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(54) **DISPLAYING COMPLEMENTARY CONTENT SOURCES**

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Publication Classification

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(52) **U.S. Cl.** **709/203**

(57) **ABSTRACT**

A computer-implemented method includes receiving a first URL address corresponding to a first web page, accessing content and serving the first web page based on the first URL address, receiving specification of a second URL address corresponding to a second web page, changing from the first web page to the second web page based on the received specification of the second URL address, motivating an automatic change in television channel from a first television channel to a second television channel based upon a change from the first web page to the second web page, and displaying the second television channel.

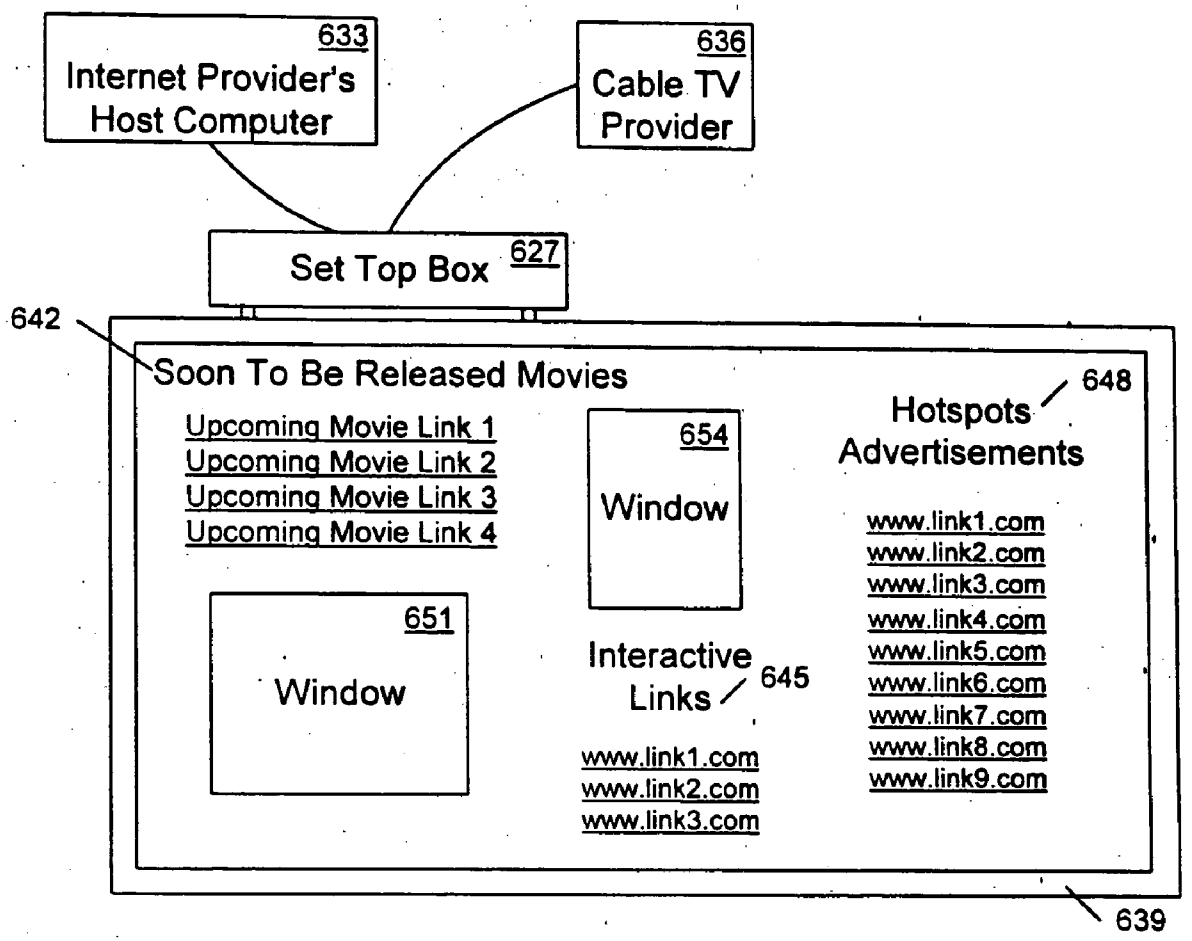
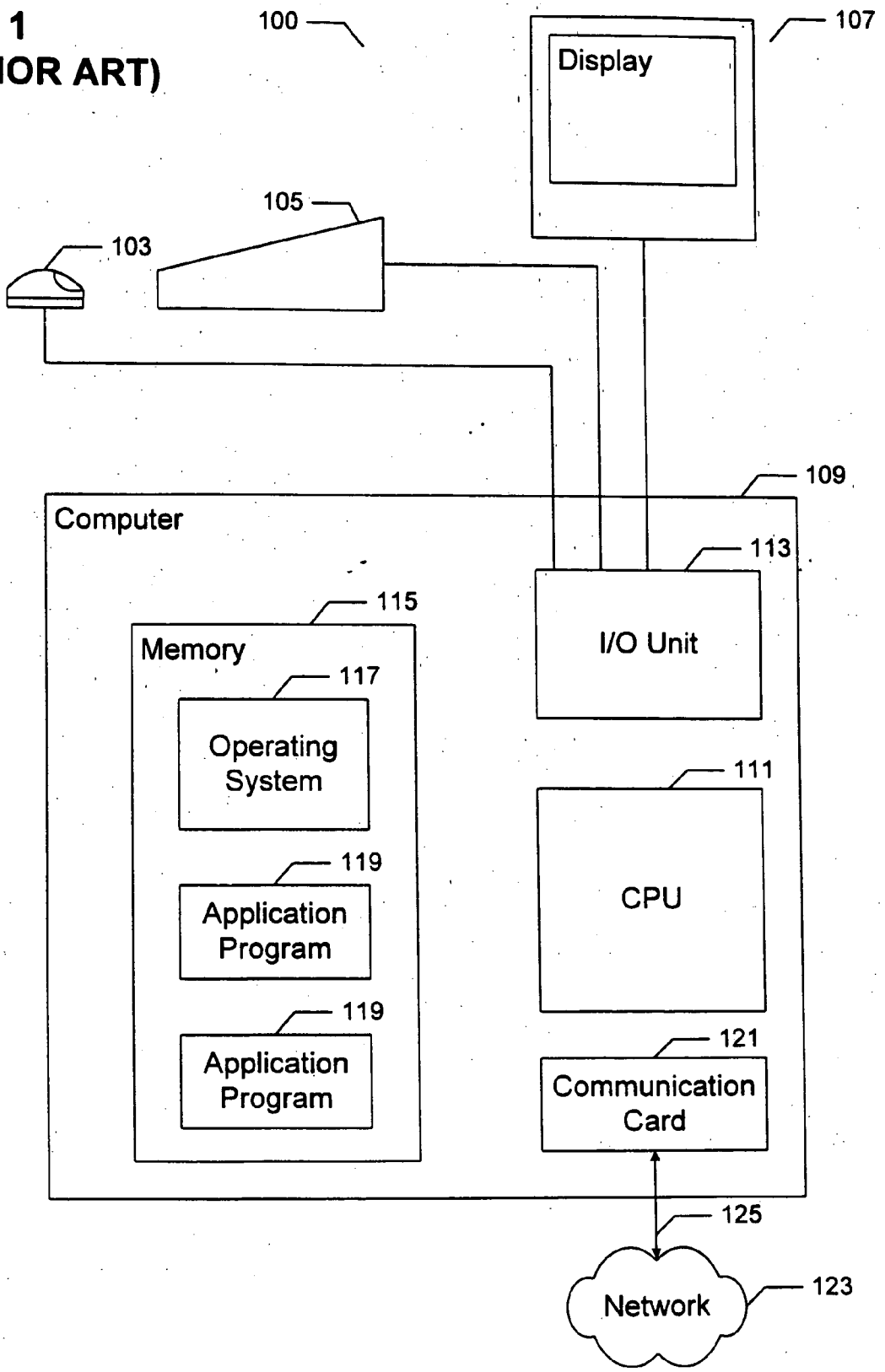


Fig. 1
(PRIOR ART)



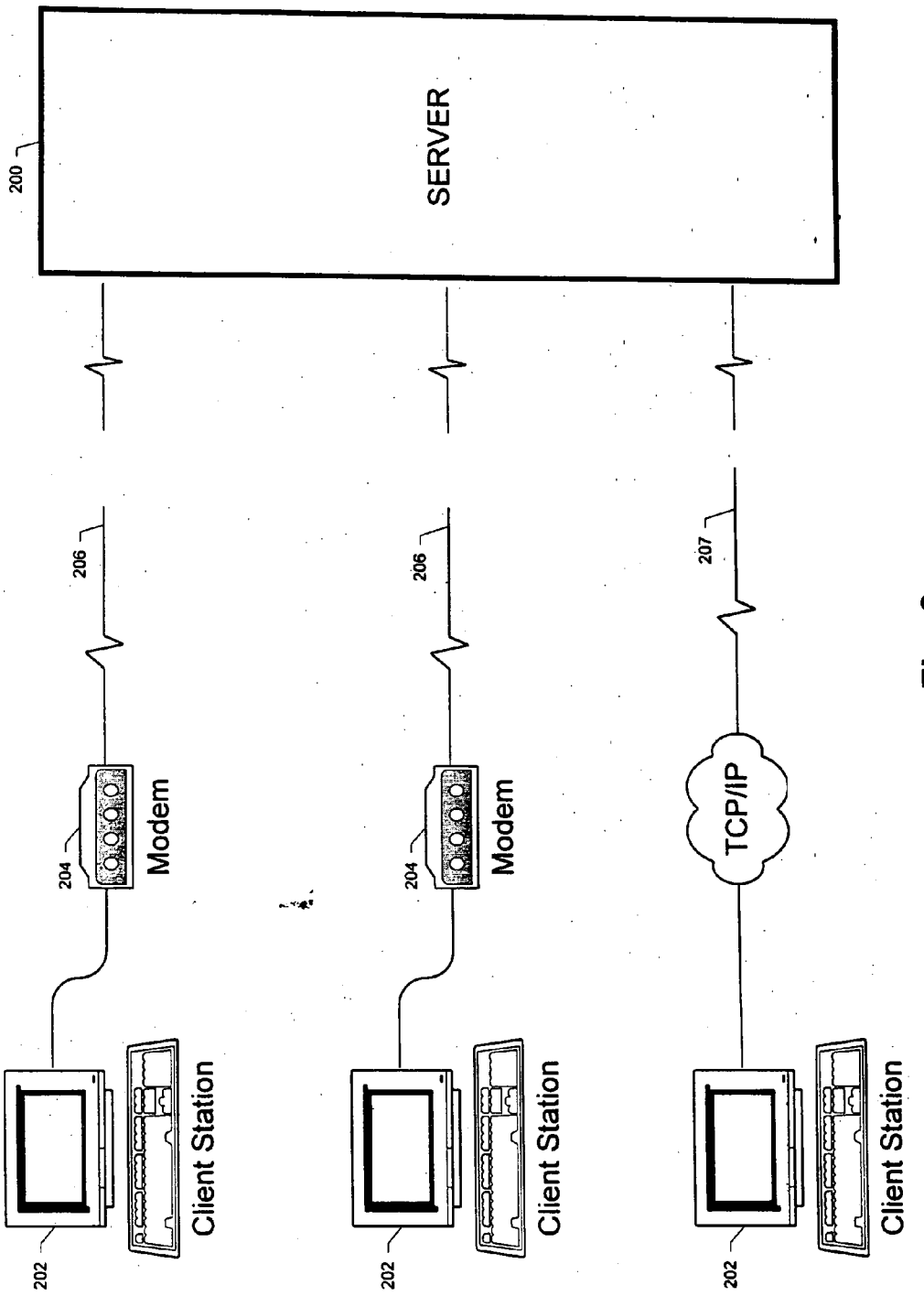


Fig. 2
(PRIOR ART)

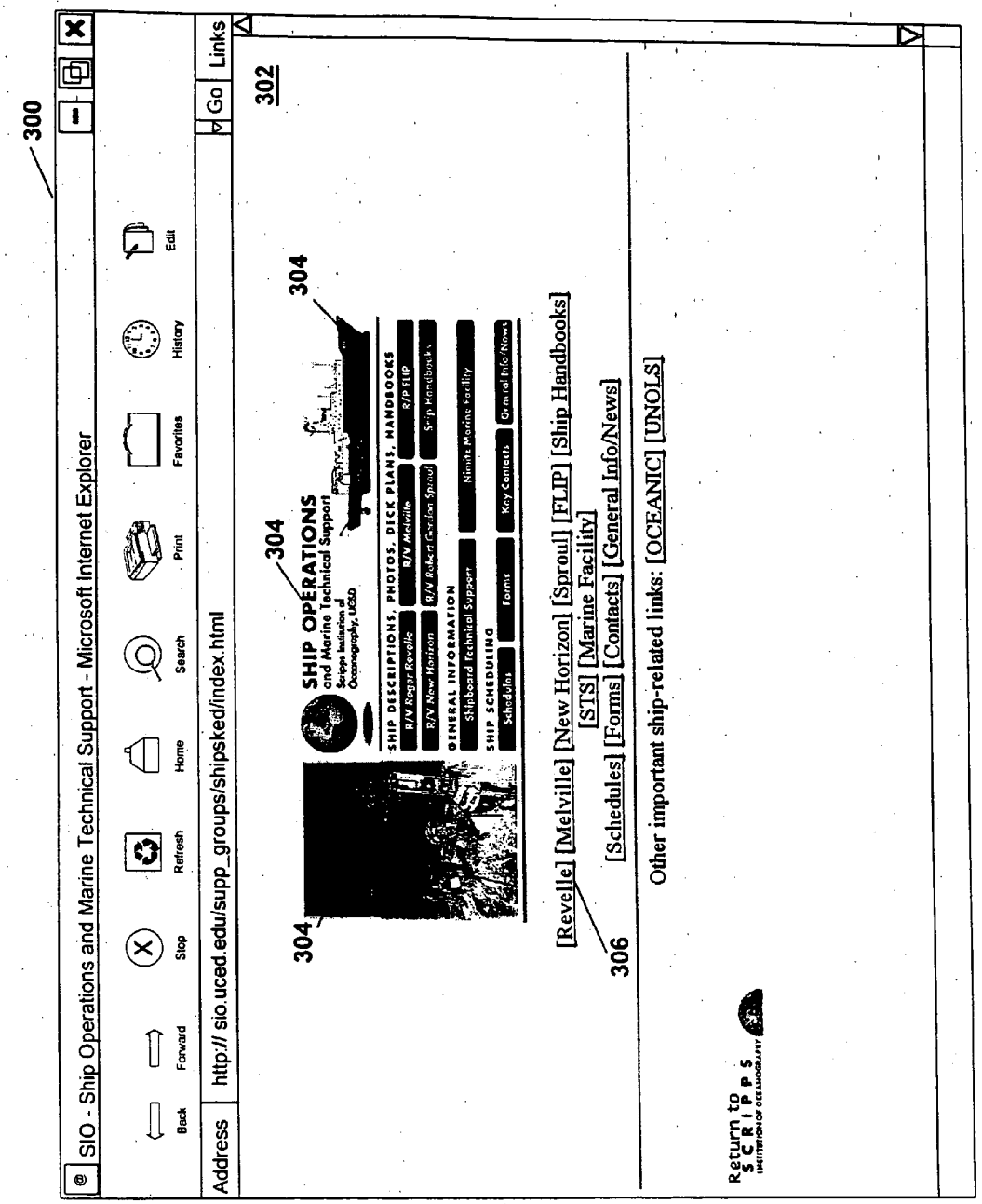


Fig. 3 (Prior Art)

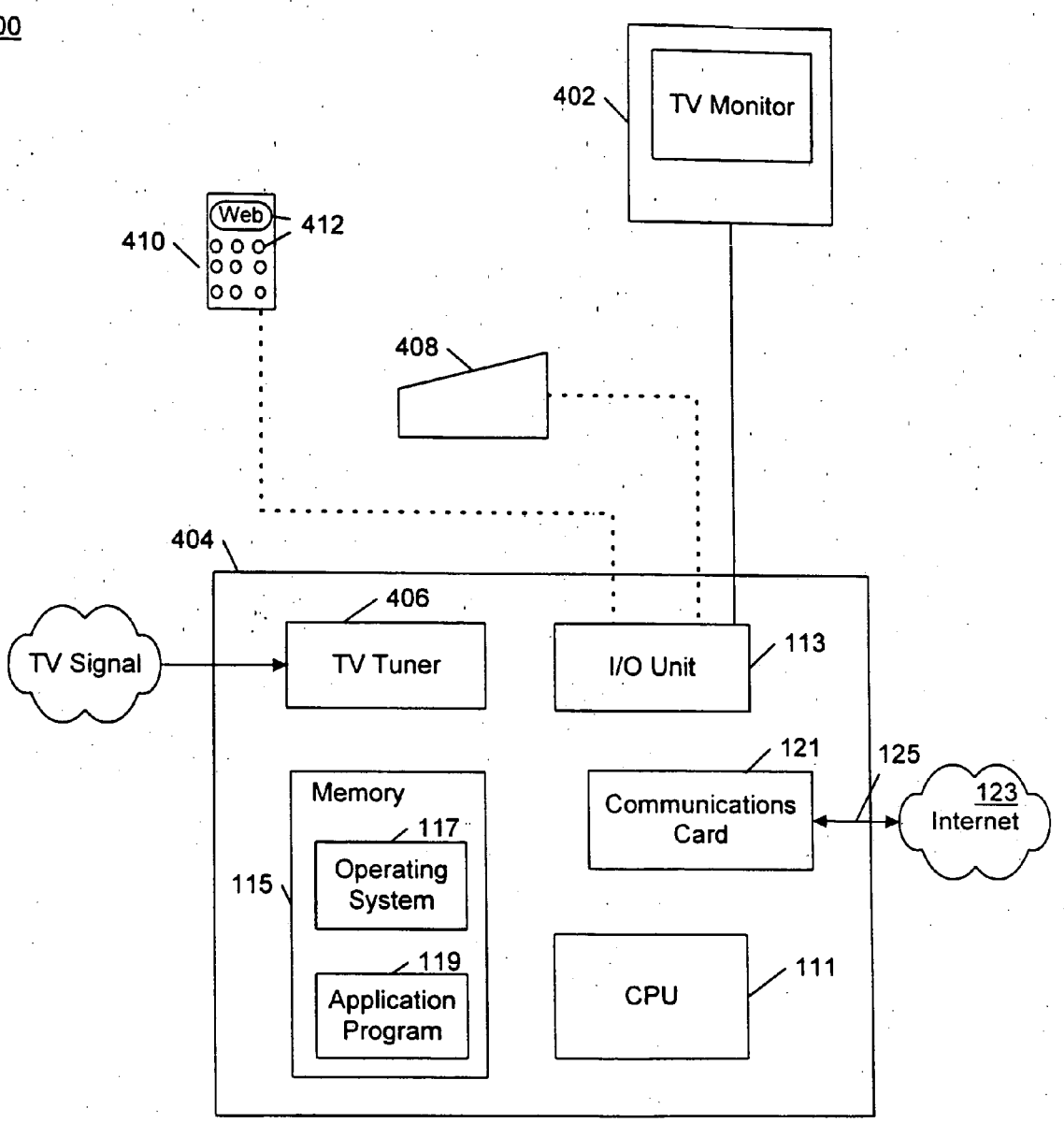


Fig. 4
(PRIOR ART)

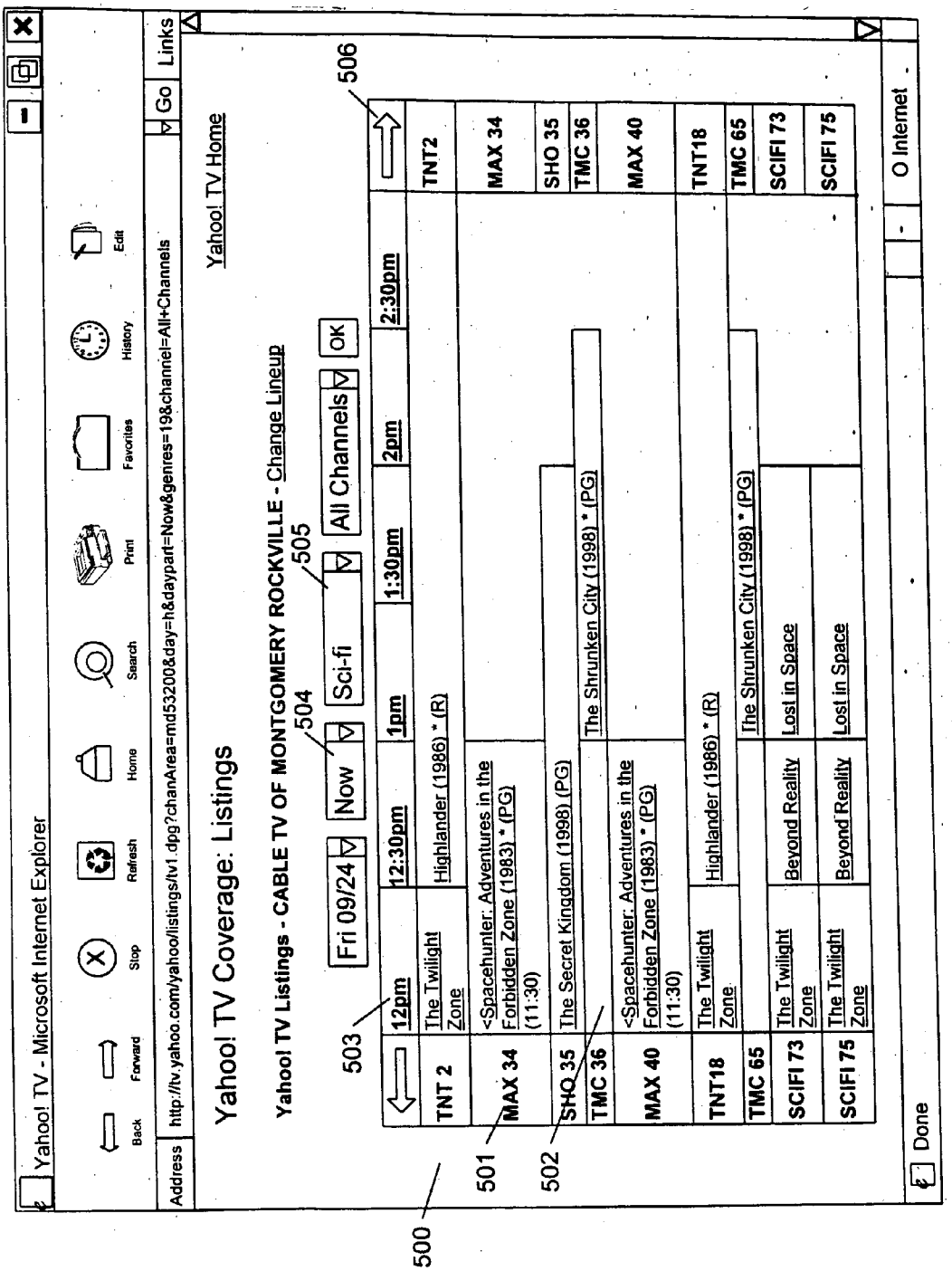
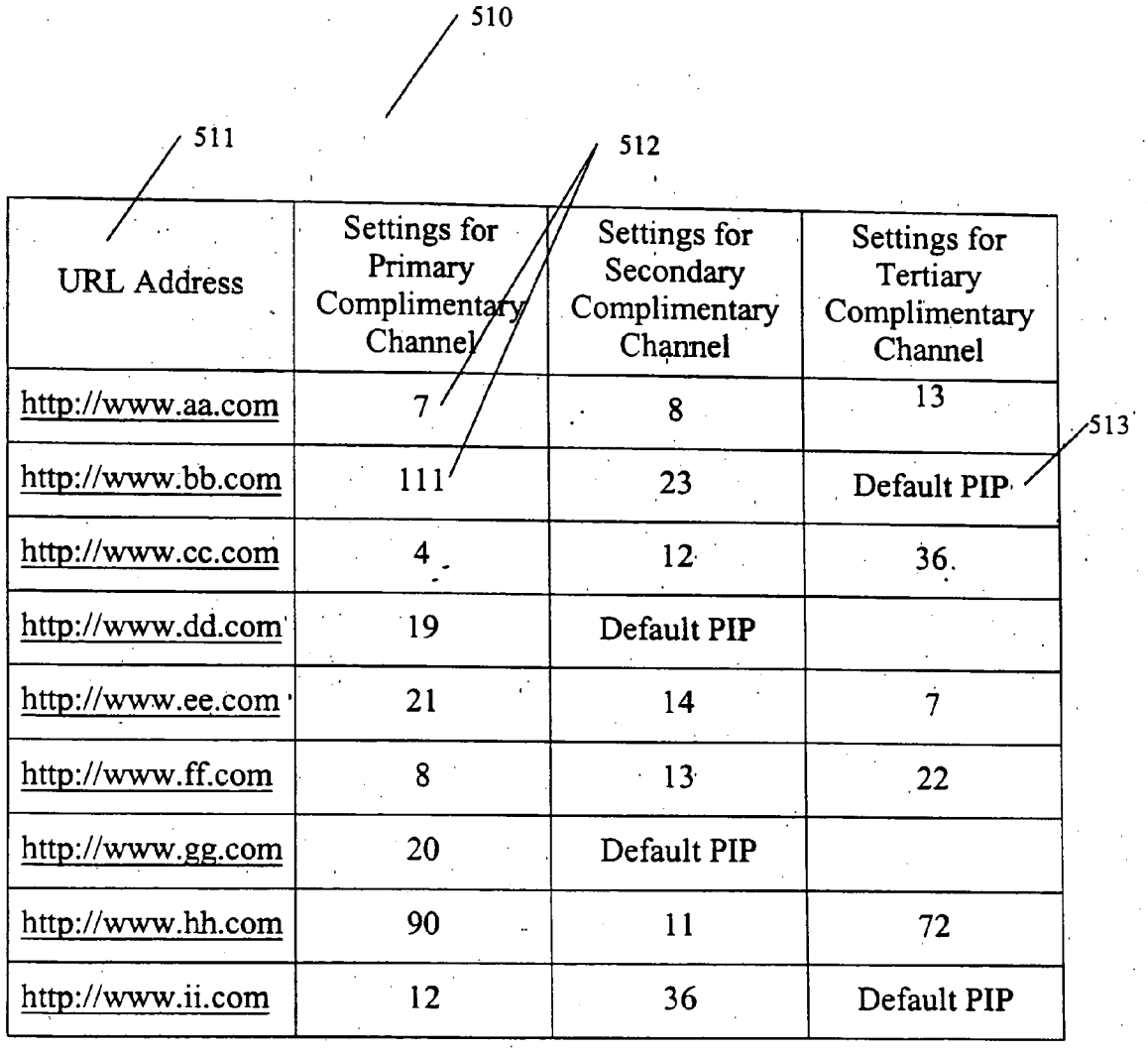

Yahoo! TV - Microsoft Internet Explorer
Back
Forward
Stop
Refresh
Home
Search
Print
Favorites
History
Edit
Address
http://tv.yahoo.com/yahoo/listings/tv1.dpg?chanArea=md53200&day=h&daypart=Now&genres=19&channel=All+Channels
Go
Links
Yahoo! TV Coverage: Listings
Yahoo! TV Home
Yahoo! TV Listings - CABLE TV OF MONTGOMERY ROCKVILLE - Change Lineup
Fri 09/24
Now
Sci-fi
All Channels
OK
12pm
12:30pm
1pm
1:30pm
2pm
2:30pm
TNT 2
The Twilight Zone
Highlander (1986) * (R)
MAX 34
<Spacehunter: Adventures in the Forbidden Zone (1983) * (PG) (11:30)
SHO 35
The Secret Kingdom (1998) (PG)
TMC 36
The Shrunken City (1998) * (PG)
MAX 40
TNT18
TMC 65
SCIFI 73
Beyond Reality
Lost in Space
SCIFI 75
Done
Internet
500
501
502
503
504
505
506

Fig. 5



URL Address	Settings for Primary Complimentary Channel	Settings for Secondary Complimentary Channel	Settings for Tertiary Complimentary Channel
http://www.aa.com	7	8	13
http://www.bb.com	111	23	Default PIP
http://www.cc.com	4	12	36
http://www.dd.com	19	Default PIP	
http://www.ee.com	21	14	7
http://www.ff.com	8	13	22
http://www.gg.com	20	Default PIP	
http://www.hh.com	90	11	72
http://www.ii.com	12	36	Default PIP

Fig. 6

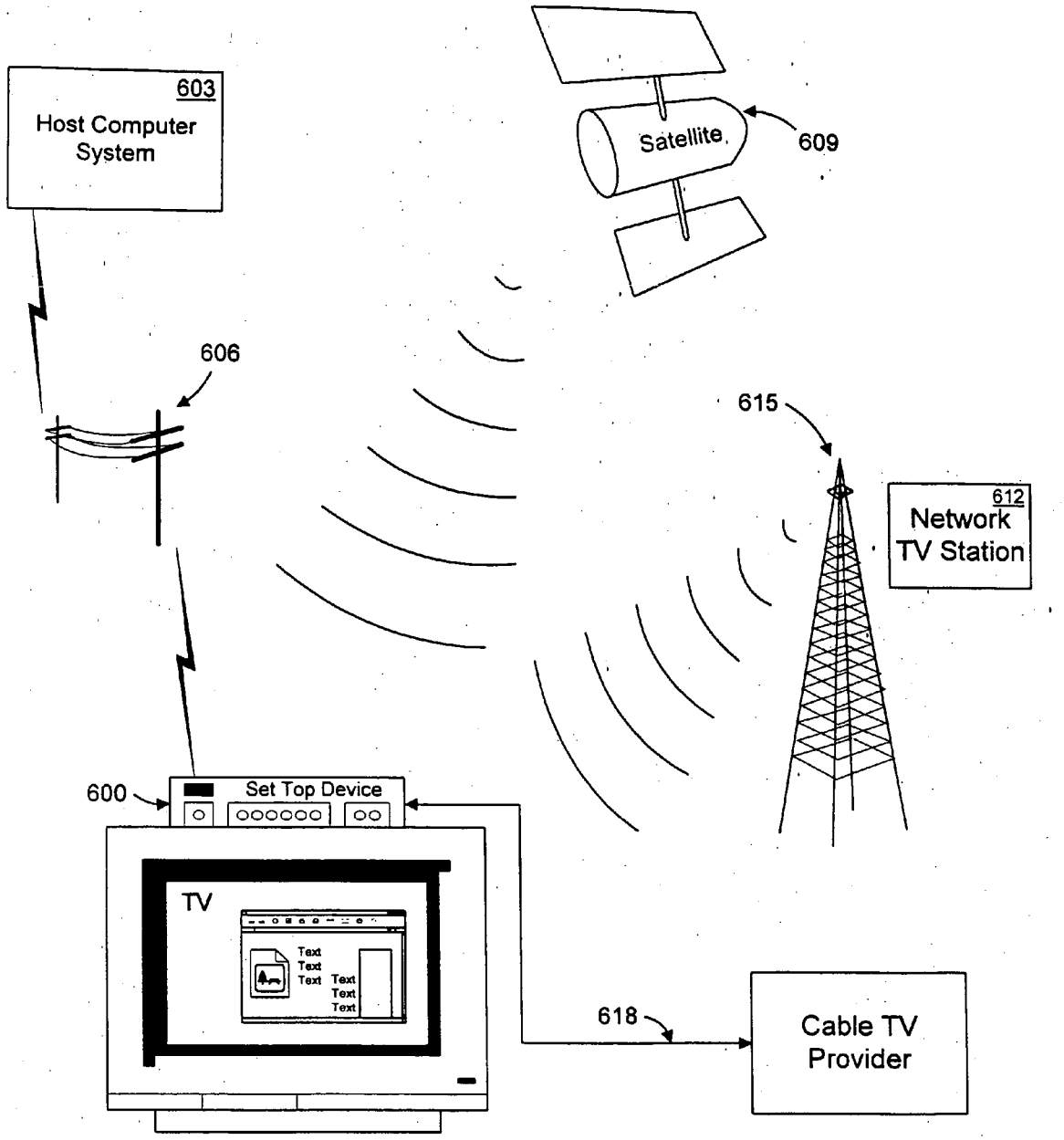

603
Host Computer System
Satellite
609
606
615
612
Network TV Station
600
Set Top Device
TV
Text
Text
Text
Text
Text
Text
618
Cable TV Provider

Fig. 7

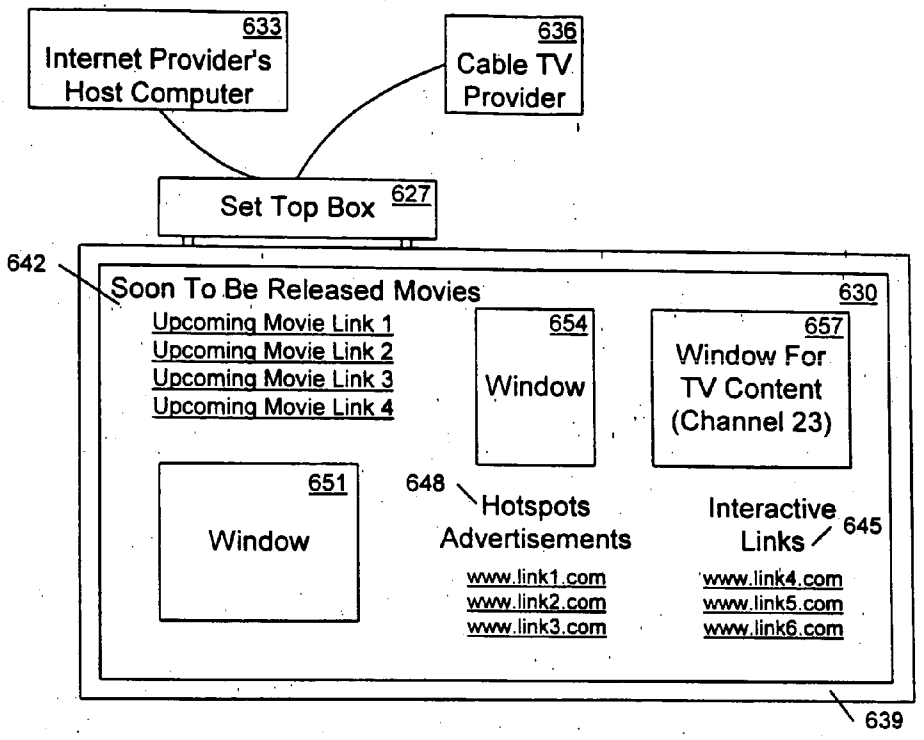

633
Internet Provider's Host Computer
636
Cable TV Provider
Set Top Box 627
642
Soon To Be Released Movies
630
Upcoming Movie Link 1
Upcoming Movie Link 2
Upcoming Movie Link 3
Upcoming Movie Link 4
654
Window
657
Window For TV Content (Channel 23)
651
Window
648
Hotspots Advertisements
www.link1.com
www.link2.com
www.link3.com
Interactive Links
645
www.link4.com
www.link5.com
www.link6.com
639

Fig. 8

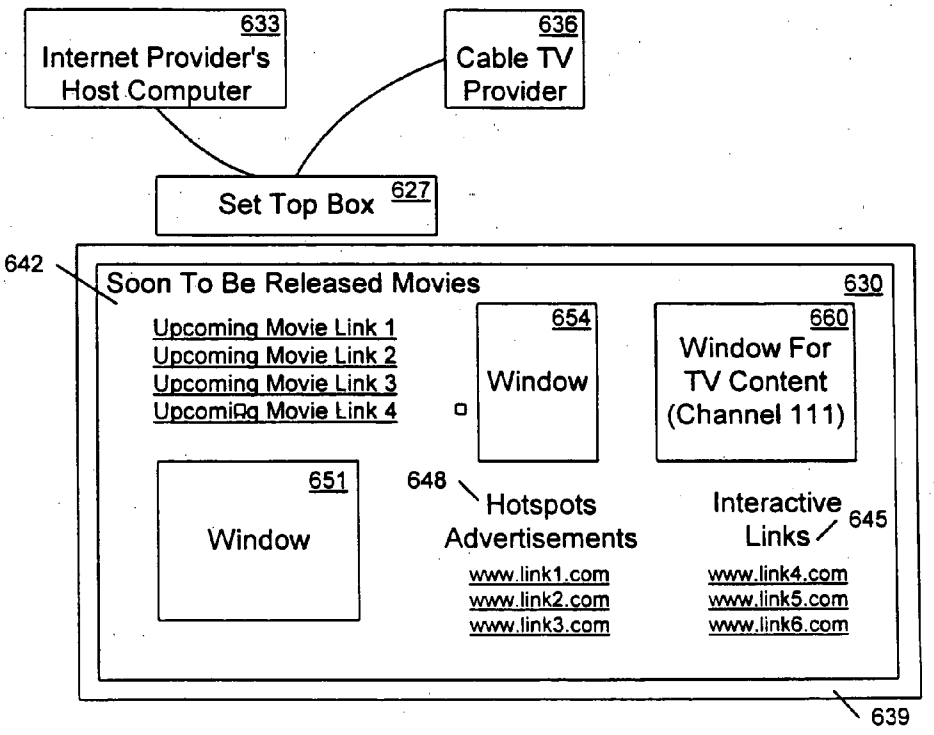

633
Internet Provider's Host Computer
636
Cable TV Provider
Set Top Box 627
642
Soon To Be Released Movies
630
Upcoming Movie Link 1
Upcoming Movie Link 2
Upcoming Movie Link 3
Upcoming Movie Link 4
654
Window
660
Window For TV Content (Channel 111)
651
Window
648
Hotspots Advertisements
www.link1.com
www.link2.com
www.link3.com
Interactive Links
645
www.link4.com
www.link5.com
www.link6.com
639

Fig. 9

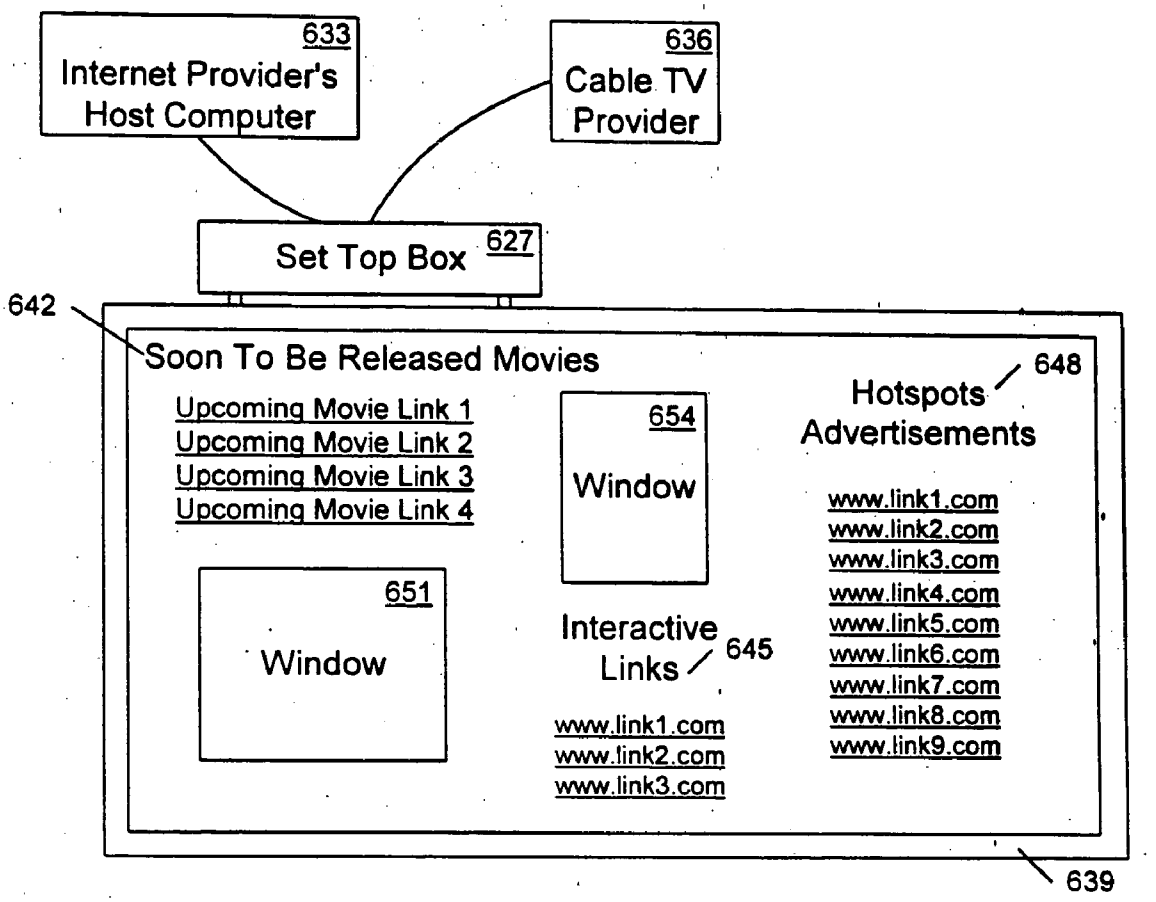

633
Internet Provider's Host Computer
636
Cable TV Provider
Set Top Box 627
642
Soon To Be Released Movies
Upcoming Movie Link 1
Upcoming Movie Link 2
Upcoming Movie Link 3
Upcoming Movie Link 4
654
Window
651
Window
Interactive Links 645
www.link1.com
www.link2.com
www.link3.com
Hotspots Advertisements 648
www.link1.com
www.link2.com
www.link3.com
www.link4.com
www.link5.com
www.link6.com
www.link7.com
www.link8.com
www.link9.com
639

Fig. 10

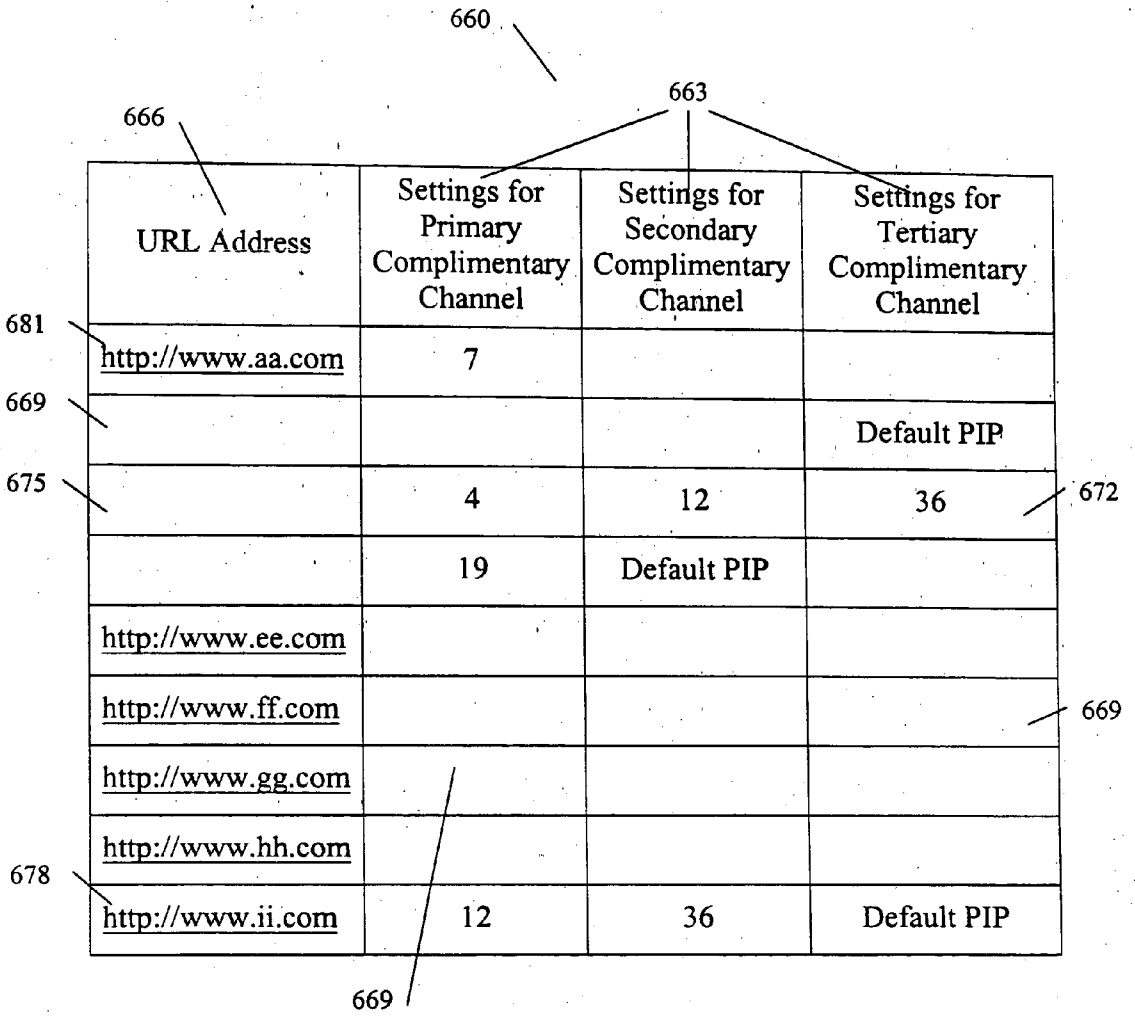

660
663
666
URL Address
Settings for Primary Complimentary Channel
Settings for Secondary Complimentary Channel
Settings for Tertiary Complimentary Channel
681
http://www.aa.com
7
669
Default PIP
675
4
12
36
672
19
Default PIP
http://www.ee.com
http://www.ff.com
669
http://www.gg.com
http://www.hh.com
678
http://www.ii.com
12
36
Default PIP
669

Fig. 11

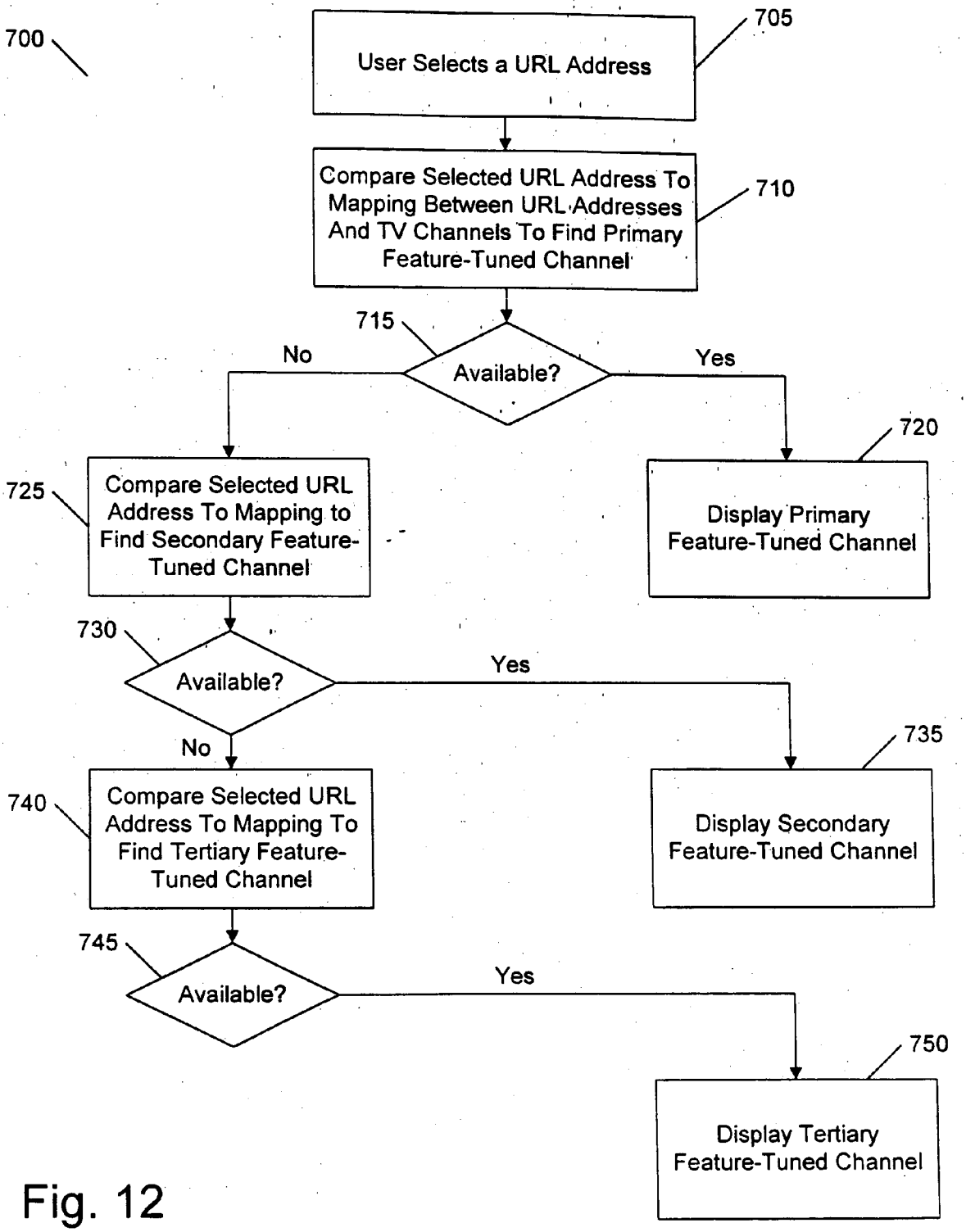

700
User Selects a URL Address
705
Compare Selected URL Address To Mapping Between URL Addresses And TV Channels To Find Primary Feature-Tuned Channel
710
715
Available?
No
Yes
720
Display Primary Feature-Tuned Channel
725
Compare Selected URL Address To Mapping to Find Secondary Feature-Tuned Channel
730
Available?
Yes
No
735
Display Secondary Feature-Tuned Channel
740
Compare Selected URL Address To Mapping To Find Tertiary Feature-Tuned Channel
745
Available?
Yes
750
Display Tertiary Feature-Tuned Channel

Fig. 12

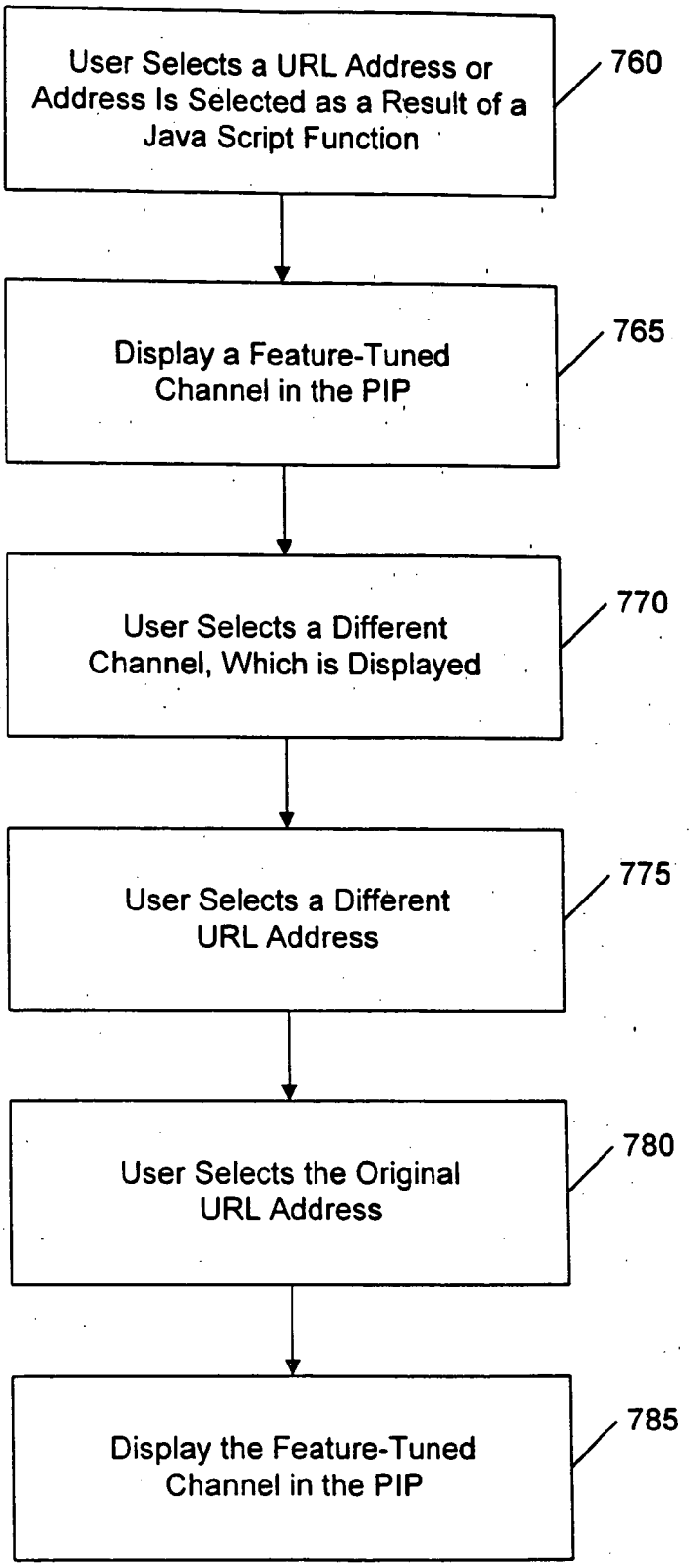

User Selects a URL Address or Address Is Selected as a Result of a Java Script Function
760
Display a Feature-Tuned Channel in the PIP
765
User Selects a Different Channel, Which is Displayed
770
User Selects a Different URL Address
775
User Selects the Original URL Address
780
Display the Feature-Tuned Channel in the PIP
785

Fig. 13

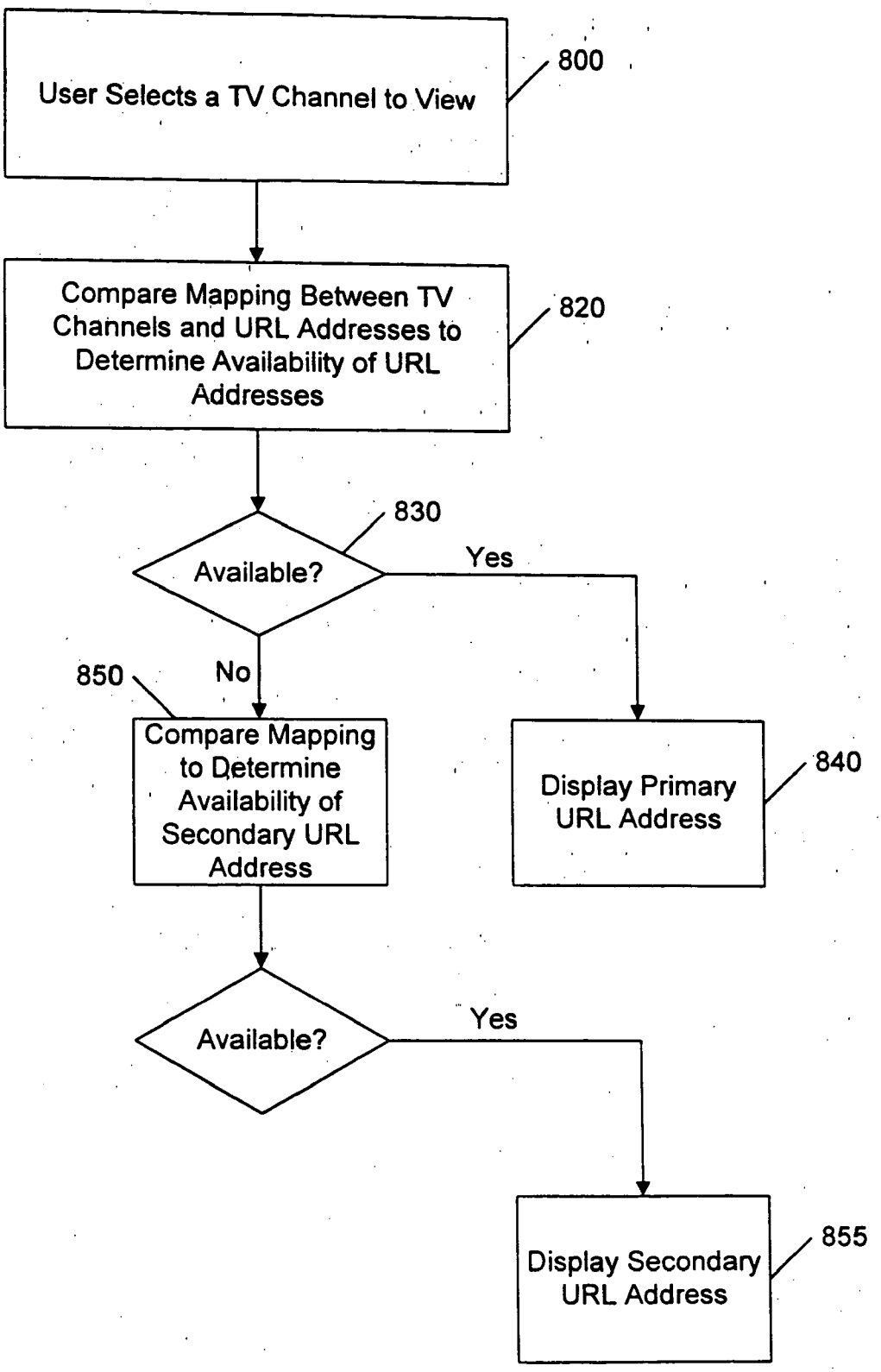
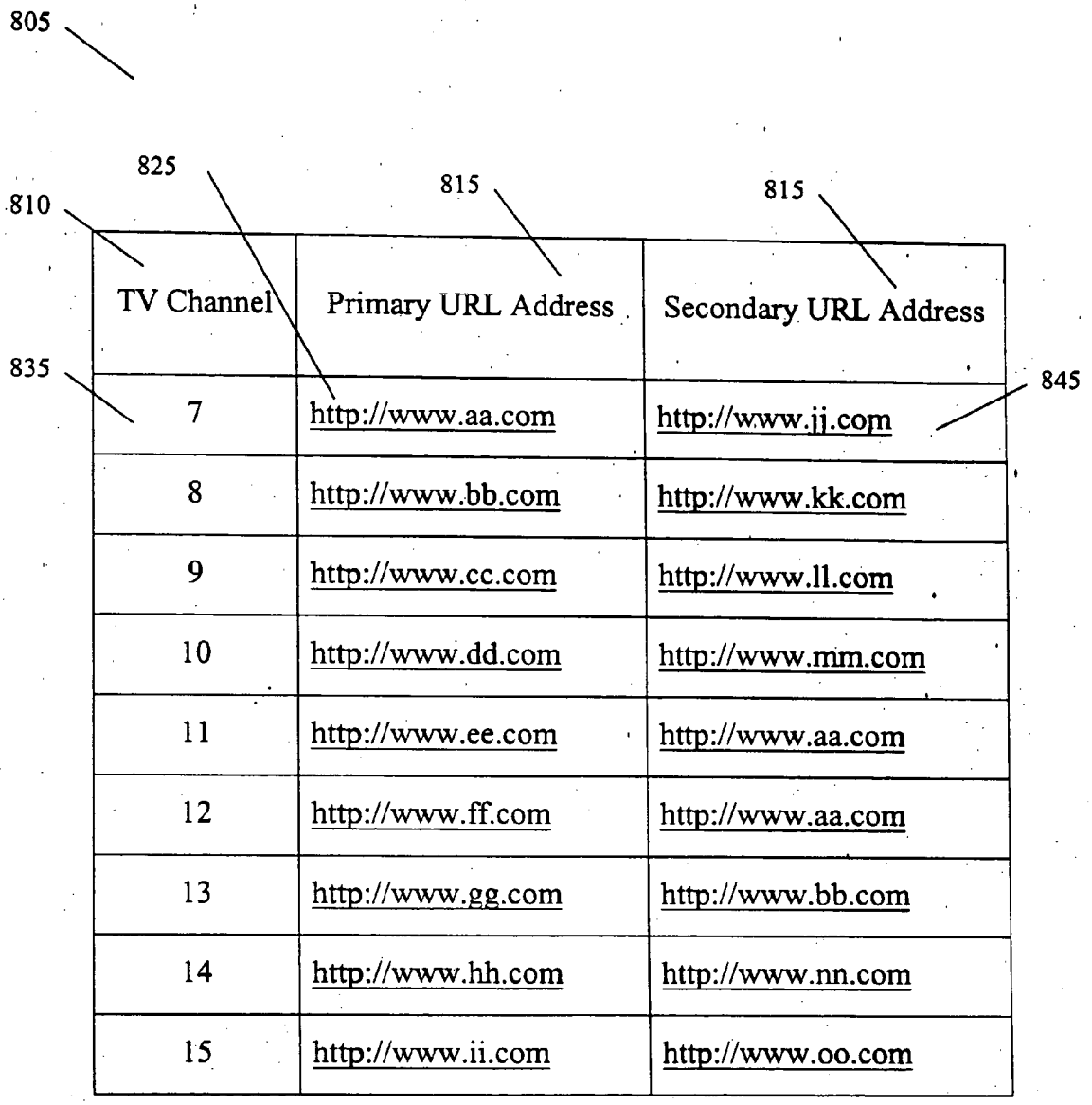

User Selects a TV Channel to View
800
Compare Mapping Between TV Channels and URL Addresses to Determine Availability of URL Addresses
820
830
Available?
Yes
No
850
Compare Mapping to Determine Availability of Secondary URL Address
Display Primary URL Address
840
Available?
Yes
Display Secondary URL Address
855

Fig. 14



TV Channel	Primary URL Address	Secondary URL Address
7	http://www.aa.com	http://www.jj.com
8	http://www.bb.com	http://www.kk.com
9	http://www.cc.com	http://www.ll.com
10	http://www.dd.com	http://www.mm.com
11	http://www.ee.com	http://www.aa.com
12	http://www.ff.com	http://www.aa.com
13	http://www.gg.com	http://www.bb.com
14	http://www.hh.com	http://www.nn.com
15	http://www.ii.com	http://www.oo.com

Fig. 15

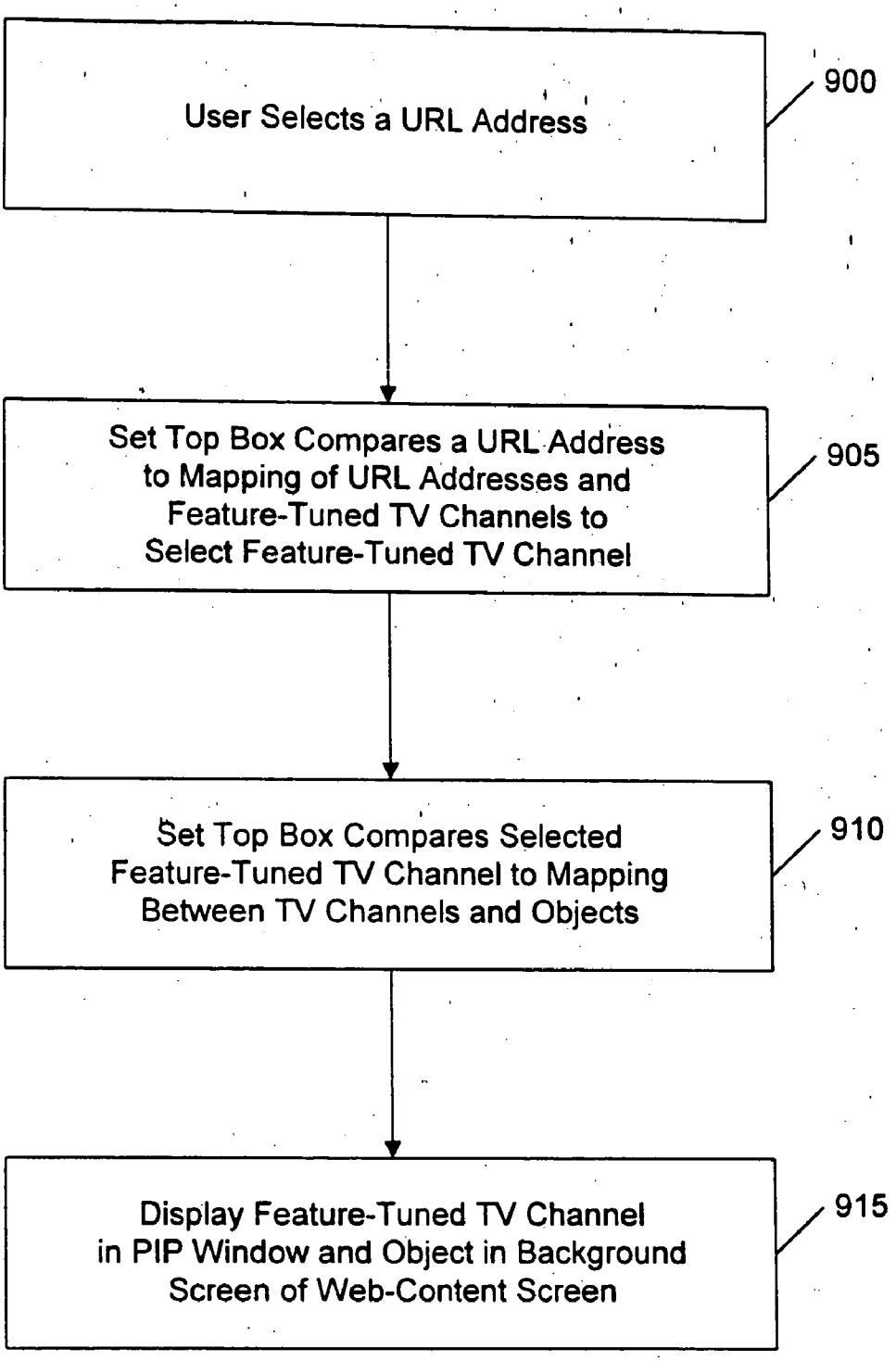

User Selects a URL Address
900
Set Top Box Compares a URL Address to Mapping of URL Addresses and Feature-Tuned TV Channels to Select Feature-Tuned TV Channel
905
Set Top Box Compares Selected Feature-Tuned TV Channel to Mapping Between TV Channels and Objects
910
Display Feature-Tuned TV Channel in PIP Window and Object in Background Screen of Web-Content Screen
915

Fig. 16

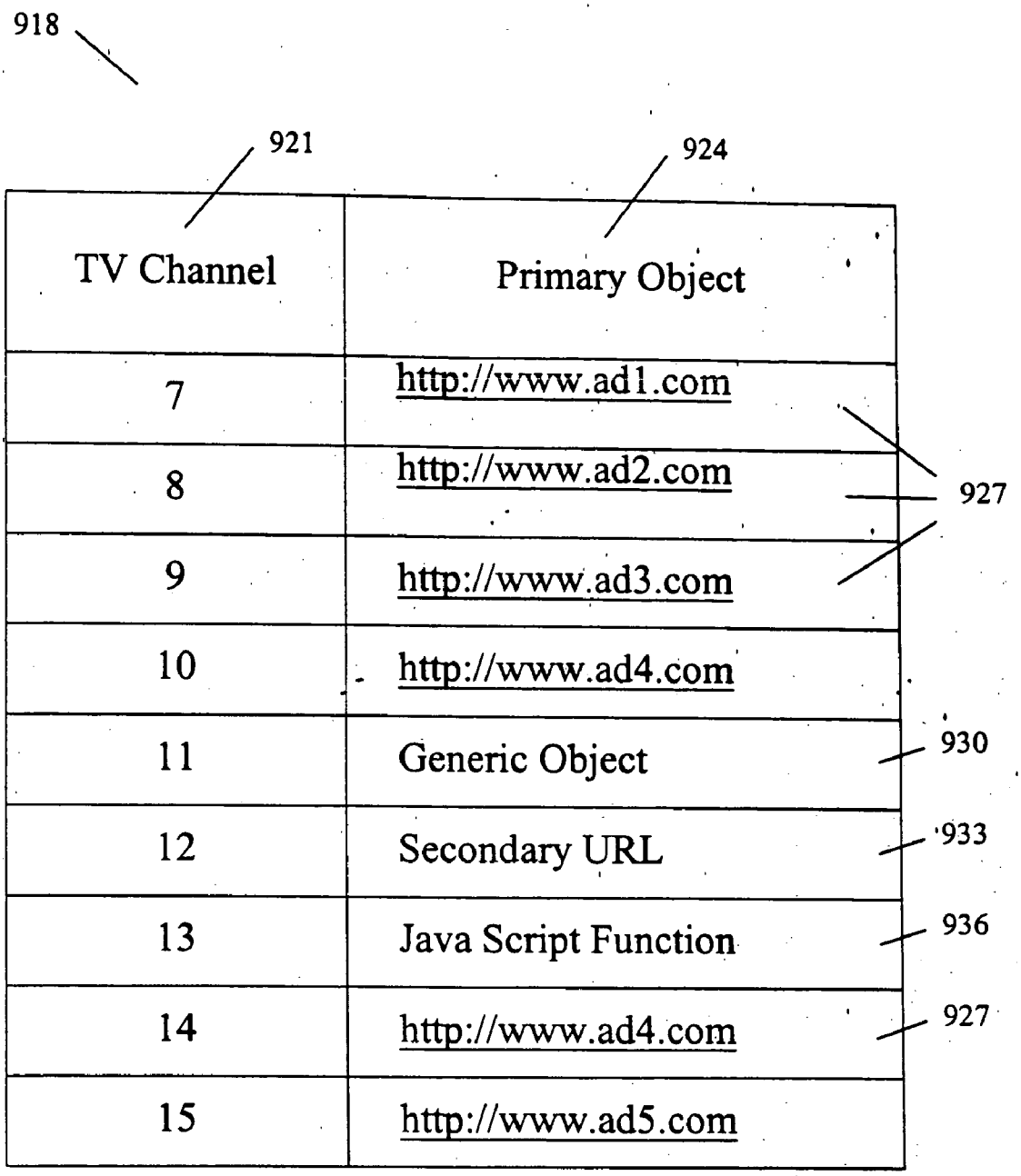

918
921
924
TV Channel
Primary Object
7
http://www.ad1.com
8
http://www.ad2.com
9
http://www.ad3.com
10
http://www.ad4.com
11
Generic Object
12
Secondary URL
13
Java Script Function
14
http://www.ad4.com
15
http://www.ad5.com
927
930
933
936
927

Fig. 17

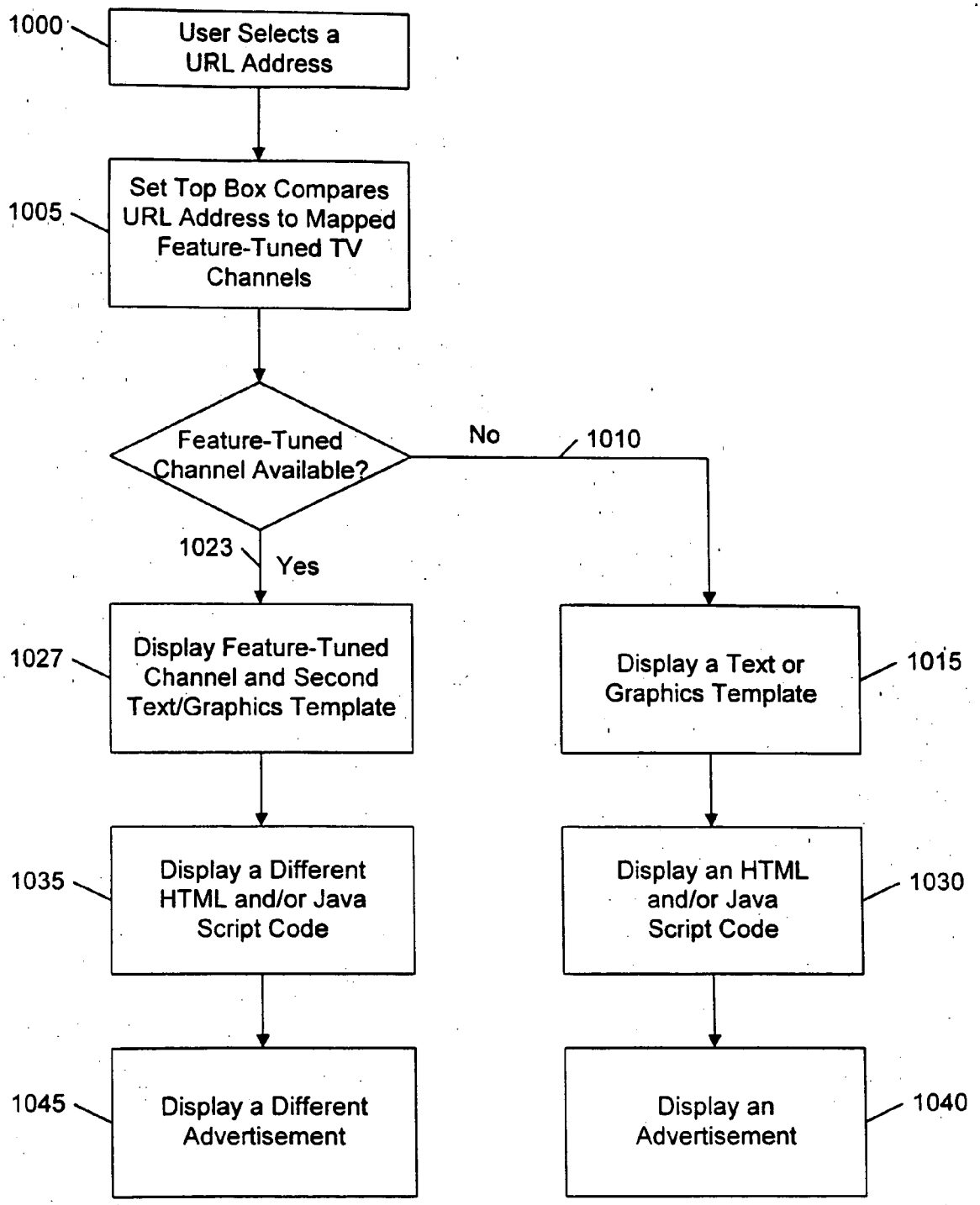

1000
User Selects a URL Address
1005
Set Top Box Compares URL Address to Mapped Feature-Tuned TV Channels
Feature-Tuned Channel Available?
No
1010
1023
Yes
1027
Display Feature-Tuned Channel and Second Text/Graphics Template
1035
Display a Different HTML and/or Java Script Code
1045
Display a Different Advertisement
Display a Text or Graphics Template
1015
Display an HTML and/or Java Script Code
1030
Display an Advertisement
1040

Fig. 18

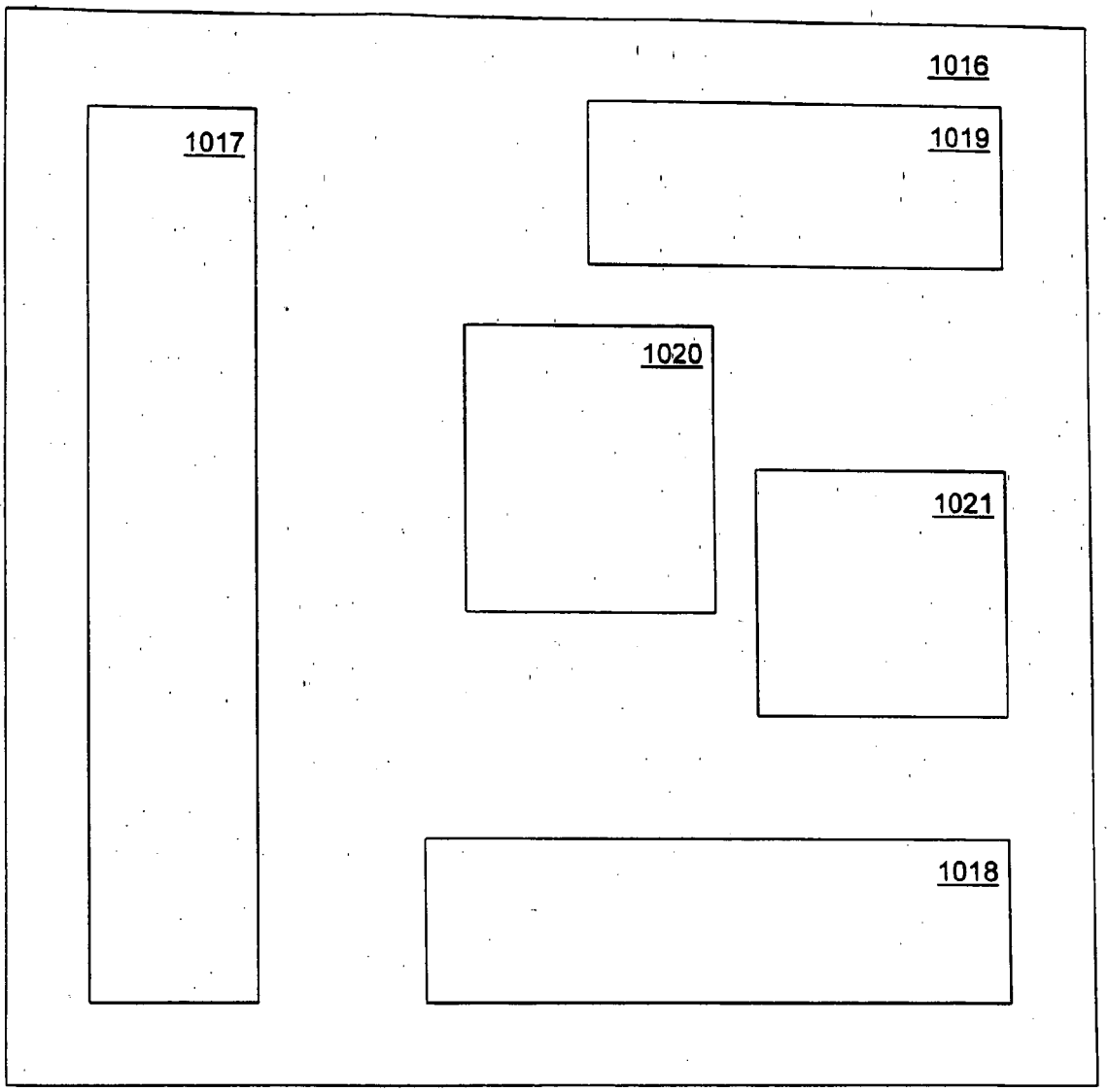


Fig. 19

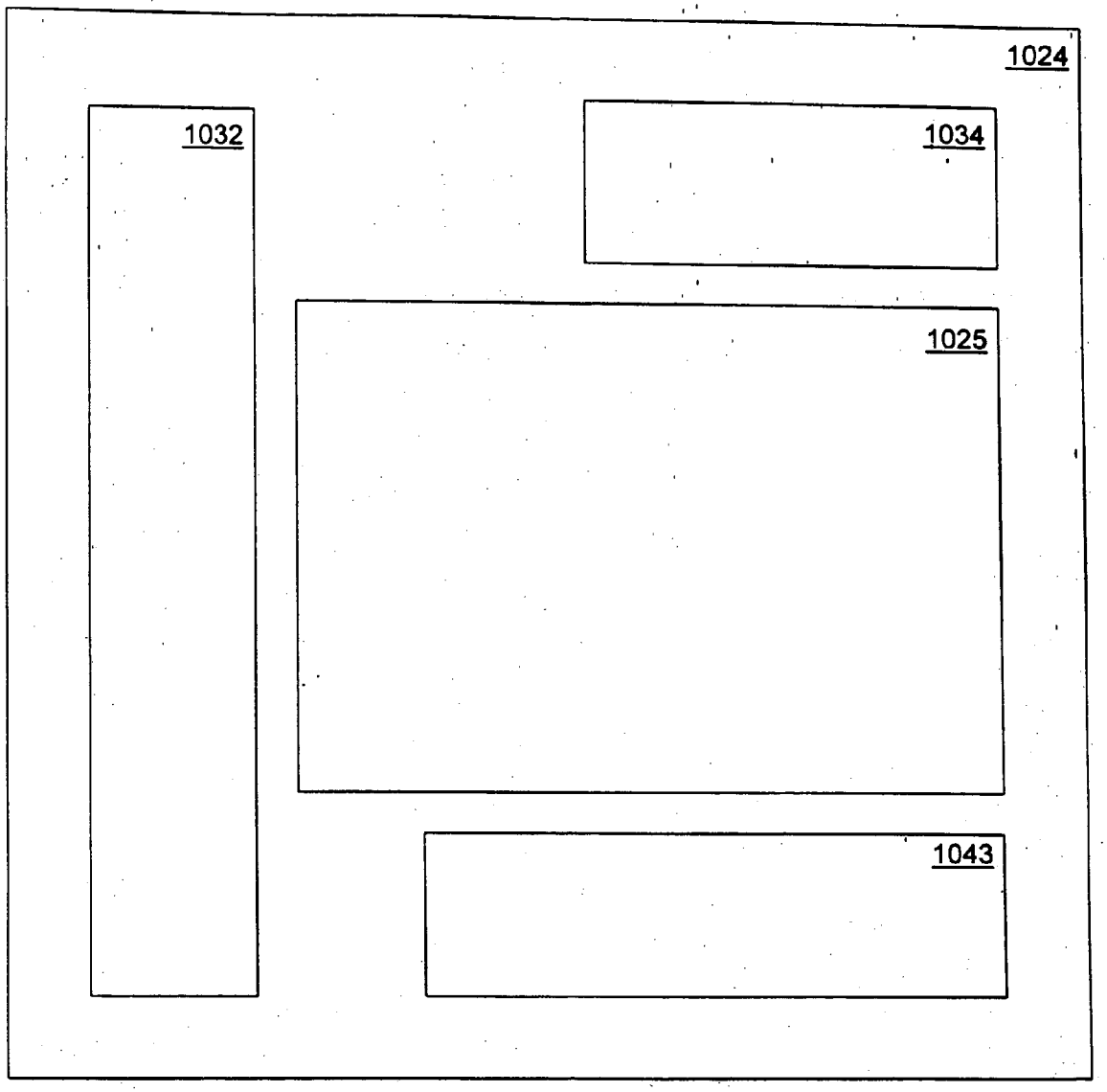


Fig. 20

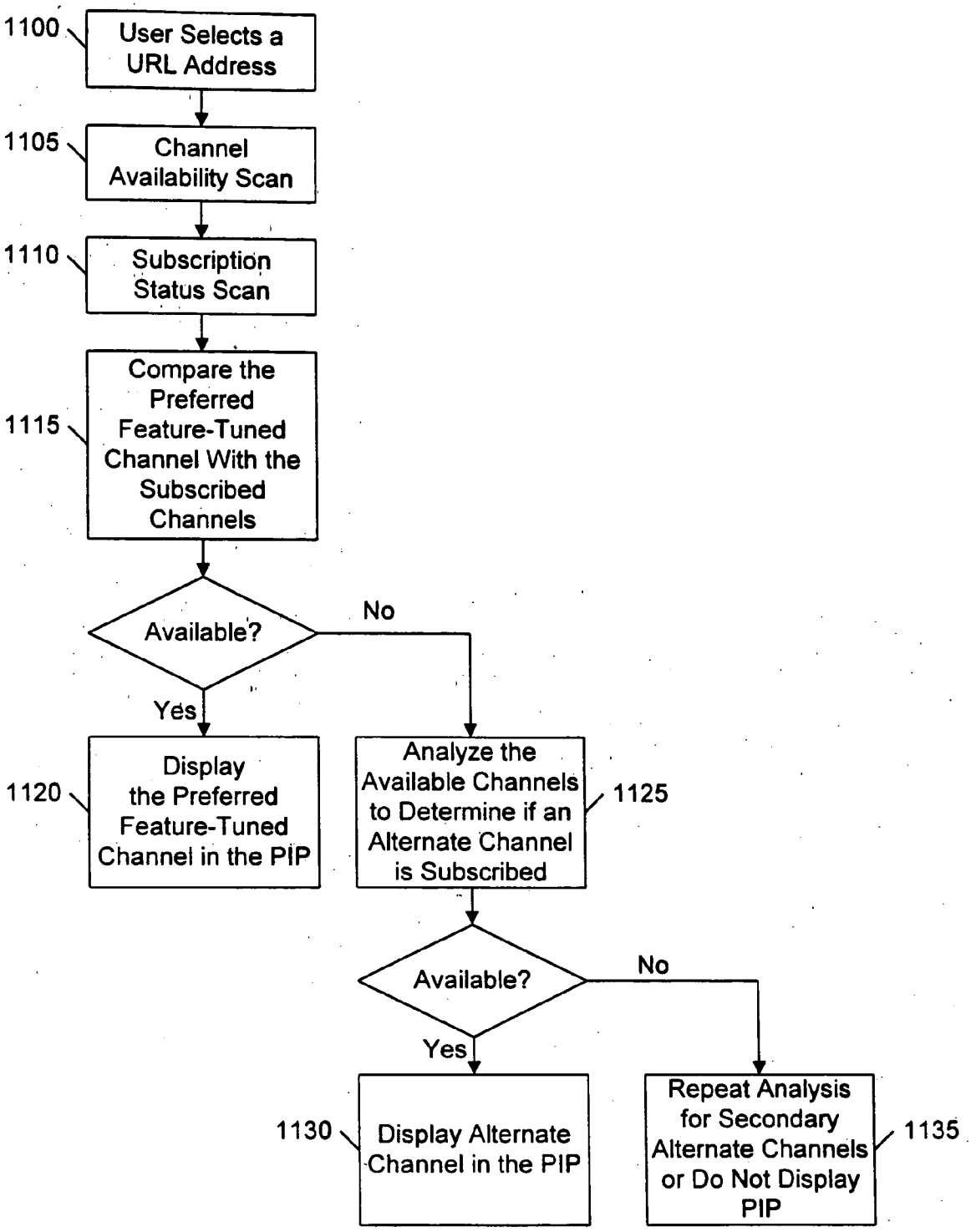

1100
User Selects a URL Address
1105
Channel Availability Scan
1110
Subscription Status Scan
1115
Compare the Preferred Feature-Tuned Channel With the Subscribed Channels
Available?
No
Yes
1120
Display the Preferred Feature-Tuned Channel in the PIP
Analyze the Available Channels to Determine if an Alternate Channel is Subscribed
1125
Available?
No
Yes
1130
Display Alternate Channel in the PIP
Repeat Analysis for Secondary Alternate Channels or Do Not Display PIP
1135

Fig. 21

DISPLAYING COMPLEMENTARY CONTENT SOURCES

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. patent application Ser. No. 09/495,333, filed on Feb. 1, 2000, which is incorporated by reference.

TECHNICAL FIELD

[0002] This application relates to displaying complementary sources of content.

BACKGROUND

[0003] The computer system **100** illustrated in **FIG. 1** represents a typical hardware setup for executing software that allows a user to perform tasks such as communicating with other computer users, accessing various computer resources, and viewing, creating, or otherwise manipulating electronic content—that is, various combinations of text, images, movies, music or other sounds, animations, 3D virtual worlds, and links to other objects. The system includes various input/output (**I/0**) devices (mouse **103**, keyboard **105**, display **107**) and a general purpose computer **109** having a central processor unit (CPU) **111**, an I/**0** unit **113** and a memory **115** that stores data and various programs, such as an operating system **117** and one or more application programs **119**. The computer system **100** also typically includes some sort of communications card or device **121** (e.g., a modem or network adapter) for exchanging data with a network **123** via a communications link **125** (e.g., a telephone line).

[0004] As shown in **FIG. 2**, a user of a computer system can access electronic content or other resources either stored remotely at one or more server systems **200** or locally at the user's own client system **202** (for example, a personal or laptop computer). An example of a server system **200** is a host computer that provides subscribers with online computer services such as e-mail, e-commerce, chat rooms, Internet access, and electronic newspapers and magazines. Users of a host computer's online services typically communicate with one or more central server systems **200** through client software executing on their respective client systems **202**. A client system **202** may connect to a server through a modem **204** and a phone line **206**, or through a direct connection **207** using a protocol such as TCP/IP.

[0005] In practice, a server system **200** typically will not be a single monolithic entity but rather will be a network of interconnected server computers, possibly physically dispersed from each other, each dedicated to its own set of duties and/or to a particular geographical region. In such a case, the individual servers are interconnected by a network of communication links, in known fashion. One such server system is "America Online 5.0" from America Online, Incorporated of Virginia.

[0006] A "browser" is an example of client software that enables users to access and view electronic content stored either locally or remotely, such as in a network environment (local area network (LAN), intranet, Internet). A browser typically is used for displaying documents described in Hyper-Text Markup Language (HTML) and stored on servers connected to a network such as the Internet.

[0007] A user instructs a browser to access an HTML document, or web page, by specifying a network address—or Uniform Resource Locator (URL)—at which a desired document resides. In response, the browser contacts the corresponding server hosting the requested web page, retrieves the one or more files that make up the web page, and then displays the web page in a window on the user's computer screen.

[0008] **FIG. 3** is a screenshot of a browser application **300** (Microsoft Internet Explorer) displaying a typical HTML document, or web page **302**. As shown therein, a single web page **302** may be composed of several different files potentially of different data types **304** (for example, text, graphics, images, virtual worlds, sounds, and movies). In addition, a web page can include links **306** pointing to other resources (for example, web pages or individual files) available on the network. Links **306** can take virtually any visual form. For example, they can appear either as a text string, a graphical image, or a combination of the two. Each link **306** has an associated URL pointing to a location on the network. When a user clicks on, or otherwise selects, a displayed link **306**, the browser automatically will retrieve the web page (or other resource) corresponding to the link's associated URL and execute it or display it to the user.

[0009] Referring to **FIG. 4**, a "web-based TV" system **400** has been developed that makes dual usage of conventional TV sets **402**. That is, a user of web-based TV can watch TV and/or view web pages and otherwise "surf" the Internet. In this regard, a special purpose computer **404**, referred to as a "set top device," is used in connection with standard TV sets **402** for viewing web pages on the Internet. The set top device **404** essentially has the same basic components as the general purpose computer **100** illustrated in **FIG. 1**, except that it also includes a TV tuner **406** for receiving TV programming in the form of broadcast, satellite, and/or cable TV signals. The set top device **404** thus can selectively display two different sources of content (TV programming received by TV tuner **406** and web or network content received by communications card **121**) on the TV monitor **402** connected to the set top device **404**.

[0010] The web content displayed may be a program that is transmitted only on the Internet. For example, the programming may be a sports event for which a broadcast network has the viewing rights but decides not to broadcast the event. In such an instance, the broadcast network and an Internet-based TV provider may cooperate to transmit the event across the Internet. The programming also may be a continuous series of programming that is transmitted on the Internet and not otherwise broadcast.

[0011] Accessories may be added to the web-based TV system **400**, such as, for example, a wireless keyboard **408**. The wireless keyboard **408** can be similar to the keyboard **105** but it also may have specialized keys designed for use in the web-based TV system **400** to make viewing and web surfing easier. Additionally, a wireless remote control **410** may be used to control the set top device **404** and to facilitate channel surfing and web-based TV connections via various buttons **412**, which may be specialized for the web-based TV environment.

[0012] An example of an existing web-based TV system **400** is "WebTV" by Microsoft. Information about WebTV

service may be found at WebTV's various web pages, for example, at http://www.webtv.net and http://developer.webtv.net.

[0013] Users of web-based TV may subscribe to a cable TV provider. Cable TV providers typically provide users an Electronic Programming Guide (EPG), which is a listing of channels that are available to the subscribers of cable TV providers. Typically, an EPG is displayed on a channel (e.g., channel **3**) dedicated for that purpose. **FIG. 5** is an example of an EPG **500** from Yahoo!. As shown therein, a list of channels **501** is presented to users. The channels may be, for example, a combination of broadcast programming and Internet-based programming. The schedule **502** for each channel typically is presented as a list showing the next several hours of programming for each channel. The starting and stopping times **503** are presented as headers at the top of the list of channel schedules. The user may use the controls **504** to limit the number of channels presented. For example, by selecting the "Sci-Fi" category **505**, the user can limit the set of channels presented to those showing science fiction programming. By using conventional graphical user interface (GUI) manipulation techniques, users of EPGs may be able to scroll through the list of channels, and may be able to scroll forward in time **506** to see the schedule for future programs. Users also may be able to select a channel to watch using the EPG.

[0014] Different cable TV providers may offer different EPGs. As a result, some channels may be available to subscribers of one cable TV provider that are not available to subscribers of another cable TV provider. A particular cable TV provider's collection of available TV channels is referred to as its "Channel Availability."

[0015] In general, a cable TV provider will provide its subscribers not only with a basic package of "free" channels that are included with the base price, but also with several "pay" (or "subscription") channels that subscribers optionally can elect to receive for additional charges. The collections of channels that a subscriber elects to receive typically form that subscriber's "channel line-up." The channels in the subscriber's line-up are referred to as the "subscribed channels" and those channels not selected are referred to as the "unsubscribed channels." For a particular subscriber, therefore, the available channels in the EPG are divided into the subscribed channels and the unsubscribed channels.

SUMMARY

[0016] In conventional web-based TV systems, viewers must separately designate for display a computer network content source (e.g., a specific TV channel). Using the present system and techniques, viewers need only designate one of the content sources and the web-based TV system will automatically select a complementary or related TV channel and/or web page. This capability is referred to as "Featured Tuning."

[0017] In one general aspect, Featured Tuning includes a computer-implemented method of displaying related sources of viewing content. The method includes receiving a user input specifying a URL address corresponding to a web page, determining a corresponding television channel and displaying the corresponding television channel.

[0018] Embodiments may include one or more of the following features. For example, receiving the user input specifying the URL address may further include executing a Java script function to specify the URL address. Specifying the URL address may include the user specifying the URL address.

[0019] Determining a corresponding television channel may include comparing the URL address to a list of television channels that includes at least a primary related television channel and selecting for display the primary related television channel. Determining a corresponding television channel may further include selecting for display a secondary related television channel if the primary related television channel is not available or is not one to which the user has subscribed and the user has subscribed to the secondary related television channel and that channel is available. Determining a corresponding related source of viewing content may further include selecting for display a generic page calling, a second URL address, or executing a Java script function, if neither the primary related television channel nor the secondary related television channel are available and part of the user's subscription.

[0020] Determining a corresponding television channel may further include one or more of selecting for display a text/graphics template based on the corresponding selected television channel, selecting for execution an HTML code based on the corresponding selected television channel, selecting for execution a Java script code based on the corresponding selected television channel, selecting for display an advertisement hot spot based on the corresponding selected television channel, and selecting for display a text/graphics template if neither the primary related television channel nor the secondary related television channel are available and part of the user's subscription. A HTML code or a Java script code may be selected for execution and/or an advertisement may be selected for display, based on the text/graphics template selected.

[0021] The computer-implemented method of displaying related sources of viewing content may further include receiving a user input specifying a user-selected television channel and displaying the user-selected television channel in place of the corresponding television channel. The method may further include receiving a user input specifying the first URL address corresponding to a web page and displaying the television channel corresponding to the first URL address.

[0022] The computer-implemented method of displaying related sources of viewing content may further include selecting for display on the video display an object relating to the displayed television channel. Selecting the object for display may include comparing the displayed television channel with a mapping of objects and selecting a primary related object corresponding to the displayed television channel. The primary related object may be a generic page or a generic object. Selecting the related object may include calling a second URL address and/or executing a Java script function.

[0023] In the computer-implemented method of displaying related sources of viewing content, determining a corresponding television channel may include performing a Channel Availability scan to create a list of channels available from the television provider, performing a subscription status scan from the list of channels available to create a list of subscribed channels, comparing the URL address to the

list of subscribed channels, selecting for display the primary related television channel if the primary related television channel is on the list of subscribed channels, and selecting for display the secondary related television channel if the primary related television channel is not on the list of subscribed channels and the secondary related television channel is on the list of subscribed channels.

[0024] In another general aspect, a computer-implemented method of displaying related sources of viewing content includes receiving a user input specifying a television channel, determining a URL address corresponding to the television channel, and displaying a web page corresponding to the URL address.

[0025] In another general aspect, a system for displaying at least two sources of viewing content includes a set top box having instructions stored within the set top box. The instructions are for receiving a user input specifying a URL address corresponding to a web page, determining a corresponding television channel, and displaying the corresponding television channel.

[0026] In another general aspect, computer software stored in a computer-readable medium provides Featured Tuning between a URL address and a Feature Tuned channel. The software includes instructions for causing a computer system to perform the following operations: receive a user input specifying a URL address corresponding to a web page, determine a corresponding television channel, and display the corresponding television channel.

[0027] The system and techniques described here may provide one or more of the following features. For example, a web content screen can be designed to display content related to a subject matter selected for viewing by a user. The related content may include related advertising, which can be marketed at a premium because it will be viewed by users interested in that subject matter. The related content also may include information relating to a television channel available to a user but one which the user has not subscribed to. By viewing information about that channel, the user may be enticed to subscribe to that channel. The system and techniques also provide a distribution channel for Internet-TV providers and broadcast TV providers to distribute interactive content and advertising across local and national television line-ups. The distributed programming may be consistent across the nation and the associated advertising may be relevant to the programming. The programming may by leveraged because the system and techniques enable related offerings, such as information feeds, tickers, polling, contextual chats, targeted advertisements, instant Record/Remind functions, tags, games, and shopping.

[0028] In one general aspect, a computer-implemented method includes receiving a first URL address corresponding to a first web page, accessing content and serving the first web page based on the first URL address, receiving specification of a second URL address corresponding to a second web page, changing from the first web page to the second web page based on the received specification of the second URL address, motivating an automatic change in television channel from a first television channel to a second television channel based upon a change from the first web page to the second web page, and displaying the second television channel.

[0029] Implementations may include one or more of the following features. For example, the method may include browsing the Internet based on the second URL address to identify second content relevant to the second URL address, and displaying the second content. The method also may include receiving the identified content from a source other than a broadcast signal. The method may include browsing the Internet based on the first URL address to identify first content relevant to the first URL address, displaying the first content, determining the first television channel based on the first URL address, and displaying the first television channel.

[0030] Motivating an automatic change may include determining the second television channel based upon the second URL address and changing the television channel from the first television channel to the second television channel in response to receipt of the second URL address. In one implementation, the method may include browsing the Internet based on the second URL address to identify second content relevant to the second URL address, and displaying the second content, where determining the second television channel includes determining the second television channel including television content relevant to but different from the second content. In another implementation, the method may include receiving a user input specifying a user-selected television channel having television content different from and unrelated to the second television channel, and displaying the user-selected television channel in place of the second television channel and concurrently displaying the second content relevant to the second URL address.

[0031] In one implementation, determining the second television channel may include performing a channel availability scan to create a list of channels available from the television provider, performing a subscription status scan on the listed channels available to create a subset list of subscribed channels, identifying a primary related television channel based on the second URL address, determining whether the primary related television channel is one of the listed subscriber channels, if so, selecting, for display, the primary related television channel, if not, identifying a secondary related television channel based on the second URL address, determining whether the secondary related television channel is one of the listed subscriber channels, and if so, selecting, for display, the secondary related television channel.

[0032] In another implementation, determining the second television channel includes comparing the second URL address to a list of television channels including at least a primary related television channel, and selecting, for display, the primary related television channel. Determining the second television channel may further include determining whether the primary related television channel is available, and if not, identifying a secondary related television channel based on the second URL address, determining whether the secondary related television channel is available, and if so, selecting, for display, the secondary related television channel. If the secondary related television channel is not available a third URL address may be called, a Java script function may be executed, or a text/graphics template may be selected for display. In addition, an HTML code based on the text/graphics template selected may be selected for execution, a Java script code based on the text/graphics template selected may be selected for execution, or an advertisement based on the text/graphics template selected may be selected for display.

[0033] In some implementations, a text/graphics template based on the second television channel may be selected for display, an HTML code based on the second television channel may be selected for execution, a Java script code based on the second television channel may be selected for execution, or an advertisement hot spot based on the second television channel may be selected for display.

[0034] Receiving the user input specifying the second URL address may include executing a Java script function to specify the second URL address. Specifying the second URL address may include specifying the second URL address based on input received from a user.

[0035] Some implementations also may include receiving a user input specifying a user-selected television channel having content different from the second television channel, and displaying the user-selected television channel in place of the second television channel and concurrently displaying second content relevant to the second URL address. One implementation further includes receiving a user input specifying the second URL address and displaying the second television channel. Another implementation further includes selecting, for display on the video display, an object relating to the second television channel. Selecting the object for display may include comparing the second television channel with a mapping of objects and selecting a primary related object corresponding to the second television channel.

[0036] Other features will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF THE DRAWINGS

[0037] **FIG. 1** is a block diagram of a computer system.

[0038] **FIG. 2** shows a typical network computing environment.

[0039] **FIG. 3** shows a screenshot of a browser displaying a web page.

[0040] **FIG. 4** is a block diagram of a set top device.

[0041] **FIG. 5** is a screenshot of an electronic programming guide.

[0042] **FIG. 6** is a data table that includes mapped pairings of URL addresses and TV channels or default screens.

[0043] **FIG. 7** is a diagram showing various sources of information available to a set top box in a web-based TV system.

[0044] **FIGS. 8-10** are mockups of screenshots of Featured Tuning between a web page and a cable television channel in a web-based TV environment.

[0045] **FIG. 11** is a partially complete data table, as would be displayed to a user, that includes mapped pairings of URL addresses and TV Channels or default screens.

[0046] **FIG. 12** is a flow chart showing the decision making process of the Featured Tuning function.

[0047] **FIG. 13** is a flow chart illustrating how a Feature Tuned channel is displayed upon accessing a URL address.

[0048] **FIG. 14** is a flow chart showing an example of a reversed Featured Tuning function used to determine which URL address to display based on a TV channel.

[0049] **FIG. 15** is a data table that includes mapped pairings of TV channels and URL addresses.

[0050] **FIG. 16** is a flow chart showing an example of Differentiation by Channel Availability used to determine what object to display in a web content screen.

[0051] **FIG. 17** is a data table that includes mapped pairings of TV channels and URL addresses used in Differentiation by Channel Availability **FIG. 18** is a flow chart showing the use of Channel Availability as a criteria to determine the content of the page or object displayed in Differentiation by Channel Availability.

[0052] **FIGS. 19 and 20** are mockups of screen shots of web content screens resulting from application of Differentiation by Channel Availability.

[0053] **FIG. 21** is a flow chart showing the use of Channel Scanning to determine Channel Availability and subscription status.

DETAILED DESCRIPTION

[0054] A web-based TV provider or an Internet-content provider can control the simultaneous display of web content and TV channels to cause a TV channel to be displayed when a particular web page is viewed. This control is provided using functions such as Content Differentiation by Channel Lineup, Featured Tuning, Channel Scan, and Differentiation by Channel Availability. "Content Differentiation by Channel Lineup" is the ability to create web pages such that viewers of those web pages with differing cable TV Channel Lineups potentially will view different content on those web pages. Content Differentiation by Channel Lineup can be used to provide users with multiple sources of coordinated or related content (i.e., complementary content) whether or not the various content sources are independent of one another. Content Differentiation by Channel Lineup is implemented using a variety of functions, such as Featured Tuning, Channel Scan, and Differentiation by Channel Availability. These functions use mappings between URL addresses, TV channels, and objects, such as hyperlinks and advertisements, to cause complementary content to be displayed based on the content accessed by the user. "Featured Tuning" is the ability to change a TV channel displayed in the picture-in-picture (PIP) window on a monitor to a selected TV channel. Featured Tuning can be used with other functions to decide what TV channel or object, such as an advertisement or hyperlink, to display on a web content screen and then to display that TV channel or object. Featured tuning may include a system and various techniques whereby viewers need only designate one of the content sources and the web-based TV system will automatically select a complementary or related TV channel and/or web page. "Channel Scan" is the ability to determine what channels are available in a TV viewer's Channel Lineup. "Differentiation by Channel Availability" is the ability to decide what object (e.g., TV channel, advertisement, hyperlink) to display on a web content screen based on the availability and/or subscription status of a particular TV channel. Content Differentiation by Channel Lineup also takes into account that different users will have different sources of content available, and further, may have chosen to receive different content even if the same content sources are potentially available.

[0055] **FIG. 6** is an example of a data table **510** that includes mapped pairings of URL addresses **511** and TV channels **512** or a default screen **513**, and provides an example of how Content Differentiation by Channel Lineup may be implemented. The URL addresses **511** and the TV channels **512** may be complementary of the other. The data table is programmed into a set-top box such that clicking on one of the URL addresses listed in the table while on the Internet causes the "selected" mapped TV channel or default screen to be displayed (i.e., Featured Tuning) in a window (referred to as a "picture-in-picture" or "PIP") on a computer monitor. The mapping can be specified by an Internet content provider and downloaded from a host computer, or it can be specified locally by the user. The Internet content provider (e.g., a web site operator, online service provider (OSP), web-based TV provider (which might be the same as the OSP)) typically is not the same as the TV service provider (e.g., cable TV provider, satellite TV provider multiple broadcast TV networks) and each operates independently of the other.

[0056] In **FIG. 6**, Featured Tuning is used to provide users with multiple sources of coordinated or related content (i.e., complementary content) that come from content sources that may be, but are not required to be, independent of one another. For example, Internet content providers may create a content screen that is complementary to the content of a mapped TV channel that appears in the PIP window on the content screen when the URL address is initially accessed.

[0057] Referring to **FIG. 7**, a set top box **600** may use any or all of a variety of methods to gather web content and TV content from any of several different sources. As illustrated, the set top box **600** can gather content from a host computer system **603** (e.g., a web-based TV service provider) via a public or private network and telephone lines **606**, from a satellite **609** or a network TV broadcast **612** using microwave or wireless communications **615**, or from a cable TV provider by means of direct cabling **618**. The transport means shown in **FIG. 7** are exemplary only, and are not necessarily comprehensive. In general, essentially any available transport mechanism may be used to gather content from multiple sources.

[0058] **FIGS. 8-10** are mockups of screenshots showing examples of web pages with a TV content overlay and displaying content directly from a set-top box **627**. For example, **FIG. 8** is a mockup of a screenshot of a "content screen" or "Internet-based TV page"**630** as it would be viewed by a user who subscribes to an Internet provider **633** and a cable TV provider **636**. Content screen **630** is a mosaic or tapestry of multiple content sources. Set-top box **627** receives content from multiple sources (cable TV provider, satellite TV, computer network, broadcast TV signals, etc.) and can combine or otherwise manipulate the received content for display on a TV monitor **639**. Based on the input received from the set-top box **627**, the TV monitor **639** is capable of simultaneously displaying content from two or more of the various content sources. For example, in the screen shot **630**, web-page content can be displayed in the background (e.g., a listing of soon-to-be released movies **642**) while other computer network content (e.g., links **645** and/or advertisements **648**, which can be generated locally by the set-top box **627**, received from the host computer **633**, or from a URL) can be displayed in display regions (e.g., windows **651** and **654**) overlaid on the background content. Additionally, TV content can be displayed in yet another window **657**, the PIP window overlaid on the background content.

[0059] The particular content screen **630** in the example of **FIG. 8** is directed to movies and therefore includes complementary content, such as the movie listing **642** in the background, the TV PIP display **657** of a movie channel, the column of interactive links **645** to movie-related web pages, and the interactive hotspot **648** (a user-clickable link to a specified resource (e.g., a URL on the Internet) displaying advertising). Referring again to **FIG. 6**, if the web page accessed and displayed in content screen **630** is http://www.bb.com, the display **657** contains complementary channel **111**, a movie channel, if that channel is available. The set-top box **627** can use various Featured tuning techniques to automatically select and display complementary or related content.

[0060] That is, each or any of the various content sources (e.g., listing **642**, movie channel **657**, interactive links **645**, hot spot advertisements **648**) displayed in **FIG. 8** can be altered automatically by the set-top box **627** or selected in the first instance automatically by the set-top box based on one or more content choices made by the user. Alternatively, or in addition, Featured tuning can be based on a user's Channel Availability and/or on predetermined pairings of TV channels and web pages stored by the set-top box or the host computer. When the user selects the URL address associated with a particular web page (for example, the web page from which the listing **642** was retrieved), software or hardware in the set top box is used to select and display a complementary TV channel, for example, the movie channel. To accomplish this, the set-top box is programmed to compare the user-selected URL address to a list of predetermined channels that are eligible for display in the PIP, and then to display a corresponding channel.

[0061] As described in **FIG. 8** above, the user has a Channel Lineup that includes the movie channel, which is the primary complementary channel and is displayed in the PIP window when a particular URL address is accessed. If another user does not have the movie channel as one of its subscribed channels, another complementary channel, the secondary complementary channel, is displayed. For example, if the movie channel is a premium cable channel and a subscriber has not subscribed to that channel, a secondary complementary channel is displayed. If the secondary channel is not available, a tertiary complementary channel is displayed. Multiple complementary channels can be mapped with an URL address and the software in the set-top box can be configured to compare the complementary channels to the user's EPG to select the channel to display. The software can be programmed to cause there to be no PIP if there are no complementary channels. The software also can be programmed to display an ad as a substitute for the PIP if there are no complementary channels.

[0062] More specifically, **FIG. 9** illustrates a screenshot of the content screen **630** of **FIG. 8** as might be viewed by a viewer having the pairings of **FIG. 6** who is not a subscriber of the premium movie channel (channel **111** of data table **510** of **FIG. 6**) that is selected by the Internet content provider as the primary complementary channel. The screenshot **630** is the same except that a PIP window **660**

displays a secondary channel, an entertainment channel (channel **23**) from cable TV, instead of the PIP window with the movie channel (channel **111**).

[**0063**] When the user selects the URL address associated with the screen content **630**, software or hardware in the set-top box **627** compares the requested URL address to a list of channels mapped to that address to determine if the primary complementary channel is available and subscribed. If not available or subscribed, the software goes through the mapping until a complementary channel is displayed or no PIP window is displayed. Although the software will be the same for each set-top box, the mapping between URL addresses and complementary channels may vary between individual users based on a number of reasons, such as (1) geographic locale; (2) time zone; (3) identity of user's cable TV provider; (4) user's specified channel line-up; and (5) user-selected preferences. The mappings can be modified by downloading new information from a host computer, or locally by the user.

[**0064**] **FIG. 10** illustrates a screenshot showing content screen **630** as it would be viewed by a broadcast TV user who does not have a subscription to either of the movie or entertainment channels used as the primary and secondary complementary channels, respectively, above. Based on this user's available TV programming, the Internet content provider has decided that there is not a related channel and, therefore, has not selected a tertiary complementary channel for inclusion in the mapping table. This decision making is implemented by downloading data from the host computer to the user's set-top box. Thus, when the broadcast TV user selects the URL address (http://www.bb.com) associated with content screen **630**, and the software or hardware in the set top box **627** compares the URL address to the mapped complementary channels (see **FIG. 6**) and finds that a complementary channel is not mapped for that URL address, a default PIP will be displayed. The default PIP may be a rearrangement of the content screen **630** to fill the space in which the PIP window normally would be displayed. The rearrangement could include increasing the size or prominence of the advertising hotspot **648**, as illustrated in **FIG. 10**.

[**0065**] The above Featured Tuning examples are based on mapped pairings between URL addresses and TV channels. The mapping may be created, for example, by Internet content service providers, Internet-based TV service providers, or users of either service. Internet or Internet-based TV service providers may download the mapping into the set top box and store it in memory there. Referring to **FIG. 11**, users may be prompted to complete a partially complete mapping table **660** that lists primary, secondary, and tertiary TV channels **663** and/or URL addresses **666**, and allows users to complete the mapping by entering their preferred channels and/or URL addresses into corresponding unmapped pairing boxes **669**. The mapping table **660** may include a list of complementary primary, secondary and tertiary channels **672** without a paired URL address **675**. The table **660** also may include a completed pairing **678** of complementary channels mapped with a corresponding URL address. The table also may include a partially completed pairing **681** that includes a URL address and a primary complementary channel, where users are prompted to enter the secondary and tertiary paired channels. In partially complete mapping table **660**, the Internet or Internet-based TV service provider has some input as to the pairings but permits users also to have input into the pairings. This may be useful, for example, for users that view web pages that have not been mapped by service providers and who want to take advantage of Featured Tuning.

[**0066**] In general, Featured Tuning that implements mapped pairings between URL addresses and TV channels follows a flow chart **700** as illustrated in **FIG. 12**. Initially, a user selects a URL address (step **705**) that causes software or hardware in the set top box to compare the selected URL address to a mapping between URL addresses and TV channels to find a primary Feature Tuned channel (step **710**). If that channel is available (step **715**), it is displayed (step **720**). If the primary Feature Tuned channel is not available (step **715**), the software or hardware compares the selected URL address to the mapping to find a secondary Feature Tuned channel (step **725**). If that channel is available (step **730**), it is displayed (step **735**). If the secondary Feature Tuned channel is not available (step **730**), the software or hardware compares the selected URL address to the mapping to find a tertiary Feature Tuned channel (step **740**). If that channel is available (step **745**), it is displayed (step **750**). The mapping and software/hardware can be created such that a search is made only for a primary Feature Tuned channel or for even more levels of channels.

[**0067**] **FIG. 13** illustrates an example showing that Featured Tuning can be used to cause a default Feature Tuned channel to be displayed in the PIP window under a variety of circumstances. This capability provides assurance to the Internet-based TV provider that a particular mapped channel always will be displayed at the time that the respective mapped URL address is accessed, although the Feature Tuned channel can subsequently be changed. Initially, a user selects a URL address (step **760**), such as the URL address of a gardening website. Alternatively, the URL address may be called as a result of a Java script function executed from a different content screen. Next, a Feature Tuned TV channel, which has been mapped with the URL address specified by the user, is displayed in the PIP window when that URL is selected (step **765**). At that point, the user can select a different channel for display in the PIP (i.e., the user can override the Feature Tuned choice of TV channels) (step **770**). The user then may decide to select another URL address for viewing (step **775**).

[**0068**] When the other URL address is accessed and the corresponding content screen is displayed, a corresponding Feature Tuned channel will be displayed. If the Featured Tuning Function has not been set to display a channel when the other URL address is accessed, a channel will not be displayed in the PIP window. This may be the case if the Internet-based TV provider does not have a program in its lineup that has content similar to the other web page and chooses not to map a channel to that URL address. It also may be the case that, because of the large number of URL addresses, a Internet-based TV provider may not have the interest or resources to map every URL address with a channel. After viewing the content of the different URL address, the user may again select the originally selected URL address (step **780**), which causes the Feature Tuned channel to be displayed again in the PIP (step **785**). To reiterate, Feature Tuning can be set such that accessing URL addresses causes selected Feature Tuned channels to be displayed in the PIP window whether or not the user is

accessing that URL address for the first time in a viewing session, after initially viewing that URL address and then selecting other URL addresses, or under other conditions.

[0069] **FIGS. 14 and 15** illustrate another implementation of Featured Tuning in which Featured Tuning functions in a manner that is reverse to the implementations previously illustrated. In **FIG. 14**, the user selects a TV channel to view (step **800**), which causes the set top device to compare a mapping **805** (**FIG. 15**) between TV channels **810** and URL addresses **815** (step **820**) to Feature Tune a corresponding, primary URL address **825** (step **830**) based on the selected TV channel **835**. If the primary URL address **825** is available, it will be displayed (step **840**). If it is not available, for example, through blocking or because it is not functioning, the set top box searches the mapping for a secondary URL address **845** (step **850**), which is then displayed (step **855**) if available. Other levels or URL addresses also may be mapped to the TV channel. This implementation can be used as a separate function. It also can be implemented, for example, with the method illustrated in the Feature Tuning example described above in **FIG. 13**, step **775**, in which the user selects a different URL address to view. Implementing this "reverse" Featured Tuning ensures that the web page content displayed with the user-selected channel is complementary to that channel.

[0070] The examples shown in **FIGS. 6-15** provide illustrations of using Featured Tuning to implement Content Differentiation by Channel Lineup so as to vary the TV channel displayed in the PIP window or elsewhere on web content screens. Content Differentiation by Channel Lineup also can be implemented using Differentiation by Channel Availability so that web-based TV service providers can provide or publish a screen of content in such a way that the content displayed can be varied as a function of the cable channels available and subscribed to by a subscriber of a cable TV provider.

[0071] **FIGS. 16 and 17** illustrate one example of "Differentiation by Channel Availability," in which the decision making method is used to decide what object, such as a URL address corresponding to an advertisement or a hyperlink to related subject matter content, to display in the web content screen. The decision making method is based on a specific TV channel's status, i.e., availability of the channel in the user's line-up. Initially, a user selects a URL address (step **900**), which causes the set top box to perform the Featured Tuning function to select a Feature Tuned channel for display in the PIP window (step **905**), as described above. The set top box may be programmed with a mapping as illustrated in **FIG. 6**. The set top box then determines what object is mapped with the Feature Tuned channel (step **910**). The corresponding object will then be displayed along with the Feature Tuned channel (step **915**). Referring to **FIG. 17**, the set top box is programmed with a mapping **918** that includes TV channels **921** mapped with objects **924**. The objects **924** may be, for example, advertisements **927**; generic objects **930**, such as a logo of the Internet-based TV service provider; secondary URL addresses **933**; or Java script functions **936**. Typically, the object displayed has a complementary relationship with the URL address and its mapped Feature Tuned channel. For example, if the URL address is to a gardening web page, the Feature Tuned channel may be to a TV channel devoted to gardening and the displayed object **924** may be an advertisement for gardening implements or a link to another related gardening web page. Although only a primary object **924** is shown in **FIG. 17**, additional objects may be displayed with the primary object. For example, a second advertisement that is complementary to the Feature Tuned channel might be displayed in a different region on the web-content screen.

[0072] Typically, the object mapped with a channel, and displayed when that channel is displayed, will be based on whether the TV channel is a national entity (e.g., NBC, CBS, ABC, Fox) or a local affiliate (e.g., Washington, D.C. channel **4**) of a national entity. For example, if the Feature Tuned channel is a CBS station that is broadcast nationwide by cable providers, the object associated with the channel may be a link to a listing and schedule of movies that will be broadcast by CBS to its affiliates over the next week. If the Feature Tuned channel is a local CBS affiliate viewed only in its local region and no object has been mapped to the local affiliate, the object displayed will default to the object mapped to the national entity, i.e., to the link to the listing and schedule of nationally broadcast CBS movies. If an object has been mapped to the local affiliate, that object will be displayed when the local affiliate is displayed.

[0073] Because the Differentiation by Channel Availability decision making function is programmed into a set top box, the function is not specifically associated with an Internet user or that user's Internet account. Thus, if two Internet users at different times access the Internet through the same set top box, both users will view the same Feature Tuned channels and objects selected by Differentiation by Channel Availability associated with the same URL addresses. This is in contrast to the situation where two users in different geographic regions with different subscribed channels access the same URL address but may see different TV channels in the PIP window and objects displayed on the web page. This difference results from the function being programmed to display channels based on whether that channel is available and part of the user's subscription. If a channel is not available and part of the user's subscription because, for example, of regional differences in Channel Availability, another channel will be displayed. As illustrated in **FIG. 17**, objects are mapped to channels and, therefore, the object displayed will be the object mapped to the channel displayed.

[0074] One rationale for this method of differentiation is that the relevant interests of people viewing the same channel are likely to be similar. Thus, for example, two people viewing a Feature Tuned travel channel are likely to be interested in travel and also are likely to be interested in viewing complementary objects, such as objects directed to travel. Consequently, two people using the same set top box to access a web page relating to travel, and which is mapped to a Feature Tuned channel relating to travel, are likely to be interested in viewing an object related to travel. Numerous other examples exist of channels directed to a narrow topic likely to be viewed by people having similar interests in some areas, such as channels directed to the weather, wrestling, gardening, or politics. Accordingly there is a significant probability that objects directed to certain topics will be of interest to viewers of complementary channels that relate to associated topics and, therefore, there is a benefit to creating the mapping between complementary URL addresses, Feature Tuned channels and objects in a set top box in a manner independent of the user.

[0075] **FIGS. 18-20** illustrate another example of "Differentiation by Channel Availability," in which the decision-making method is used to decide which graphics template, corresponding to formats of various web pages, to display as a web content screen based on a specific TV channel's status, i.e., the availability of the channel in the user's line-up. In this manner, the Internet-based TV provider can change the format of the web content screen based on the availability, or lack thereof, of a Feature Tuned channel. For example, if a certain Feature Tuned channel is available, various hot spots, links, and objects may be displayed that rely on and relate to the channel. If the channel is not available, the format of the web content screen may be varied by necessity to display other hot spots, links, and objects that do not rely on the user viewing the channel but that may nonetheless relate to the content of the channel.

[0076] In this method, the user selects a URL address (step **1000**), such as a gardening website, which causes the set top box to compare the mapping between the URL addresses and the Feature Tuned channels, as described above with reference to **FIG. 6**, to determine the availability of a Feature Tuned channel associated with that URL address (step **1005**).

[0077] If there is no Feature Tuned channel associated with that URL address (step **1010**), the set top box, based on information either stored locally or received from a host computer, displays a text or graphics template (step **1015**), which is a template for the web content screen **1016** and may include links **1017**, hotspots **1018**, advertisements **1019**, and other screen real estate complementary to the URL address, as illustrated in **FIG. 19**. Because the particular Feature Tuned channel is unavailable, the template displayed may, for example, provide information relating to the content displayed on the unavailable Feature Tuned channel. The text or graphics template also may include an ad for the unavailable Feature Tuned channel. The ad may include a link to email the user's TV provider with a request to either order the channel or have the channel added to the provider's line-up.

[0078] Thus, if the unavailable Feature Tuned channel is a gardening channel, the template displayed may include, for example, a number of photographs **1020** and **1021** from the show currently broadcast on that channel to illustrate typical information that is provided as part of the show. The underlying notion is to provide the viewer with a taste of what this currently unsubscribed channel offers, and thereby entice the viewer to subscribe to that channel. In other words, the template acts as an abstract and/or advertisement for the unsubscribed channel. If the Feature Tuned channel is available (step **1010**), the Internet provider may display a different content screen **1024** that may have a different text and graphics template, but one that includes a PIP window **1025** displaying the Feature Tuned channel (step **1027**) that replaces photographs **1020** and **1021** of **FIG. 19**.

[0079] In addition, HTML and/or Java script code that is downloaded as part of a web page's content or as part of a template may be differentiated based on a channel's availability. Referring again to **FIG. 18**, if the Feature Tuned channel is not available (step **1010**), the set top box may execute, along with the text or graphics template, a HTML and/or Java script code (step **1030**). Because the channel is not available, the code may provide hyperlinks **1032** to information related to the subject matter of the broadcast displayed on the Feature Tuned channel. If the unavailable Feature Tuned channel is a gardening channel, the code may provide hyperlinks to gardening web pages and related advertisements by causing a window to be displayed that includes those hyperlinks.

[0080] On the other hand, if the Feature Tuned channel is available (step **1010**), the set top box can execute with the Feature Tuned channel a different HTML and/or Java script code **1034** (step **1035**) that may more closely relate to the Feature Tuned channel than would the code executed when the Featured Tuned channel is unavailable. Assuming still that the Feature Tuned channel is the gardening channel, the code also may include hyperlinks to a web page produced in connection with the Feature Tuned channel.

[0081] **FIGS. 18-20** also illustrate an implementation of "Differentiation by Channel Availability" (i.e., the decision-making method used to decide what to display based on a specific TV channel's status, such as its availability in the user's line-up) applied to advertising. In this manner, the Internet-based TV provider can vary the advertising based on a channel's availability. Referring again to **FIG. 18**, if the Feature Tuned channel is not available (step **1010**), the set top devices can be programmed to display the advertisements **1019** (step **1040**). Because in this case the channel is not available, the advertisements may be designed so that they do not rely on viewing the channel to provide context for the product promoted. Again, if the unavailable Feature Tuned channel is a gardening channel, the advertisement may be to a product used on the show. Moreover, the advertisement may provide an in-depth description of a feature of the product that would otherwise be evident only from viewing the channel.

[0082] If the Feature Tuned channel is available (step **1010**), the Internet provider also can display a different advertisement **1043** (step **1045**) that may be closely related to a product included in a broadcast on the Feature Tuned channel and for which less information is necessary for someone viewing the broadcast. Assuming still that the Feature Tuned channel is the gardening channel, the advertisements may be brief displays of information on how to order a product that was used on a program associated with that channel. In this case, the international content of the advertisement can be abbreviated based on context that the viewer receives from the Feature Tuned channel. As a result, advertisement space usage and efficiency are enhanced. After viewing the program, the viewer likely would have enough information about the product to have made a purchase decision, i.e., to buy or not to buy. Thus, the purchasing-inclined viewer would be interested in learning how to purchase the product, and less interested in seeing repetitive information about the product.

[0083] Another reason to differentiate advertising by Channel Availability is the undesirability of displaying advertisements for a program, or closely related to the subject matter of the program, if that channel is unavailable in the user's Channel Lineup. That is, in one sense, displaying advertisements for unavailable programs could be viewed as an inefficient usage of ad space. On the other hand, depending on the Internet-based TV service provider's preferences, displaying ads for currently unavailable programs could entice the viewer to subscribe to the corresponding channel.

[0084] As described above, in a typical implementation of Content Differentiation by Channel Lineup using Featured Tuning and Differentiation by Channel Availability, the web-based TV provider determines each subscriber's Channel Lineup (i.e., set of available channels). AOLTV, a Web-based TV service offered by America Online, for example, provides a set top box that has the ability to perform a "Channel Scan", which is defined as the ability to scan the signals received by the TV tuner and determine the channels available and subscribed. The scan may be performed periodically to sense and compensate for changes in Channel Availability and/or as a result of a user's changing his/her cable TV subscription. The set top box performs the "Channel Scan" using software provided, for example, by the Internet-based TV content provider. The results of the Channel Scan are stored in the set top box and are used along with the mapping between the URL addresses and Feature Tuned channels to cause an available and subscribed channel to be displayed when a URL address is accessed. The results also are used to determine what objects, as described above, to display on the web content screen.

[0085] **FIG. 21** illustrates a decision-making method that could be used on a set top box, for example, that involves scanning for Channel Availability and subscription status, and Featured tuning. First, a user selects a URL address, such as a movie-related page, which starts a decision-making hierarchy to determine what to display in a PIP (step **1100**). The set top box then performs a Channel Availability scan of the TV tuner in the set top box to determine which channels are available to viewers in that locale (step **1105**).

[0086] The set top box next performs a subscription status scan to determine the subscription status of each available channel, i.e., which available channels have been subscribed to for that set top box (step **1110**). The set top box compares the preferred Feature Tuned channel for the user-selected URL address with the subscribed channels to determine if the preferred Feature Tuned channel is available for display (step **1115**). If the channel is available, it is displayed, for example, in the PIP (step **1120**). If the channel is unavailable, the set top box analyzes the available channels to determine if an alternate channel is available (step **1125**). This step is repeated based on decision-making criteria until an alternate channel is displayed in the PIP or until it is determined that no corresponding channel is available (in which case the PIP optionally may not be displayed).

[0087] Although **FIG. 21** only illustrates the scan and Featured Tuning aspects, other features described above may be employed. For example, applying Differentiation by Channel Availability to text/graphics, HTML and Java script code, and advertising can be used to ensure that the content displayed is complementary to the displayed Feature Tuned channel. In this manner, the set top box scans the available channels, displays a Feature Tuned channel in the PIP, and then determines what other complementary content should be displayed, such as links to related web pages, advertisements, and related text or graphics.

[0088] Various implementations of the systems and techniques described here may be realized in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations thereof. A system or other apparatus that uses one or more of the techniques and methods described here may be implemented as a computer-readable storage medium, configured with a computer program, where the storage medium so configured causes a computer system to operate on input and/or generate output in a specific and predefined manner. Such a computer system may include one or more programmable processors that receive data and instructions from, and transmit data and instructions to, a data storage system, and suitable input and output devices.

[0089] Each computer program may be implemented in a high-level procedural or object-oriented programming language, or in assembly or machine language if desired; and in any case, the language may be a compiled or interpreted language. Suitable processors include, by way of example, both general and special purpose microprocessors.

[0090] Generally, a processor will receive instructions and data from a read-only memory and/or a random access memory. Storage devices suitable for tangibly embodying computer program instructions and data include all forms of non-volatile memory, including semiconductor memory devices, such as EPROM, EEPROM, and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROM disks.

[0091] Any of the foregoing may be supplemented by, or implemented in, specially-designed ASICs (application-specific integrated circuits).

[0092] A number of implementations have been described. Nevertheless, it will be understood that various modifications may be made. Accordingly, other implementations are within the scope of the following claims.

What is claimed is:

1. A computer-implemented method comprising:

receiving a first URL address corresponding to a first web page;

accessing content and serving the first web page based on the first URL address;

receiving specification of a second URL address corresponding to a second web page;

changing from the first web page to the second web page based on the received specification of the second URL address;

motivating an automatic change in television channel from a first television channel to a second television channel based upon a change from the first web page to the second web page; and

displaying the second television channel.

2. The method of claim 1 further comprising:

browsing the Internet based on the second URL address to identify second content relevant to the second URL address; and

displaying the second content.

3. The method of claim 2 further comprising receiving the identified content from a source other than a broadcast signal.

4. The method of claim 2 further comprising:

browsing the Internet based on the first URL address to identify first content relevant to the first URL address;

displaying the first content;

determining the first television channel based on the first URL address; and

displaying the first television channel.

5. The method of claim 1 wherein motivating an automatic change further comprises:

determining the second television channel based upon the second URL address; and

changing the television channel from the first television channel to the second television channel in response to receipt of the second URL address.

6. The method of claim 5 further comprising:

browsing the Internet based on the second URL address to identify second content relevant to the second URL address; and

displaying the second content; and

wherein determining the second television channel comprises determining the second television channel including television content relevant to but different from the second content.

7. The method of claim 5 further comprising:

receiving a user input specifying a user-selected television channel having television content different from and unrelated to the second television channel; and

displaying the user-selected television channel in place of the second television channel and concurrently displaying the second content relevant to the second URL address.

8. The method of claim 5 wherein determining the second television channel comprises:

performing a channel availability scan to create a list of channels available from the television provider;

performing a subscription status scan on the listed channels available to create a subset list of subscribed channels;

identifying a primary related television channel based on the second URL address;

determining whether the primary related television channel is one of the listed subscriber channels;

if so, selecting, for display, the primary related television channel;

if not, identifying a secondary related television channel based on the second URL address;

determining whether the secondary related television channel is one of the listed subscriber channels; and

if so, selecting, for display, the secondary related television channel.

9. The method of claim 5 wherein determining the second television channel comprises:

comparing the second URL address to a list of television channels comprising at least a primary related television channel; and

selecting, for display, the primary related television channel.

10. The method of claim 9 wherein determining the second television channel further comprises:

determining whether the primary related television channel is available; and

if not, identifying a secondary related television channel based on the second URL address;

determining whether the secondary related television channel is available; and

if so, selecting, for display, the secondary related television channel.

11. The method of claim 10 further comprising, if the secondary related television channel is not available, calling a third URL address.

12. The method of claim 10 further comprising, if the secondary related television channel is not available, executing a Java script function.

13. The method of claim 9 further comprising selecting, for display, a text/graphics template based on the second television channel.

14. The method of claim 9 further comprising selecting, for execution, an HTML code based on the second television channel.

15. The method of claim 9 further comprising selecting, for execution, a Java script code based on the second television channel.

16. The method of claim 9 further comprising selecting, for display, an advertisement hot spot based on the second television channel.

17. The method of claim 10 further comprising selecting, for display, a text/graphics template if neither the primary related television channel nor the secondary related television channel are available.

18. The method of claim 17 further comprising selecting, for execution, an HTML code based on the text/graphics template selected.

19. The method of claim 17 further comprising selecting, for execution, a Java script code based on the text/graphics template selected.

20. The method of claim 17 further comprising selecting, for display, an advertisement based on the text/graphics template selected.

21. The method of claim 1 wherein receiving the user input specifying the second URL address further comprises executing a Java script function to specify the second URL address.

22. The method of claim 1 wherein specifying the second URL address comprises specifying the second URL address based on input received from a user.

23. The method of claim 1 further comprising:

receiving a user input specifying a user-selected television channel having content different from the second television channel; and

displaying the user-selected television channel in place of the second television channel and concurrently displaying second content relevant to the second URL address.

24. The method of claim 23 further comprising receiving a user input specifying the second URL address and displaying the second television channel.

25. The method of claim 23 further comprising selecting, for display on the video display, an object relating to the second television channel.

26. The method of claim 25 wherein selecting the object for display comprises comparing the second television channel with a mapping of objects and selecting a primary related object corresponding to the second television channel.

27. A computer program, stored in a computer-readable medium, comprising instructions for causing a computer system to:

receive a first URL address corresponding to a first web page;

access content and serve the first web page based on the first URL address;

receive specification of a second URL address corresponding to a second web page;

change from the first web page to the second web page based on the received specification of the second URL address;

motivate an automatic change in television channel from a first television channel to a second television channel based upon a change from the first web page to the second web page; and

display the second television channel.

28. The computer program of claim 27 further comprising instructions for causing a computer system to receive the identified content from a source other than a broadcast signal.

29. The computer program of claim 27 wherein instructions for causing a computer system to motivate an automatic change further comprises instructions for causing a computer system to:

determine the second television channel based upon the second URL address; and

change the television channel from the first television channel to the second television channel in response to receipt of the second URL address.

30. The computer program of claim 29 further comprising instructions for causing a computer system to:

browse the Internet based on the second URL address to identify second content relevant to the second URL address; and

display the second content; and

wherein instructions for causing a computer system to determine the second television channel comprises instructions for causing a computer system to determine the second television channel including television content relevant to but different from the second content.

31. The computer program of claim 29 further comprising instructions for causing a computer system to:

receive a user input specifying a user-selected television channel having television content different from and unrelated to the second television channel; and

display the user-selected television channel in place of the second television channel and concurrently display the second content relevant to the second URL address.

32. The computer program of claim 29 wherein instructions for causing a computer system to determine the second television channel comprises instructions for causing a computer system to:

perform a channel availability scan to create a list of channels available from the television provider;

perform a subscription status scan on the listed channels available to create a subset list of subscribed channels;

identify a primary related television channel based on the second URL address;

determine whether the primary related television channel is one of the listed subscriber channels;

if so, select, for display, the primary related television channel;

if not, identify a secondary related television channel based on the second URL address;

determine whether the secondary related television channel is one of the listed subscriber channels; and

if so, select, for display, the secondary related television channel.

33. The computer program of claim 29 wherein instructions for causing a computer system to determine the second television channel comprises instructions for causing a computer system to:

compare the second URL address to a list of television channels comprising at least a primary related television channel; and

select, for display, the primary related television channel.

34. The computer program of claim 33 wherein instructions for causing a computer system to determine the second television channel further comprises instructions for causing a computer system to:

determine whether the primary related television channel is available; and

if not, identify a secondary related television channel based on the second URL address;

determine whether the secondary related television channel is available; and

if so, select, for display, the secondary related television channel.

35. The computer program of claim 27 further comprising instructions for causing a computer system to:

receive a user input specifying a user-selected television channel having content different from the second television channel; and

display the user-selected television channel in place of the second television channel and concurrently display second content relevant to the second URL address.

36. A computer program, stored in a computer-readable medium, the computer program comprising:

means for receiving a first URL address corresponding to a first web page;

means for accessing content and serve the first web page based on the first URL address;

means for receiving specification of a second URL address corresponding to a second web page;

means for changing from the first web page to the second web page based on the received specification of the second URL address;

means for motivating an automatic change in television channel from a first television channel to a second television channel based upon a change from the first web page to the second web page; and

means for displaying the second television channel.

37. The computer program of claim 36 further comprising means for receiving the identified content from a source other than a broadcast signal.

38. The computer program of claim 36 wherein means for motivating an automatic change further comprises:

means for determining the second television channel based upon the second URL address; and

means for changing the television channel from the first television channel to the second television channel in response to receipt of the second URL address.

39. The computer program of claim 38 further comprising:

means for browsing the Internet based on the second URL address to identify second content relevant to the second URL address; and

means for displaying the second content; and

wherein means for determining the second television channel comprises means for determining the second television channel including television content relevant to but different from the second content.

40. The computer program of claim 38 further comprising:

means for receiving a user input specifying a user-selected television channel having television content different from and unrelated to the second television channel; and

means for displaying the user-selected television channel in place of the second television channel and concurrently displaying the second content relevant to the second URL address.

41. The computer program of claim 38 wherein means for determining the second television channel comprises:

means for performing a channel availability scan to create a list of channels available from the television provider;

means for performing a subscription status scan on the listed channels available to create a subset list of subscribed channels;

means for identifying a primary related television channel based on the second URL address;

means for determining whether the primary related television channel is one of the listed subscriber channels;

if so, means for selecting, for display, the primary related television channel;

if not, means for identifying a secondary related television channel based on the second URL address;

means for determining whether the secondary related television channel is one of the listed subscriber channels; and

if so, means for selecting, for display, the secondary related television channel.

42. The computer program of claim 38 wherein means for determining the second television channel comprises:

means for comparing the second URL address to a list of television channels comprising at least a primary related television channel; and

means for selecting, for display, the primary related television channel.

43. The computer program of claim 42 wherein means for determining the second television channel further comprises:

means for determining whether the primary related television channel is available; and

if not, means for identifying a secondary related television channel based on the second URL address;

means for determining whether the secondary related television channel is available; and

if so, means for selecting, for display, the secondary related television channel.

44. The computer program of claim 36 further comprising:

means for receiving a user input specifying a user-selected television channel having content different from the second television channel; and

means for displaying the user-selected television channel in place of the second television channel and concurrently displaying second content relevant to the second URL address.

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