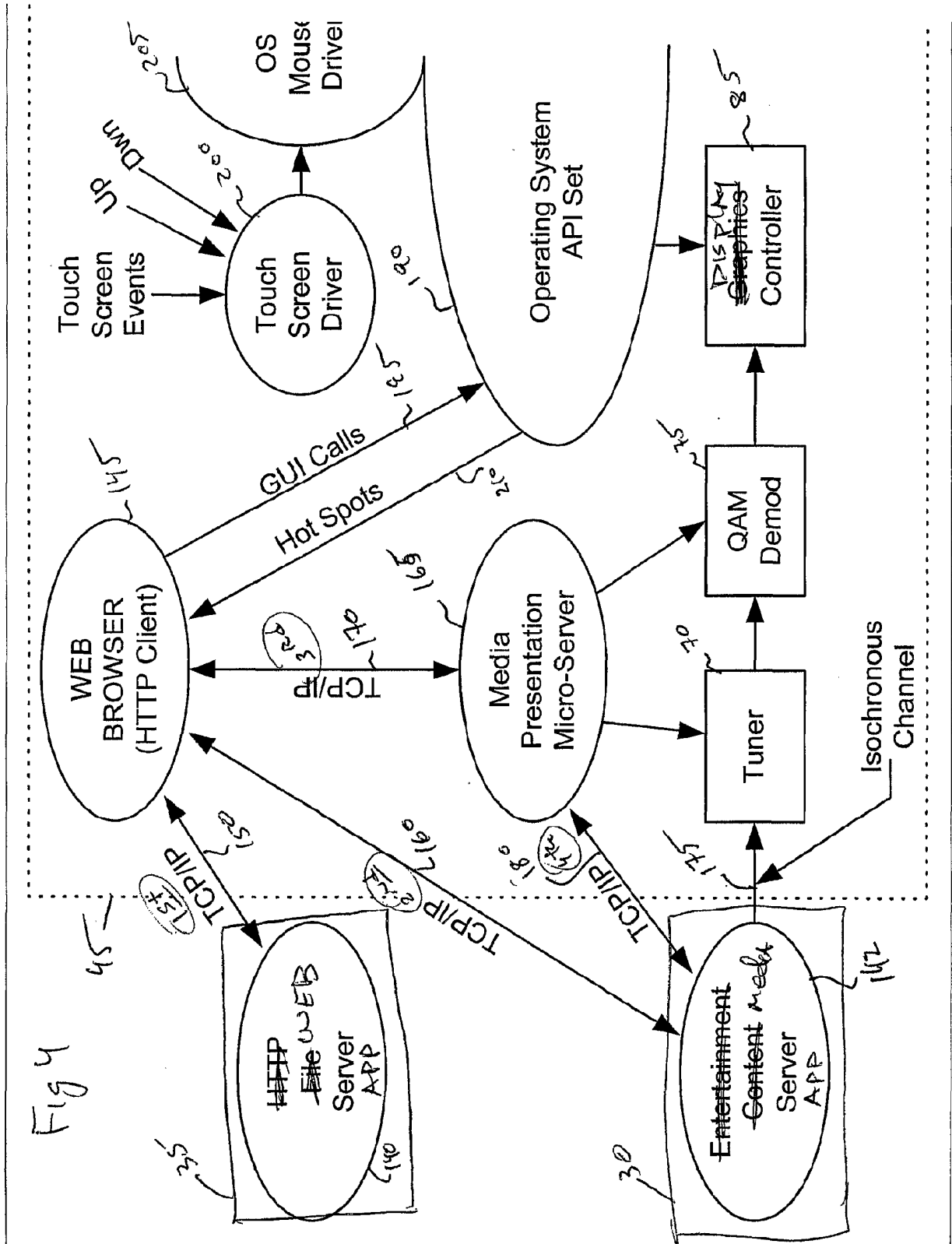


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FIG 2







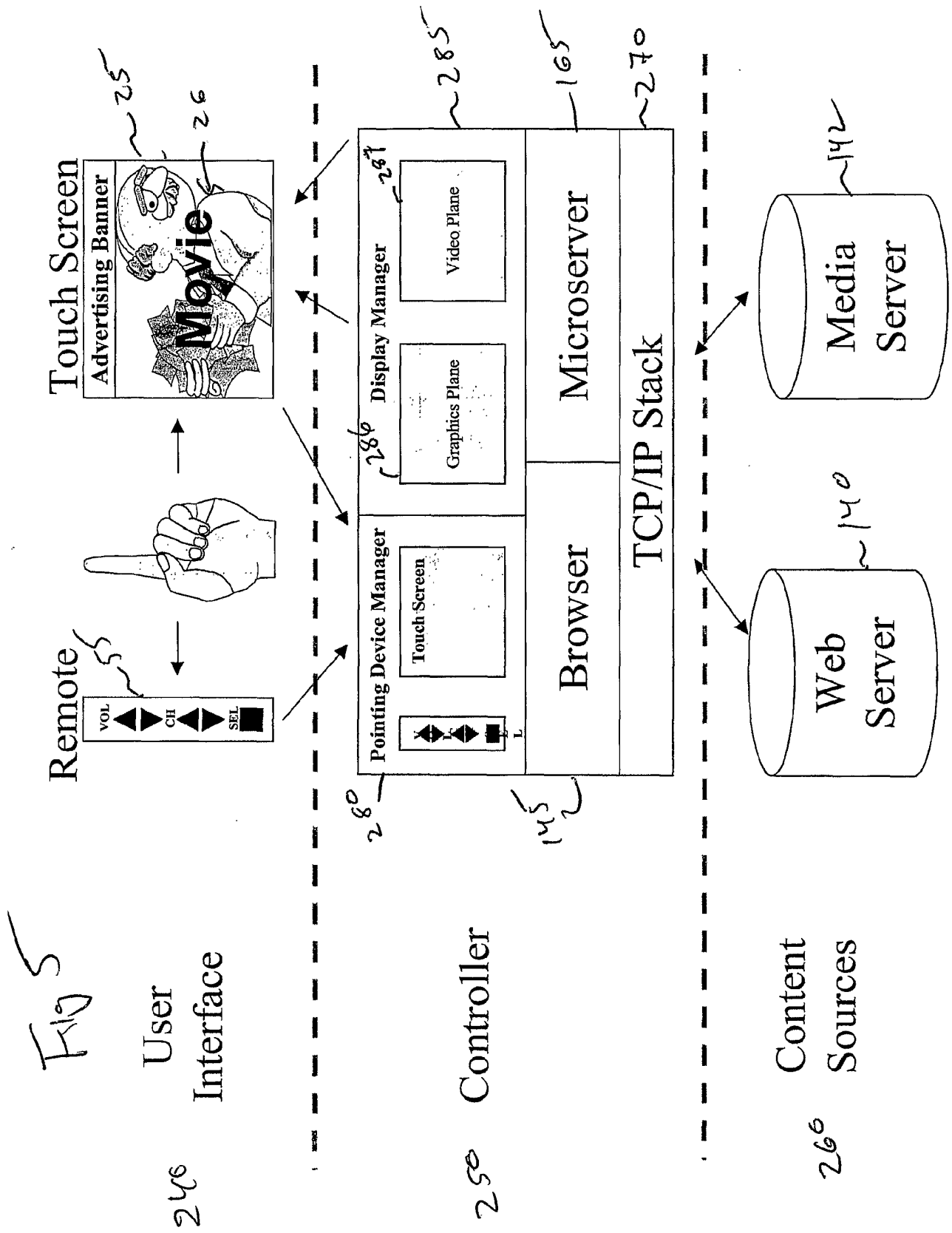


Fig 6
DISPLAY + Touch Screen
HTML Script

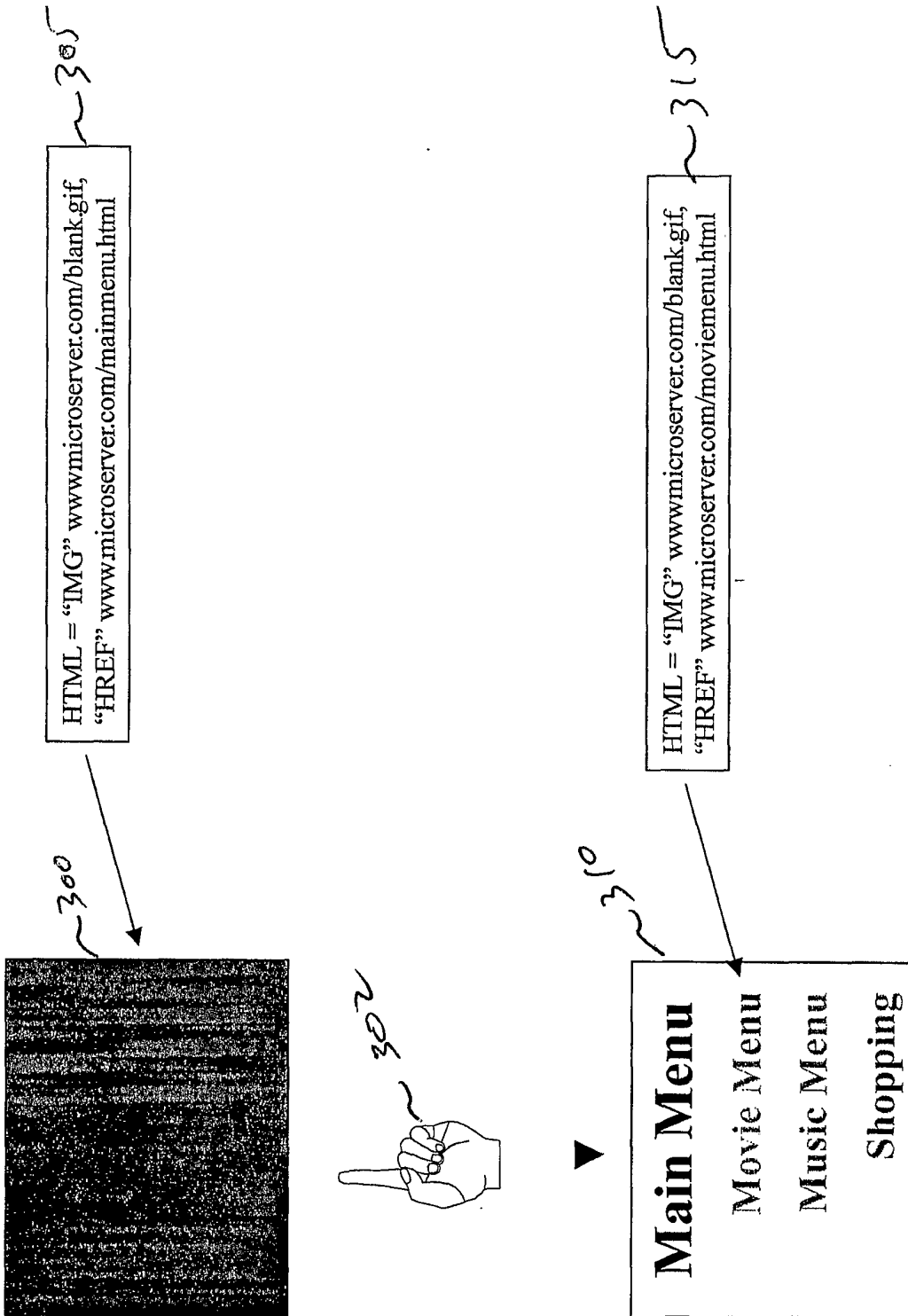
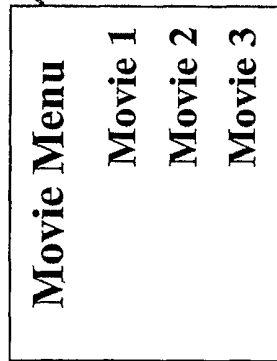


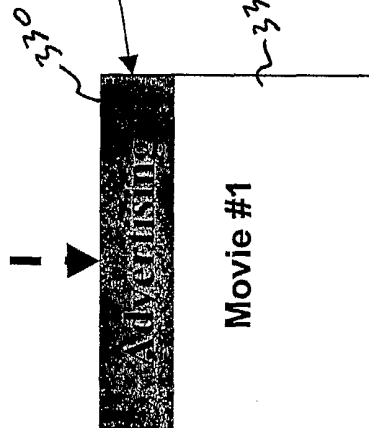
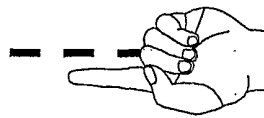
Fig. 7

Touch Screen

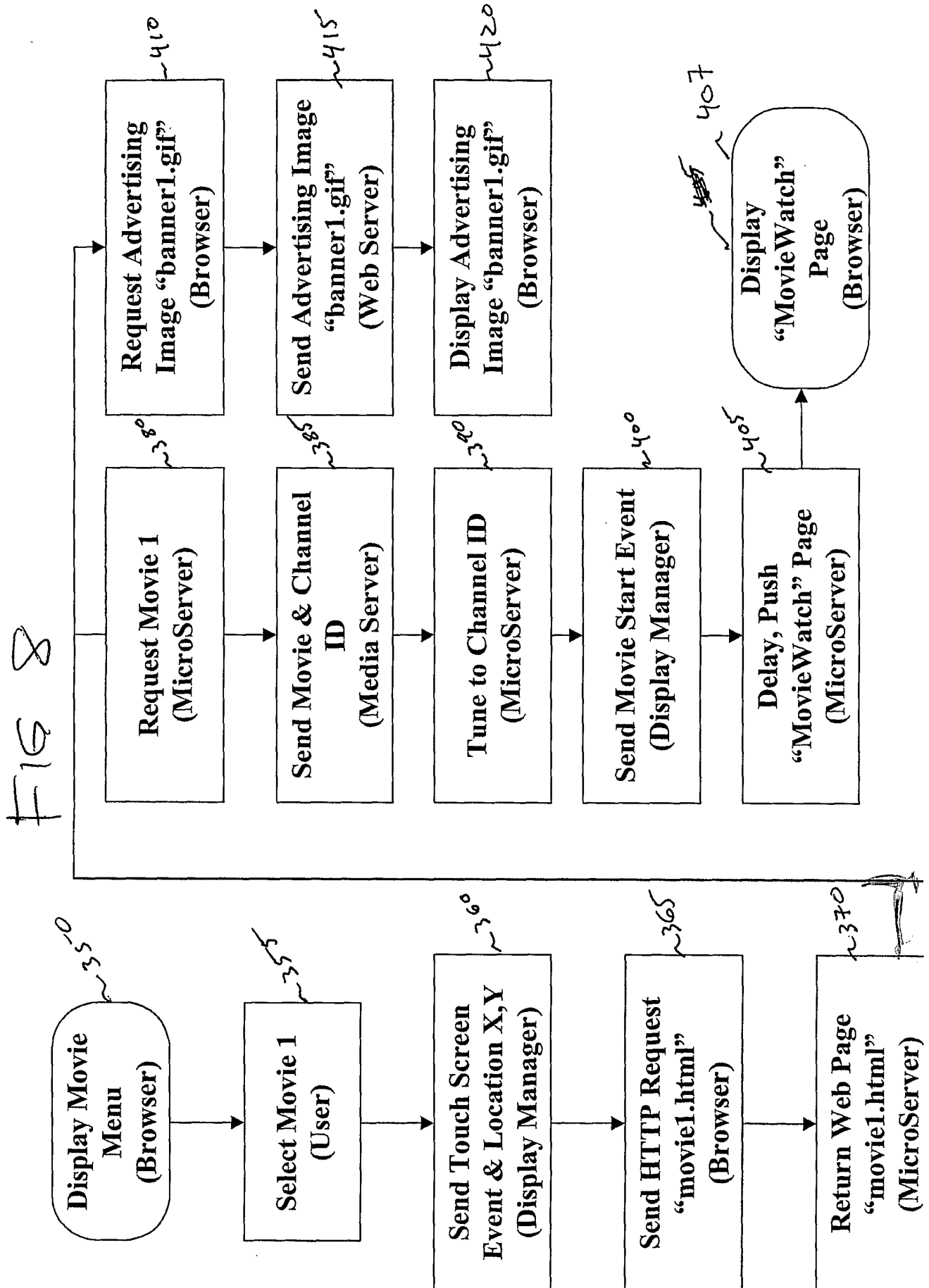


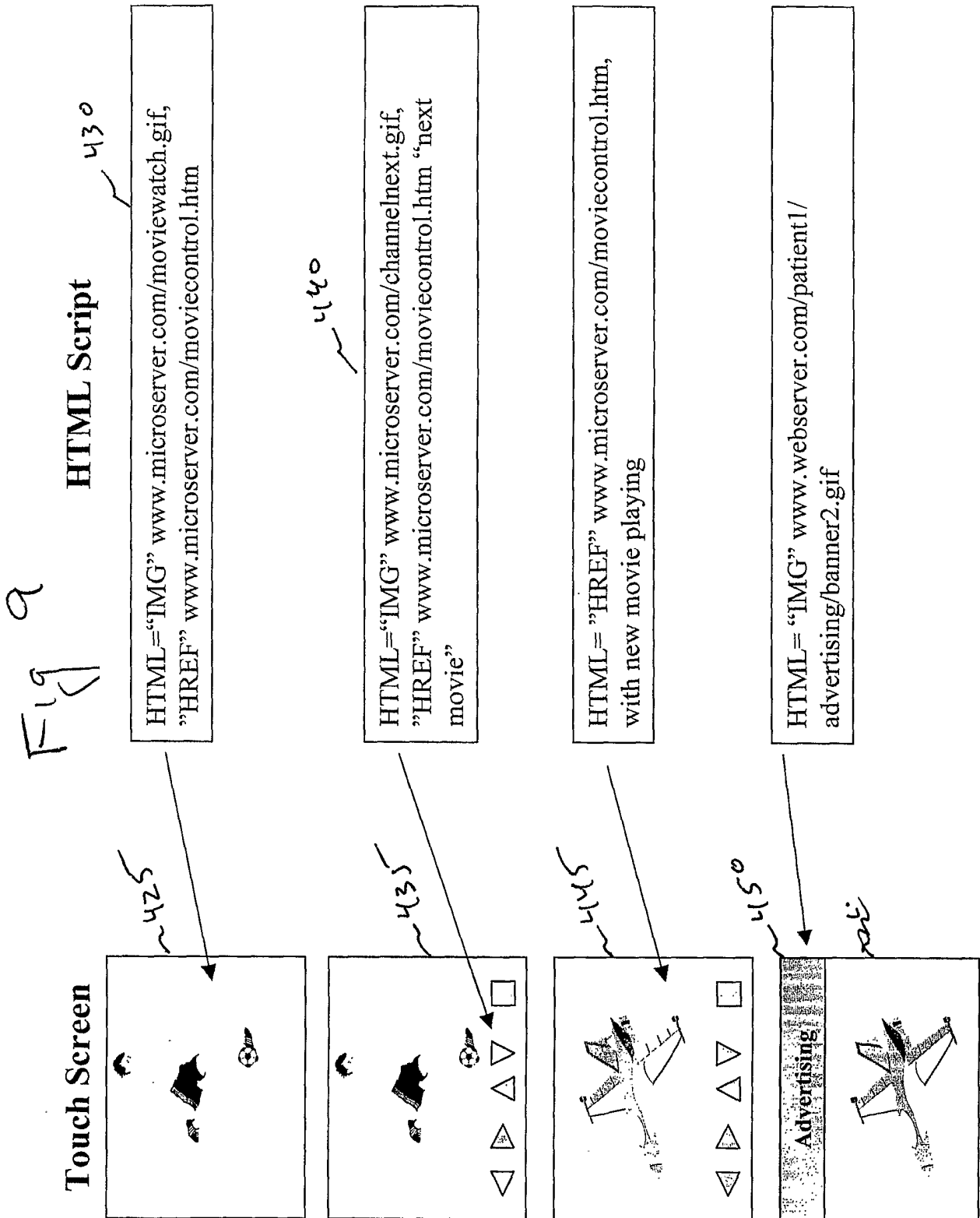
HTML Script

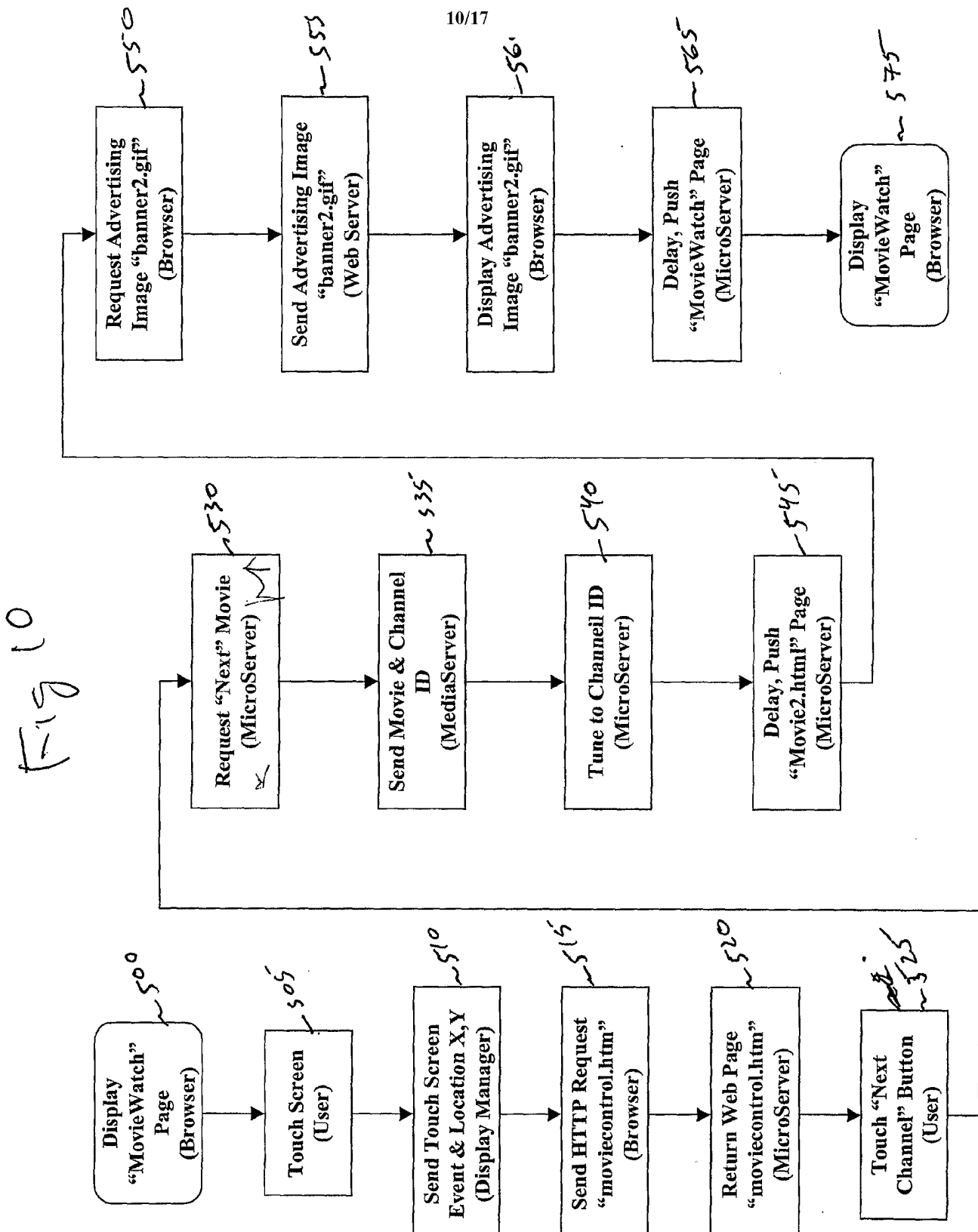
HTML = "IMG" www.microserver.com/moviebtn.gif,
"HREF" www.microserver.com/movie1.html "start"

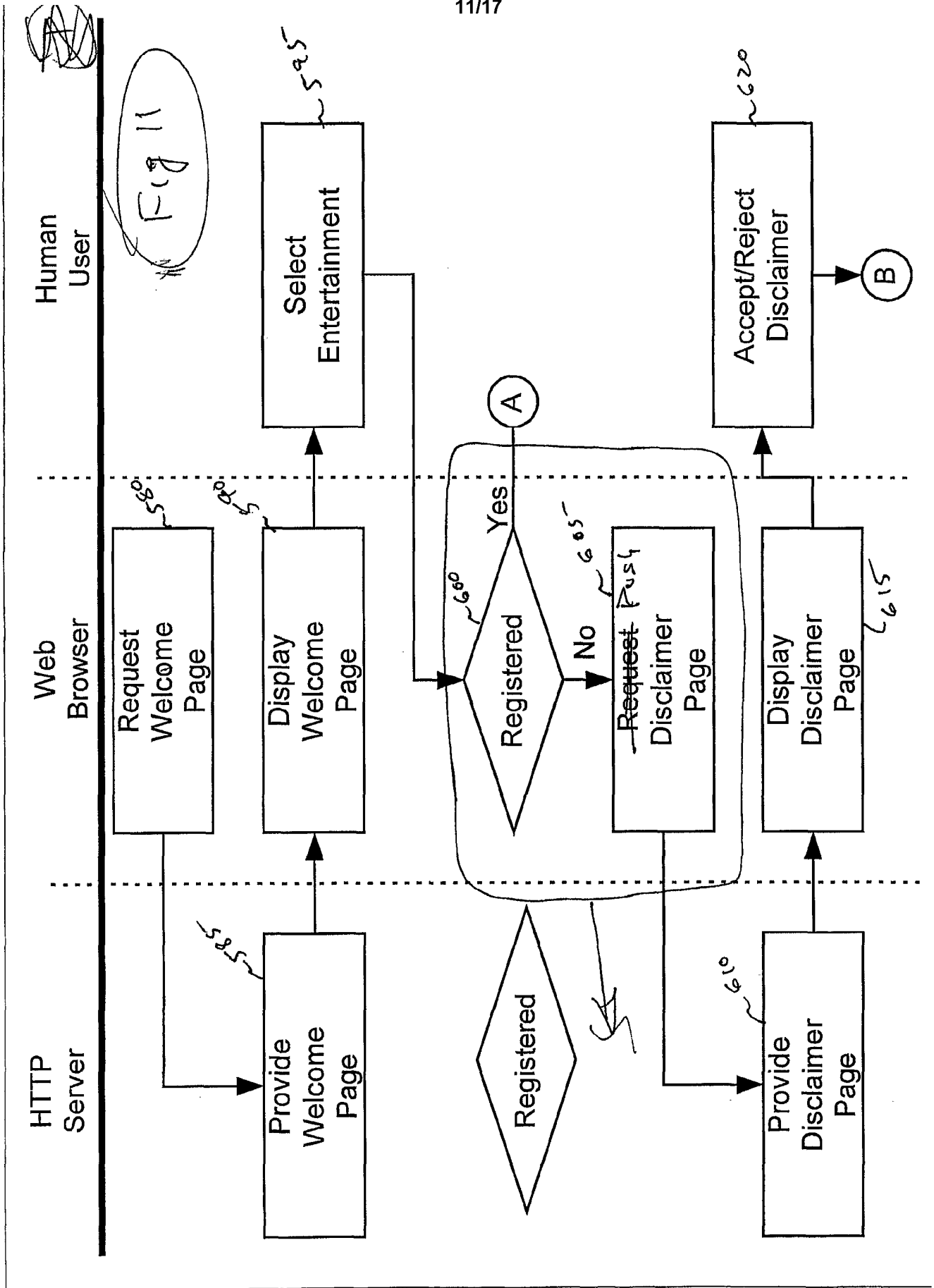


HTML = "IMG" www.webserver.com/patient1/
advertising/banner1.gif









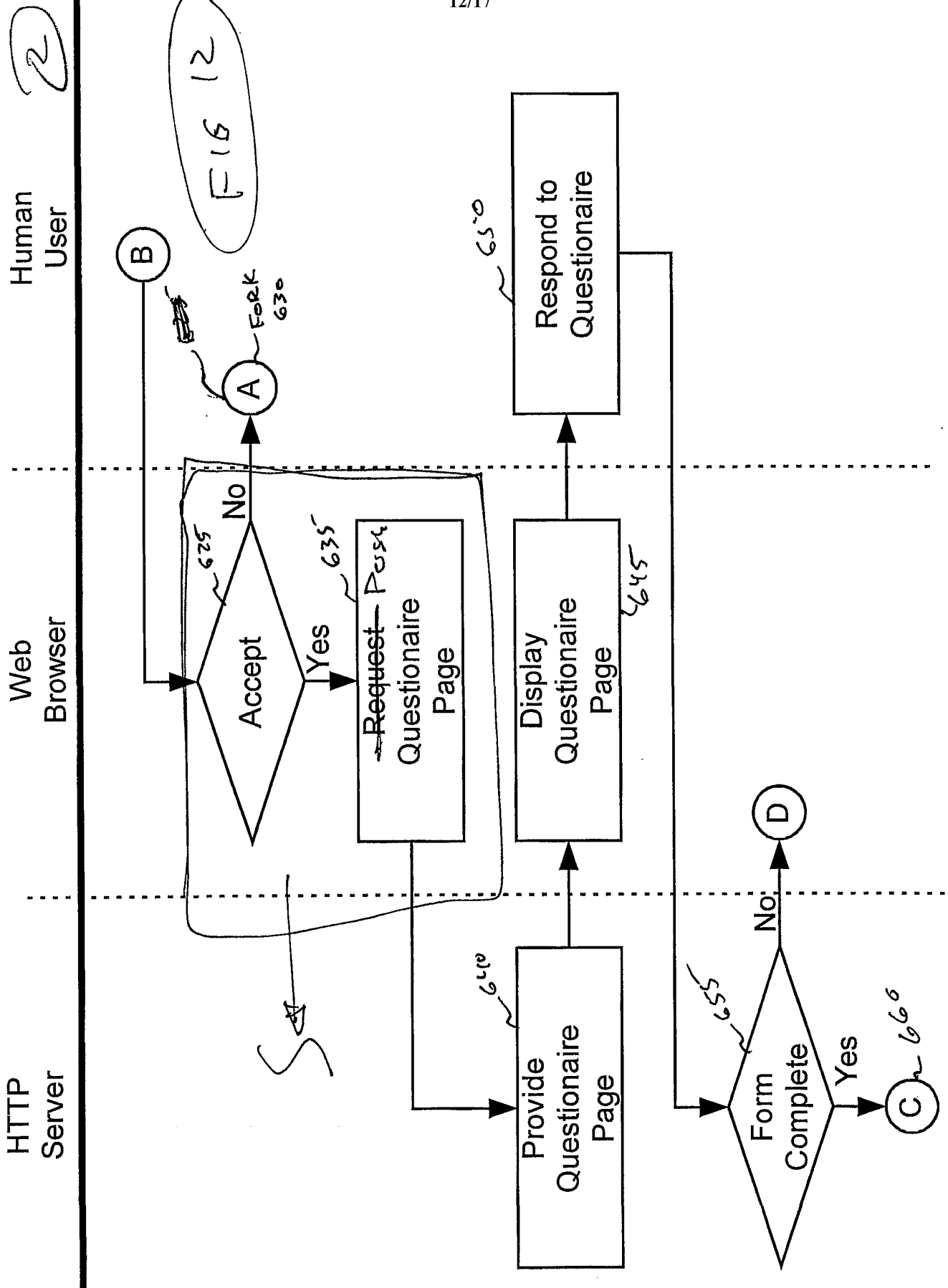


FIG 13

Welcome to the Hospital Entertainment System

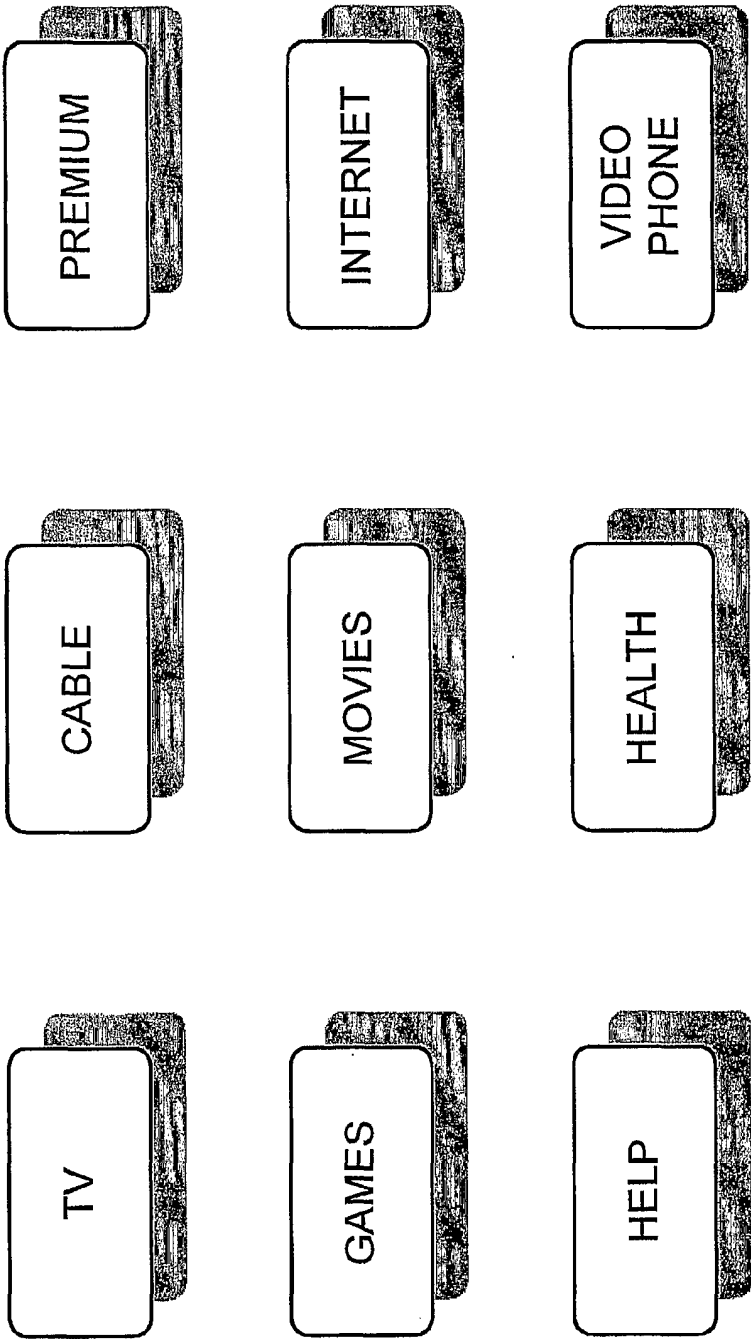


Fig 14

Welcome to the *Hospital Entertainment System*

We understand that your stay in this health care facility is a critical matter to you and we respect that you need to recuperate from your ailments.

As you use your in-bed entertainment system, we want to advise you that the programming you will be watching is sponsored by various commercial companies such as pharmaceutical producers and health care providers.

[NEXT >](#)

FIG 15

Welcome to the *Hospital Entertainment System*

In order to help these companies deliver their message to you more effectively, we would like to ask you a few simple questions regarding your present health condition.

The sponsors will not have access to your sensitive health information. It will only be used to direct specific messages to you so that you can be more aware of the products and services that may be helpful to you as you recover.

< BACK

NEXT >

FIG 16

Welcome to the *Hospital Entertainment System*

Should you choose not to respond to the questionnaire we have prepared for you, we fully respect your privacy.

In the event that you do respond to the questionnaire, the companies that sponsor the programming you will be watching have authorized a credit to your entertainment system account that is equivalent to 50% off the normal patient subscription rate.

FIG 17

Patient Health Survey

Please Point to All of the Products or Services you
Wish to be Made Aware of:

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Home Health Care

YES

NO

Maternity Products

YES

NO

Cardiac Care Products

YES

NO

Arthritis Medicine

YES

NO

Cancer Recovery

YES

NO

Physical Therapy

YES

NO

SUBMIT

CANCEL

670

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/41927

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/60; H04N 7/14, 7/10,

US CL : 705/14, 725/32, 33, 34, 35, 36

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/14, 725/32, 33, 34, 35, 36

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

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

EAST

search terms: video, movie, on-demand, paid, interactive, promotion, advertisement, banner, TV.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,006,257 A (SLEZAK) 21 DECEMBER 1999, WHOLE DOCUMENT.	1-35
Y	US 5,907,321 A (GROSSMAN ET AL.) 25 MAY 1999, WHOLE DOCUMENT.	1-35
Y	US 6,029,045 A (PICCO ET AL.) 22 FEBURARY 2000, WHOLE DOCUMENT.	1-35
Y	US 5,900,905 A (SHOFF ET AL.) 04 MAY 1999, WHOLE DOCUMENT.	1-35
Y	US 5,850,218 A (LAJOIE ET AL.) 15 DECEMBER 1998, WHOLE DOCUMENT.	1-35
Y	US 5,995,092 A (YUEN ET AL.) 30 NOVEMBER 1999, WHOLE DOCUMENT.	1-35



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier document published on or after the international filing date	"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
"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)	"G"	document member of the same patent family
"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		

Date of the actual completion of the international search

06 DECEMBER 2001

Date of mailing of the international search report

03 JAN 2002

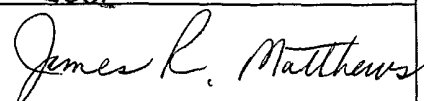
Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

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ERIC STAMBER

Telephone No. (703) 305-8000



INTERNATIONAL SEARCH REPORT

Inte application No.
PCT/US01/41927

C^{*} (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,002,393 A (HITE ET AL.) 14 DECEMBER 1999, WHOLE DOCUMENT.	1-35
Y, E	US 6,282,713 B1 (KITSUKAWA ET AL.) 28 AUGUST 2001, WHOLE DOCUMENT.	1-35
A	US 6,005,602 A (MATTHEWS, III) 21 DECEMBER 1999, WHOLE DOCUMENT.	1-35