(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 May 2011 (26.05.2011)

PCT

(10) International Publication Number
WO 2011/062690 A1

(51) International Patent Classification:
G06F 17/30 (2006.01)

(21) International Application Number:
PCT/US2010/051506

(22) International Filing Date:
5 October 2010 (05.10.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

12/622,766	20 November 2009 (20.11.2009)	US
12/623,096	20 November 2009 (20.11.2009)	US
12/623,123	20 November 2009 (20.11.2009)	US

(71) Applicant *(for all designated States except US)*: **ROVI TECHNOLOGIES CORPORATION** [US/US]; 2830 De La Cruz Boulevard, Santa Clara, California 95050 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **DOW, Christopher** [US/US]; 742 Loma Verde Avenue, Palo Alto, California 94303 (US). **GEVORGYAN, Gevorg** [AM/US]; 1429 Valley View Rd Apt 15, Glendale, California 91202 (US). **WHITE, Gareth** [US/US]; 7 Apple Blossom Way, Groveland, Massachusetts 01834 (US).

(74) Agents: **MADDEN, Robert, B.** et al.; Schwegman, Lundberg & Woessner, P.A., P.O. Box 2938, Minneapolis, Minnesota 55402 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: DATA DELIVERY FOR A CONTENT SYSTEM

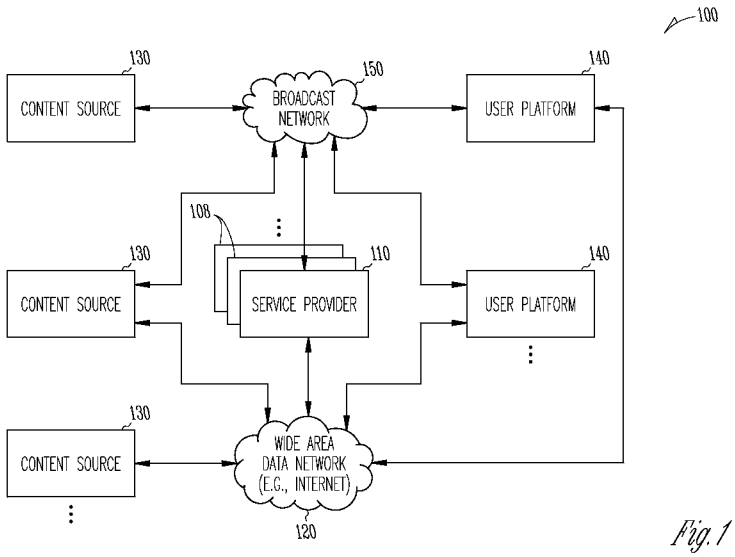

Fig. 1

(57) Abstract: A computer-implemented system and method for enabling data delivery in a content browsing and recommendation system are disclosed. The system and method in an example embodiment include: gathering available content information related to particular items of content from a plurality of content sources via a data network; processing the content information, using a data processor, to associate particular items of content information with content catalogs; storing the processed content information into a database with information identifying associated content catalogs; and providing a service, accessible via the data network, to enable a user platform to search the processed content information in the database based on a content catalog identifier.

WO 2011/062690 A1

Published:

— *with international search report (Art. 21(3))*

DATA DELIVERY FOR A CONTENT SYSTEM

Related Applications

This application claims priority to United States Patent Application Serial No. 12/622,766, filed November 20, 2009 entitled, "DATA DELIVERY FOR A CONTENT SYSTEM," and to United States Patent Application Serial No. 12/623,096, filed November 20, 2009 entitled, "CONTENT RECOMMENDATION FOR A CONTENT SYSTEM," and to United States Patent Application Serial No. 12/623,123, filed November 20, 2009 entitled, "CONTENT INGESTION FOR A CONTENT SYSTEM," which applications are incorporated herein by reference in their entirety.

The present patent application is related to the following patent applications each assigned to a common assignee:

United States Patent Application Serial No. 12/622,787, filed November 20, 2009 entitled, "CONTENT INTEGRATION FOR A CONTENT SYSTEM," which is hereby incorporated by reference.

United States Patent Application Serial No. 12/623,251, filed November 20, 2009 entitled "MANAGING DIFFERENT FORMATS FOR MEDIA FILES AND MEDIA PLAYBACK DEVICES," which is hereby incorporated by reference.

United States Patent Application Serial No. 12/623,230 entitled "USER INTERFACE FOR MANAGING DIFFERENT FORMATS FOR MEDIA FILES AND MEDIA PLAYBACK DEVICES," which is hereby incorporated by reference.

Copyright Notice

A portion of the disclosure of this patent document contains material that is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent files or records, but otherwise reserves all copyright rights whatsoever. The following notice applies to the software and data as described below and in the drawings that form a part of this

document: Copyright 2008-2009, Macrovision Solutions Corporation and Rovi Corporation, All Rights Reserved.

Technical Field

This disclosure relates to networked systems. More particularly, the present disclosure relates to networked content systems.

Background

In conventional content aggregation and delivery systems, it can be difficult to manage content for playback on a particular client playback device when there are multiple playback devices, multiple playback device types, multiple content sources, and multiple instances (copies) of a particular desired item of content. Typically, electronic program guides (EPGs) or interactive program guides (IPGs) were provided to allow a viewer and/or user to browse available programming. However, in conventional program guides, data was only available to devices through broadcast channels. In updated conventional program guides, the guides also support delivery of data over the Internet, but that delivered data is the same data as what is broadcast.

Thus, a computer-implemented system and method for enabling data delivery in a content browsing and recommendation system is needed.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments are illustrated by way of example and not limitation in the figures of the accompanying drawings, in which:

Figure 1 illustrates an example architecture for delivering content to a user of a user platform, according to various embodiments;

Figure 2 illustrates an architecture for delivering content and/or content information to a user platform, according to various embodiments;

Figure 3 illustrates a service provider for delivering content to a user of a user platform, according to various embodiments;

Figure 4 is a flow diagram illustrating a method of delivering content to a user of a user platform, according to various embodiments;

Figure 5 illustrates a process for registering a user and/or a user platform with a content source;

Figure 6 illustrates an example user platform, according to various embodiments;

Figure 7 illustrates an example architecture for a networked browsing and/or recommendation architecture within which various embodiments operate;

Figure 8 illustrates a set of example platform services supported by an example cross-platform service component of a particular embodiment and a set of source services provided by the content sources;

Figure 9 illustrates a user platform according to an example embodiment;

Figure 10 illustrates an example environment showing an example data connection between the user platform and the cross platform services component;

Figure 11 illustrates a user platform data delivery component for a user platform of an implementation;

Figure 12 illustrates the factors used in an example embodiment to fill the content information cache in a user platform according to an example embodiment;

Figure 13 illustrates a user platform according to an example embodiment, wherein the example user platform includes components for data delivery, according to an embodiment;

Figure 14 illustrates an alternative implementation of a user platform according to another example embodiment, wherein the example user platform includes components for content integration by using custom integration applications on the user platform, according to an embodiment;

Figures 15-16 illustrate a sequence of processing operations in example embodiments; and

Figure 17 shows a diagrammatic representation of a machine in the form of a computer system within which a set of instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed, according to an example embodiment.

DETAILED DESCRIPTION

A computer-implemented method, system, and apparatus for enabling data delivery in a content browsing and recommendation system are disclosed. In the following description, numerous specific details are set forth. However, it

is understood that embodiments may be practiced without these specific details. In other instances, well-known processes, structures and techniques have not been shown in detail in order not to obscure the clarity of this description. Various embodiments are described below in connection with the figures provided herein.

Overview of Various Embodiments

The various embodiments described herein are part of a content browsing and recommendation system that includes an enhanced interactive and/or electronic program/programming guide (IPG and/or EPG) and a content integration system. The various embodiments provide a rich content browsing and recommendation experience, which utilizes host site databases to correlate content across delivery media, such as linear television, internet-based video on demand services, recorded content, and content available on the home network. In conventional program guides, data is only available to devices through broadcast channels. In updated conventional program guides, the guides also support delivery of data over the Internet, but that delivered data is the same data as what is broadcast.

Within this document, content includes television programming, movies, music, games, images, special features, scheduled media, on-demand and/or pay-per-view media, and further includes broadcast, multicast, downloaded, streamed media, and/or media or content that is delivered by another means. As described herein, the term, "content" is distinguished from the term, "content information" that is related to, but separate from the content itself. The term "content information," which may include metadata, refers to information associated with or related to one or more items of content and may include information used to access the content. The content information, provided and/or delivered by various embodiments, is designed to meet the needs of the user in providing a rich media metadata browsing experience. The content information also includes guide data, listings data and program information, in addition to extended metadata, such as MyTV^{TM} module metadata, celebrity biographies, program and celebrity images, and the like for channel lineups and other media and/or content sources that are available to the end user at the user's location. A

MyTV™ module is provided by the Microsoft™ Media Center system to view live TV broadcast programming and/or to view a program guide of available broadcast programming. As described herein, guide data can be used to generate a content guide that can be used to display available programming options, sources of the programming, and temporal information for the available programming options to enable a user to browse, search, select, and view/consume a desired programming option.

Unfortunately, because there are so many available content sources and so much available information for each content source, the volume of data in the available content information can overwhelm a network's ability to transfer the data and a user platform's ability to receive, process, and display the content information on a sufficiently frequent basis. Without effective management of the data delivery and consumption by a user platform, it is effectively impossible for all the content information to be packaged up and delivered on a sufficiently frequent basis to all user platforms; because the content information includes so many content sources other than conventional linear television. This situation leads to two conclusions:

1. A host site must provide an internet-based service that can provide selected content information to all deployed user platforms in real time.
2. The existence of such a service allows the host site to radically reduce the amount of content information packaged and delivered to user platforms in bulk on a scheduled, e.g., daily, basis.

The various embodiments described herein provide an architecture that allows a host site to package and bulk deliver content information and content itself to user platforms, wherein the content information contains only the content listings and/or program guide for the channel line-up for which the user has indicated a use or preference. Additionally, the various embodiments described herein provide an architecture that allows a host site to package and deliver content information in real-time to user platforms based on a user content selection or preference. The content itself can be delivered to a user platform via a content integration system described herein.

Within this document, the term "user" includes a viewer of television and/or video content as well as a consumer of other content. In the various embodiments described herein, the user platform can fetch content information, including extended metadata, extended program information, celebrity information such as biographies, images, trailers, and the like, that the user platform needs based on the usage of the user platform by a user. In two example embodiments described herein, there are at least two methods for delivering required and/or requested content information to a user platform. The first method is to fill a local user platform content information cache with content information at off-peak times. The second method, employed when the user needs content information that is not in the local cache, is to get the content information by using host site services in real time. In a particular embodiment, a host site can use a cross-platform service (CPS) component and real-time services in both cases. Other equivalent embodiments can be implemented without cross-platform services. These methods and services are described in more detail below.

Some example embodiments described herein also include a system and method for delivering content to a user of a registered user platform. Assets retrieved from a number of content sources may be stored in a database at a service provider or the content itself can be retained at the content source for direct delivery to a user platform as described in more detail herein. The term "asset" can be taken to include, but is not limited to, one or more collections of content, content information and metadata associated with the content, e.g., descriptions, synopses, biographies, trailers, reviews, links, etc., and content source catalogs. Each asset can contain a content item and content information related to the content item. Content information related to a number of content items retrieved from the assets may be presented to the user of the registered user platform. In response to a request from the user, a content item associated with a content source may be delivered directly to the user platform without a need for explicit user authentication. The service provider may authenticate on behalf of the user so that the user does not need to be asked to authenticate each time the user employs the registered user platform to order content from the content source.

In example embodiments, the content may comprise, but is not limited to, digital content including electronic publications such as electronic books, journals, newspapers, catalogs, and advertisements, and multimedia content including audio and video content. Content sources are originators, providers, publishers, and/or broadcasters of such content and assets. Content sources can be conventional television or radio broadcasters, Internet sites, printed media authors or publishers, magnetic or optical media creators or publishers, and the like.

A registered user platform, e.g., a registered user device or a set of user devices, may comprise a consumer electronic (CE) device including additional hardware and software that enables the consumer electronic device to register with a service provider. Some consumer electronic devices, such as television sets, may enable access to the Internet by being coupled to a computer, e.g., a personal computer (PC) such as a laptop or a desktop computer, etc. The registered consumer electronic device may be used by a user to access content from various content sources such as, for example, Amazon, Netflix, Napster, CBS, etc., over the Internet, directly without connection through a computer, as discussed in detail below.

Figures 1 and 2 illustrate example architectures 100 and 101 for delivering content and content information to a user of a user platform 140, according to various embodiments. Preferably, the user platform 140 receiving the content and/or content information comprises a registered user platform. Registration for a user platform 140 is further described below in relation to Figures 2-5. The user platform 140 may gain access to one or more content items from a content source 130, e.g., a third party content source such as Amazon, Netflix, Napster, CBS, etc., via services of a service provider 110 including, for example, Macrovision Corporation, Rovi Corporation, or another host or service provider. The user platform 140 may comprise, for example, a television (TV) 142, a digital video recorder (DVR) 143, or other user devices shown under user platforms 140. The user platforms 140 may also include a computer (PC) 144 and/or a network attached storage device (NAS) 146, such as a network router or a wireless access point device that may optionally form a home network. The user platforms 140 may also include a set-top box. The user platforms 140, for example, the television 142, the computer 144, and/or the set-

top box may be coupled to the content source 130 via a broadcast network 150. The user platforms 140 and content sources 130 may have access to the wide-area data network 120, e.g., the Internet, as well.

Figure 1 also illustrates that an equivalent configuration of architecture 100, 101, and/or 700 of various embodiments can include multiple content information processing sites 108, each managing a portion of the functionality provided as described herein. A particular embodiment may include an additional layer, called the Partner Sites, wherein each Partner Site is hosted on a separate server and each Partner Site communicates with the user platform 140 and/or the content guide manager 721 (shown in Figure 7) of a network-enabled user platform 140, described in more detail herein. In this embodiment, each Partner Site can manage a subset of the available content and content information from content sources 130. Further, it will be apparent to those of ordinary skill in the art that another equivalent configuration includes a portion of the functionality provided by the user platform 140 being downloaded from the service provider 110 and/or processing sites 108, such as a collocation facility, to the user platform 140 and executed locally at the client and/or user location. In any of these alternative configurations, the architecture 100, 101, and/or 700 of various embodiments provides and supports enabling content information aggregation and access by user platforms as described in more detail herein, in addition to the functions and/or services for content browsing and recommendation.

In an example embodiment shown in Figure 2, the service provider 110 may comprise a service provider database 112, such as a content information database coupled via an intranet 114 to hosted services 115. The hosted services 115 may comprise a cross platform services (CPS) component 116 and a cross platform gateway (CPGW) or "platform gateway" 118. The platform gateway 118 may act as an interface between the user platform 140 and the service provider 110. The cross platform services component 116 may be responsible for processing requests from the user platform 140 via interactions with the content sources 130, as described in more detail below.

Figure 3 is a diagram illustrating a more detailed example of a service provider 110 for delivering content to a user of a user platform that is preferably registered such as, for example, the user platform 140 of Figures 1 and 2. User

platform 140 registration and/or device registration is further described below in relation to Figure 6. As shown in Figure 3, the service provider 110 comprises a data processor 111, a memory 113, a service provider database 112, a provision module 117, cross platform services component 116, and platform gateway 118. The provision module 117 may receive assets from various content sources such as, for example, the content sources 130 of Figures 1 and 2. The delivery of assets from the content source 130 may be via a wide-area data network 120 of Figures 1 and 2, such as the Internet. The assets may be received periodically, e.g., daily, in a batch mode operation or the provision module 117 may request assets from the content sources on demand or receive the assets in real time. In some embodiments, real time means as soon as the assets are available for delivery from the content source.

The assets may be temporarily stored in the memory 113 such as within a buffer, for example, from where the assets may be transferred and recorded in the service provider database 112, which may correspond, for example, to the service provider database 112 of Figure 2. In operation, the data processor 111 may cause an interface device, such as, for example, the interface device 644 shown in Figure 6 and described below, to present to a user of the user platform 140, information related to a number of content items retrieved from the assets. In an example embodiment, the data processor 111 may cause the provision module 117 to retrieve the content from the assets stored within the service provider database 112 and make the content accessible to the interface device 644 via the wide-area data network 120 of Figures 1 and 2, by using the platform gateway 118.

The platform gateway 118, which acts as an interface between the user platform 140 of Figures 1 and 2 and the service provider 110, may comprise software and/or hardware to translate between communication protocols used internally by the service provider 110 such as, for example, between the platform gateway 118 and the cross platform services component 116. These translated protocols may include, without limitation, a simple object access protocol (SOAP) and protocols used by the user platform 140 such as, for example, Internet Protocol (IP) and/or Transmission Control Protocol (TCP). The platform gateway 118 may receive, via the wide-area data network 120, from the

user platform 140, a request by the user for content associated with the content source 130 of Figures 1 and 2.

The user may provide membership information regarding a membership with the content source 130 to the service provider 110, the first time the user attempts to access content from the content source 130, via the user platform 140. The membership information, for example, may include, but is not limited to, authentication information such as a username, a password and account identification, such as an account number and so forth. The membership information may be stored in the memory 113 in a member list associated with the content source 130 along with a registration code associated with the user platform 140 for future reference.

In later access attempts, the data processor 111 of the service provider 110 may determine that the user, and/or the user platform 140, has a membership with the content source 130, by referring to the member list associated with the content source 130 and the registration code of the user platform 140. Then, the data processor 111 may perform the authentication on behalf of the user, by using the stored authentication information, such that the user may access content from the content source 130 without explicit authentication being performed by the user.

Regardless of the foregoing alternatives, accessing the content from the content source 130 can be achieved via several methods. For example, the data processor 111 may cause the provision module 117 to allow the user to receive delivery of the content directly from the content source 130 to the user platform 140. This embodiment is beneficial because the service provider 110 does not have to provision the resources necessary to store selected content for a plurality of users. In another embodiment, the data processor 111 causes the provision module 117 to retrieve the content from the assets stored in the service provider database 112, and allow the user to receive delivery of the content from the service provider 110. In this embodiment, the service provider 110 first retrieves the content from the content source 130 and stores the content as assets in the service provider database 112. This embodiment is beneficial because the service provider 110 can retain control over the content delivery process.

Figure 4 is a flow diagram illustrating a further example method 400 of delivering content to a user of a user platform 140 of Figures 1 and 2, according

to various embodiments. At an operation 410 shown in Figure 4, assets or asset information received from the content source 130 may be stored in the service provider database 112 or memory 113. Information related to a number of content items retrieved from the assets can be presented, via the wide-area data network 120 of Figures 1 and 2, to a user of the user platform 140, at operation 420. The user determines if one or more of the content titles, presented as part of the content information, may be of interest. The user then submits a request for particular content titles to the service provider 110. The service provider 110, at operation 430, may receive a request from the user for one or more content items associated with the content source 130 from the user platform 140.

If it is determined at the control operation 440 that the user does not have a membership with the content source 130, and thus is not a registered user, then at operation 460, the data processor 111 causes the provision module 117 to automatically register the user with the content source 130. The registration of the user may proceed according to the steps described below in relation to Figure 5.

If it is determined at the control operation 440 that the user does have a membership with the content source 130, and thus is a registered user, then at operation 450, the data processor 111 causes the provision module 117 to facilitate delivery of the requested content to the user without a need for explicit user authentication by the user. In order to skip explicit user authentication, upon receiving the request for content, the provision module 117 may receive an authentication token associated with the user from the content source 130 and invoke, by using the authentication token, an interface associated with the content source 130.

The provision module 117 may facilitate delivery of the requested content at operation 450 by allowing the user to download the content directly from the content source 130 on demand to the user platform 140. The provision module 117 may also retrieve the content from the assets stored in the service provider database 112 and allow the user to download the content from the service provider 110. Once registered with the content source 130, the user may download, stream, and/or receive content directly from the content source 130 to the user platform 140 without the need for explicit user authentication.

Figure 5 is a flow diagram illustrating a further example method 501 of delivering content to a user of a user platform 140 of Figures 1 and 2, according to various embodiments. Preferably, the user platform 140 is registered. As shown in Figure 5, a service provider 110 receives the request for the content from a user platform 140, at operation 531. If the data processor 111 determines, at operation 541, that the user does not have a membership with the content source, and thus is not a registered user, the data processor 111 may cause the provision module 117 to automatically register the user with the content source 130, at operation 561. For instance, the data processor 111 may cause the provision module 117 to receive an authentication token associated with the user from the content source 130, at operation 562, and invoke an interface associated with the content source by using the authentication token, at operation 564, to register the user with the content source 130 and allow the user to access the content, at operation 550.

More specifically, at operation 550, in response to receiving the request for content from the user platform 140, the data processor 111 may cause the provision module 117 to facilitate delivery of the content to the user, without a need for user authentication such as, for example, without the need for the user to login, provide a password, and/or provide payment or credit information, as described above. In some implementations, the provision module 117 is a software module, and the data processor 111 causes the software module to execute. With regard to registration of the user platform 140, the first time that a non-registered user platform 140 device is used, e.g., a consumer electronic (CE) device, television 142, or a digital video recorder (DVR) 143, the user may send a registration request. In another embodiment, the provision module 117 may automatically register the non-registered user platform 140 when the user platform 140 is coupled with the service provider 110 via a wide-area data network 120 for the first time. In one embodiment, for example, the provision module 117 provides the user with a registration code for the user platform 140. The user provides the registration code when the user explicitly registers the user platform 140 or refers to the user platform 140 in communications with the service provider 110. The user platform 140 of some embodiments is further described below with respect to Figure 6.

User Platform Registration

As mentioned above, the user platform 140 is preferably registered. The user platform registration or "device registration" operates alternatively, or in conjunction with, the "user registration" of some embodiments. User registration is used to identify and/or authorize a particular individual person for access to content via a user platform. User platform registration is used to identify and/or authorize a particular device or interface for access to content. Either or both types of registration can be used in various embodiments. Figure 6 illustrates an example user platform 140, which may correspond to the user platform 140 shown in Figures 1 and 2. The user platform 140 preferably comprises a first consumer electronic (CE) device 642, such as the television 142 or the digital video recorder (DVR) 143 of Figure 2, an interface device 644, a memory 646 and a configuration module 648. The memory 646 and/or the interface device 644 may be preconfigured within the television 142 and/or the digital video recorder 143. Alternatively, the memory 646 and/or the interface device 644 are added along with the configuration module 648 to form a non-registered user platform 140 that is enabled for registration. For instance, the memory 646 and/or the interface device 644 may optionally be coupled internally or externally to the television 142 and/or the digital video recorder 143.

As mentioned above, some user platforms 140 are initially not registered and require registration for operation with the service provider 110. In these cases, the first time that a user activates a non-registered user platform 140, the interface device 644 preferably communicates, via the wide-area data network 120, with the service provider 110. Once the non-registered user platform 140 communicates with the service provider 110, the configuration module 648 may work with the provision module 117 to register the non-registered user platform 140 with the service provider 110. When the registration is complete, the configuration module 648 may receive a registration code from the provision module 117. The configuration module 648 may then save the registration code in the memory 646 on the user platform 140. Once registered, the user platform 140 is ready to perform the functionalities described herein with respect to a registered user platform.

The interface device 644 may include hardware and/or software and may also provide various user interfaces to display a variety of information to the

user. In an embodiment, the interface device 644 may receive the user interfaces from the service provider 110. The user interfaces, for example, may be used to display information related to a collection of content and associated metadata available from the service provider 110. The user interfaces may also provide for the user one or more search boxes to enable the user to search for content under a variety of listings such as title, artist, category, subject, company name, etc. For example, see United States Patent Application No. 2004/0073920 A1 for a sample interface in accordance with some embodiments. The interface device 644, as mentioned above, may also provide connectivity between the user platform 140 and the service provider 110, via the wide-area data network 120. Interactions between the user platform 140 and the components of the architectures shown in Figures 1 and 2 are discussed in more detail below.

The content browsing and/or recommendation functions of various embodiments described herein are used to facilitate the correlation of content and related content information for delivery across various delivery media. Figure 7 illustrates an example environment for a networked browsing and/or recommendation architecture 700 with which various embodiments operate. The networked browsing and/or recommendation architecture 700 includes the functionality of the service provider 110 described above plus additional features described below. As shown in Figure 7, a processing system 200 is in networked data communication, via a conventional network 105 such as the Internet, with one or more content sources 130, such as the content sources 130 shown in Figures 1 and 2. The processing system 200 is also in networked data communication, via the conventional network 105, with one or more user platforms 140, such as the user platforms 140 shown in Figures 1 and 2. The one or more user platforms 140 may include or be in networked data communication with rendering devices 742, playback devices 743, computer 744, set-top box 746 and/or other types of user devices operating in or with user platform 140. For example, the television 142 shown in Figure 2 may correspond to rendering device 742 shown in Figure 7. The digital video recorder 143 shown in Figure 2 may correspond to playback device 743 shown in Figure 7. The personal computer 144 shown in Figure 2 may correspond to computer 744 shown in Figure 7. The network access system 146 shown in Figure 2 may correspond to broadcast receiver 746 shown in Figure 7. The processing system 200 is

preferably used to process content information 732 that is related to, but may be peripheral, ancillary, or distinct from, content 731 that is desired and requested by users for playback and/or rendering. As shown in Figure 7, the environment for the architecture 700 preferably includes content information 732, content 731 in the form of items of content, and/or both.

In some embodiments, the user platforms 140 are configured to communicate directly with the processing system 200 via the network 105. Further, the user platforms 140, such as the rendering device 742, the playback device 743, and/or the broadcast receiver 746, may use local interfaces such as USB or local wireless interfaces such as Bluetooth, 802.11, 802.3, and the like, for direct data communication with the computer 744, which can communicate with the processing system 200. The user platforms 140 are used by individuals who can log in to or otherwise gain access to the processing system 200 via the network 105 and become subscribers or members of a content browsing and recommendation service enabled by the various embodiments described herein. The process for registration and/or activation by subscribers and non-subscribers is described in more detail above. In a particular embodiment shown in Figure 7, some content guide and/or content information functions are selectively provided in or by one or more of the user platforms 140. For instance, in some embodiments, a particular user platform 140 is configured for or enabled with a content guide manager 721 and/or a content information cache 722. The content guide manager 721 controls the flow of a selected item of content into and out of a data buffer or local database 392 (shown in Figure 11) for the user platform 140 for playback, rendering, and/or recording of content for a user. Additionally, the content guide manager 721 controls the flow of content information such as, for example, content metadata related to a selected item of content, into and out of the content information cache 722 of the user platform 140 as shown in Figure 7.

The content guide manager 721 includes processing logic to communicate with the cross-platform services component 116 via platform gateway 118 and the network 105 to coordinate access to a user-selected item of content 731 directly from the one or more content sources 130 by the user platform 140 via the network 105. The cross platform services component 116 shown in Figure 2 may correspond to cross platform services component 116

shown in Figure 7. The platform gateway 118 shown in Figure 2 may correspond to platform gateway 118 shown in Figure 7. The content guide manager 721 also includes processing logic to communicate with the cross-platform services component 116 via the platform gateway 118 and network 105 to obtain available content information 732, and related content metadata, associated with identified items of content 731 available through the content sources 130. In an example embodiment, this content information 732 includes content information related to a particular content item. Content items are further described above in relation to Figures 1-2. The content information 732 may include content metadata, biographical information on the authors, writers, actors, directors, producers, or the like, background information on the content item, web links or text identifiers related to the content item, information identifying related content items, information related to categories, genres, or the like that relate to the content item, information identifying other users and/or viewers who may share an interest in content similar to the particular item of content, content reviews, and other content information related to the particular item of content. Content reviews can be summaries, critiques, overviews, polling or survey information, or other type of analysis, opinion, or parody of a particular content item. This content information, obtained by the processing system 200 from various content sources 130, is maintained in a database 112 by the processing system 200 of various embodiments. This content information can be made available to user platforms 140, via platform services 252, for viewing, searching, and/or selection by users of user platforms 140. The users of user platforms 140 can log in to accounts maintained by the processing system 200, search for listings of available content and related content information by using a search engine 235, and select a particular item or items of content and/or a related item or items of content information for download or streaming to the user platform 140 via local interfaces and/or network 105. Content distribution component 733 includes processing logic to communicate with one or more content sources 130 and one or more user platforms 140 to facilitate the downloading or streaming of a particular selected item of content to a user platform 140 of a requesting user. The content sources 130 can include feeds or repositories of digital content 731 that are downloaded or streamed to a particular user platform 140 via the network 105. The content 731 can include

various forms of digital content including video or multimedia, e.g., MPEG, still images, e.g., JPEG or TIFF, audio, e.g., MP3, spoken audio, digital documents, executable code, and the like. The content sources 130 may represent websites, servers, peer-to-peer nodes, databases, data storage local to the processing system 200, data storage local to the user platforms 140, and the like. As described in more detail herein, the processing system 200 and the content sources 130 operate in concert with the content guide manager 721 to control the access to content information and content, and the playback of selected content on the user platforms 140 from the content sources 130. Note that in a particular embodiment, the selected item of content 731 can be downloaded or streamed directly from the content source 130 to the user platform 140 of a requesting user via the content distribution component 733 and network 105. In contrast, the content information 732 corresponding to a selected item of content 733 can take a different path to the user platform 140 of a requesting user. The content information can be obtained from content sources 130 and processed by ingestion engine 225. The content information can then be uploaded to database 112 by the data delivery module 211 of processing system 200. At a time of its choosing, a user platform 140, and the content guide manager 721 therein, can obtain the content information from the database 112 by using a platform service 252 of cross-platform services component 116. The content information can be downloaded to a requesting user platform 140 via the platform gateway 118 and stored in the content information cache 722 of the user platform 140.

Referring still to Figure 7, the processing system 200 is in data communication with a plurality of content sources 130 via the network 105. The content sources 130 represent any of a variety of content producers, content aggregators, or other content sources from which a plurality of items of content 731 and related content information 732 can be obtained. Examples of content sources 130 include CinemaNow, Netflix, Amazon, CBS, Video Detective, and the like. The processing system 200 obtains content information 732, as related to various content items 731, from the content sources 130 via an ingestion engine 225. The ingestion engine 225 is configured to accept content information 732 in a variety of forms and formats. This variety of content information 732 is preferably normalized or otherwise re-formatted and structured into a form that is conveniently processed by the processing system

200. A data delivery manager 212 of the data delivery module 211 of the processing system 200 receives the ingested content information from ingestion engine 225 and determines a catalog or catalogs to which a particular item of content information relates. Additionally, the data delivery manager 212 performs classification, grouping, and cross-correlation operations to associate particular items of content information with content catalogs, content groupings, content types, content sources, or particular content items. The data delivery manager 212 performs the classification, grouping, and cross-correlation operations by using the data in the content information item itself. For example, keywords, metadata, tags, and the like can be extracted from the content information and used to categorize or classify a particular content information item in association with one or more content catalogs or groupings. Once the data delivery manager 212 processes the content information, the processed and classified content information is stored in a database 112 with information identifying associated content catalogs, categories, types, groupings, or content sources.

A content integration module 221 and content integration manager 222 of the processing system 200 is responsible for managing the delivery of content items 731, but not content information 732, to particular user platforms 140, with which users have made content selections. The content integration manager 222 coordinates the delivery of selected content items 731 from the content sources 130 to particular user platforms 140 via content distribution component 733 and the network 105. The delivery of selected content items 731 is processed as a content download or a streamed content feed, in some implementations.

The content information 732 stored in the database 112 by the data delivery manager 212 is structured and conveniently searchable by using search engine 235. The database 112 thereby retains all structured content information 732 across all content sources 130. The platform services 252 provided by the cross-platform services component 116 include services for querying content information in the database 112 by using the search engine 235. The cross-platform services component 116 makes these platform services 252 available to user platforms 140 via the network 105 and the platform gateway 118. The platform services 252 can include services to enable a user platform 140 to

search the processed content information in the database 112 based on a content catalog identifier, a content category, type, grouping, or content source. Other queries based on keywords, tags, or metadata are also supported by the platform services 252. The platform services 252 provided by the cross-platform services component 116 also include services for requesting a recommendation for content information by using a recommendation engine 241. The processing performed by the recommendation engine 241 is described in more detail below.

The recommendation engine 241 obtains user behavior information, and optionally user profile information (collectively denoted user interest information), to correlate user interests with corresponding content information retained in the database 112. For this purpose, the recommendation engine 241 is coupled to a clickstream system 270 as shown in Figure 7. The clickstream system 270 is in data communication with a plurality of user platforms 140 via the network 105. The clickstream system 270 collects user behavior information including mouse click events, mouseover events, webpage access and/or view events, object selection events, purchase or bid events, and the like. Additionally, a user identifier and optionally a user profile can also be associated with the user behavior information to form the user interest information. This user interest information is provided to the recommendation engine 241 by the clickstream system 270 and is used by the recommendation engine 241 to correlate user interests with corresponding content information retained in the database 112. Additionally, the clickstream system 270 may provide the user interest information to an advertisement (ad) component 275 via the network 105. The ad component 275 is used for making decisions regarding which ads to serve to a user, and for reporting ad relevant information, such as click through and/or conversion rates and the like. The ad component 275 may use the user interest information to target advertisements that relate to the users operating a particular user platform 140. The ad component 275 may further determine which ads to deliver to a particular user platform 140. The ad component 275 may notify the ad services component 265 with information identifying particular advertisements that should be delivered to identified user platforms 140. The ad services component 265 delivers the selected ads to the identified user platforms 140. The ad component 275 may also generate reports detailing how the advertisements were targeted.

Referring still to Figure 7, a content service gateway 255 is shown in data communication between the cross-platform services component 116 and the content sources 130. The content service gateway 255 is responsible for communication with content sources 130 such as from third party sources. The content service gateway 255 aggregates application programming interfaces (API's) using an API aggregator 257. The API aggregator 257 generates a generalized abstracted content service API from the various individual API's provided by each of the content sources 130. In essence, the API aggregator 257 builds a generalized abstracted content service API on top of the different API's provided by each of the content sources 130. In this manner, the API aggregator 257 generates a standardized content service API that can be used by cross-platform services component 116 and user platforms 140 via the platform gateway 118. The user platforms 140 of an embodiment preferably use the standardized content service API of the content service gateway 255 for real-time communication with any of a variety of content sources 130.

The cross-platform services component 116 provides a uniform service interface for the user platforms 140. In one embodiment, this service interface provided by the cross-platform services component 116 is a web service interface. In an example embodiment, the platform services 252 supported by the cross-platform services component 116 include, for example, one or more of the following services: user account management services, user platform profile management services, recommendation services, search services, listings services, listing preferences services, remote record services, rich media services, watchlist services, user behavior services, and/or user profile services. A set of platform services 252 offered in an example cross-platform services component 116 is further described in relation to Figure 8.

Figure 8 illustrates a set of example platform services 252 and source services 734 supported by some embodiments such as, for example, the cross-platform services component 116 of Figure 7 and content sources 130. As shown in Figure 8, the platform services 252 include a rich media service 851, a listings service 852, a user behavior service 853, a listing preference service 854, a search service 856, an integrated search service 857, a watchlist service 858, a user profile service 859, and a user account management service 860. In each

case, the platform services 252 provide a uniform service interface for the user platforms 140 described herein.

The rich media service 851 enables a user of a user platform 140 to configure the user platform for the presentation of rich media content, such as images, graphics, or video. The listings service 852 enables a user of a user platform 140 to view content item listings as stored in a database 112. The user behavior service 853 enables a user of a user platform 140 to configure the user platform to capture and report user behavior data in a desired manner. The listing preference service 854 enables a user of a user platform 140 to specify types of content listings likely of interest to the particular user. The search service 856 enables a user of a user platform 140 to search content item listings as stored in the database 112. The integrated search service 857 enables a user of a user platform 140 to search content item listings as stored in the database 112 or accessible via the network 105, e.g., the Internet. The watchlist service 858 enables a user of a user platform 140 to specify types of content items for which the user wishes to be notified when the specified content items become available. The user profile service 859 enables a user of a user platform 140 to manage the parameters retained in a user profile related to the user. The user account management service 860 enables a user of a user platform 140 to manage the parameters retained in a user account related to the user.

Figure 8 also illustrates a set of source services 734. Source services 734 are provided by and sometimes resident in the content sources 130. Some content sources 130 provide various services 861, 862, and 863 of their own, which enable a consumer to browse, access, purchase, and download particular content items offered by the particular content source 130. However, other content sources 130 may not provide any source services or the provided services may not be compatible or efficient for use with the content information aggregation system described herein. As such, a particular embodiment can be configured to use the source services 734, if the source services 734 are provided by the content source 130. But, the various embodiments described herein do not rely on or require that such source services 734 be provided by the content source 130. One of ordinary skill in the art will recognize additional services can be provided alternatively and/or in conjunction with the service sets illustrated in the example of Figure 8.

A user platform 140 according to an example embodiment is further described by reference to Figures 9 - 13. As shown in Figure 9, the user platform 140 is configured to include user platform software 372. All or portions of the user platform software 372 can be installed within the user platform 140 firmware or downloaded into the user platform 140 via a network 105. The user platform software 372 includes native applications 374, which perform standard functions on conventional user platforms 140. Additionally, the user platform software 372 may be configured to include a content guide manager 721 that is preferably installed within the user platform software 372. The content guide manager 721 is configured to communicate with the various components of the architecture 700 of Figure 7 to coordinate the selection and delivery of particular items of content and content information to a user platform 140. The content guide manager 721, in an example embodiment, includes a guide generator 366, a user platform data delivery component 367, and a user behavior & preferences component 368. The guide generator 366 gathers content information by using the architecture 700 and builds a user interface compliant electronic and/or interactive program guide (EPG and/or IPG) for display to a user of a user platform 140. The guide lists the various content items and content information as selected by a user. Native applications 374 can access the guide generator 366 to obtain data to populate program guides or to build content metadata browsing experiences for a user. The guide generator 366, in turn, uses the user platform data delivery component 367 to obtain the content information data from the architecture 700, as described above. The user behavior & preferences component 368 provides user-side functionality to gather user behavior data used by the clickstream system 270. The user behavior & preferences component 368 further stores user preferences with which the user can customize the interfaces and services provided on a particular user platform 140. The user behavior data includes mouse click events, mouseover events, webpage access and/or view events, object selection events, purchase or bid events, and the like.

As shown in Figure 9, the guide generator 366 according to an example embodiment, is configured to include an electronic program guide (EPG) search engine 380 and a jobs manager 381. The guide search engine 380 provides application program interfaces to query the guide listings data, channel mapping,

and the like, stored in the database 112 of the architecture 700. The jobs manager 381 schedules jobs to occur at particular times such as, for example, according to a periodic schedule of events. In this case, the jobs manager 381 schedules the content information cache filling operations described herein.

Figure 10 illustrates an example environment showing an example data connection between the user platform 140 and the cross platform services component 116 with platform services 252 included therein. A platform gateway 118 can be used to facilitate networked data communications between the user platform 140 and the cross platform services component 116 via network 105. In this manner, the user platform 140, and a user thereof, may access and use the platform services 252.

Figure 11 illustrates the user platform data delivery component 367 of an embodiment in further detail. As shown in Figure 11, the user platform data delivery component 367 is configured to include a data access module 385, a data reception engine 386, a click stream engine 387, an internet data loader 388, a cross-platform client manager 390, a data cache fill engine 391, a local database 392, and a cache list 399. The data access module 385 provides access to the local database 392, in which local data such as, for example, guide data and/or content information, are preferably stored. The data reception engine 386 unpacks the content information delivered by the architecture 700 via the internet data loader 388 and populates the local database 392 by using the data access module 385. In a particular embodiment, the user platform 140 indicates to the architecture 700 which channel lineup the user platform 140 needs, and the user platform 140 receives only the content information, e.g., the listings data, for that lineup. The click stream engine 387 records the user's behavior and reports the user behavior back to the clickstream system 270 via the user behavior module 368. The cross-platform client manager 390 provides a user platform-resident interface for platform services 252 through the platform gateway 118. The data cache fill engine 391 uses the cross-platform client manager 390 to contact platform services 252 and retrieve content information such as, for example, metadata to be cached in the local database 392 for local use on the user platform 140. In a particular embodiment, the local database 392 can be used as content information cache 722 maintained on each user platform 140.

In a particular embodiment, the user platforms 140 maintain a local cache 722 of content information, e.g., metadata, which is available immediately to the user. This content information cache 722 is built by retrieving or generating a list of content information items to fetch by using the platform services 252 on a periodic, e.g., daily, basis. The cache filling may be controlled by a server as a method of load balancing, so that the platform services 252 are used as evenly as possible over time. On a periodic basis such as, for example, once per day, the user platform 140 queries the platform services 252 to retrieve content information identifiers with which the user platform 140 can generate a cache list 399 for the user platform 140. The user platform 140 can also determine the time the user platform 140 should begin filling its content information cache 722. At the correct time, as determined and/or scheduled by the jobs manager 381, the user platform 140 communicates with the platform services 252 and retrieves content information items that are identified in the cache list 399.

Referring to Figure 12, the factors used in an example embodiment to fill the content information cache 722 in a user platform 140 are illustrated. In the example of Figure 12, these factors include editorial recommendations 395, item-based recommendations 396, personalized recommendations 397, and promotions 398. These factors are used to generate the content information cache list 399. In essence, the factors provide information indicative of the types of content information that is likely of interest to a particular user of a user platform 140. The more accurate the factors are for a particular user, the more likely it is that the content information ultimately requested by the user will already be resident locally in the content information cache 722 in the user platform 140. If the requested content information is already stored in the content information cache 722, the user platform 140 will not need to incur the time and expense to obtain the requested content information via the architecture 700. Given an accurate set of factors, the user platform 140 infrequently, or as infrequently as possible, may need to perform an access to the real-time platform services 252 of the architecture 700 in response to user action. Thus, the user platform 140 and the other portions of architecture 700 of various embodiments is able to predict the prospective user demand based on user behavior, prior user content selection, and user profiling. Nevertheless, any requested content

information that is not in the content information cache 722 is fetched via the platform services 252 of the architecture 700.

Content Integration of an Example Embodiment

One of the key features of the various embodiments described herein is the ability to guide the user to content that is available via traditional and non-traditional means. Some of these non-traditional means may include:

- Video On Demand such as from Amazon
- Other video delivery means such as Netflix Instant Queue
- White-box services such as CinemaNow and/or other brand experiences such as Blockbuster
- Ad-supported services, e.g., broadcast and cable networks
- Premium music services such as Rhapsody
- Mixed-model music services such as Pandora
- User-generated content services, e.g., Flickr and YouTube

Once the various embodiments have guided the user to the available content as described herein, some embodiments enable the user to access selected content items via a public and/or private data network. In some cases, this process of providing access to selected content items involves user registration or linking with an existing user account as described above. In some cases, the process involves transactions where the user pays for access to the content. However, once the user has selected a particular content item and provided registration and/or payment information for the selected content, the various embodiments then provide the content to the user. This portion of the various embodiments described herein for providing the content to the user is denoted content integration, which is described in more detail below.

As described herein, various embodiments provide a service technology that allows for the ingestion and correlation of content and catalog information into one or more databases to indicate the availability and accessibility of Internet-based content and/or broadcast network content. The ingested content and/or catalog information may be stored and/or presented in conjunction with and/or in a manner that is similar as for linear television data. Instead of indicating that a particular program is available on a certain channel of a lineup at a certain time, this content and catalog information may indicate that a

particular program is available via an Internet-enabled content source. Additionally, these services can allow the linking of user platform devices and user profiles to accounts with these content sources.

Because the content sources 130 that provide the content 731 have a wide variety of goals for doing so, various embodiments accommodate different models for the content sources 130 to deliver content to the user platforms 140. In various embodiments, there are at least three models of content integration as described below:

- A first model of content integration involves a custom application on the user platform 140 that generates a high-quality, tightly integrated experience around the content 731 from a particular content source 130. This first model involves components and processes with which the user platform 140 communicates directly with the services and API's of the particular content source 130 for access to the content itself and for access to content information, including content directories, metadata, tags, reviews, blogs, and the like provided by the particular content source 130. Alternatively, the user platform 140 utilizes the services of an architecture such as the architecture 100, 101, and/or 700 described above, for access to the content itself and for access to content information, including content directories, metadata, tags, reviews, blogs, and the like provided by the particular content source 130 via the architecture 100, 101, and/or 700. A hybridization of these approaches is also possible.
- A second model of content integration involves using the services of an architecture 100, 101, and/or 700, with an application on the user platform 140 that offers a small amount of customization in the form of skinning and the presence or absence of advertising content while browsing the directory of content available from the content sources 130. Skinning refers to placing a "skin" or a custom user interface or webpage over an interface or page provided by a content source 130. This second model may not allow for the flexibility of the full-custom application of the first model, but may be used for a broad set of content sources 130.
- A third model of content integration involves the content sources 130 developing specialized web sites for use with user platforms 140 and the

platform services 252 described above in relation to Figures 7, 8 and 10. This third model may not provide an experience that is as graphically rich as a custom experience, but allows for flexibility and control of the experience by the content source 130.

Figure 13 further illustrates a user platform 140 according to an example embodiment, wherein the example user platform 140 includes components for content integration. As shown in Figure 13, a user platform 140 is configured to include user platform software 372. All or portions of the user platform software 372 can be installed within the user platform 140 firmware or downloaded into the user platform 140 via a network 105. The user platform software 372 includes native applications 374, which perform content-related functions on the user platform 140. Native applications 374 on the user platform 140 are used to couple the user platform 140 to the platform services 252, or directly to source services 734 that are provided by the content sources 130, to search and browse content directories, gain access to content, and play selected content items. JavaScript applications 375 may be written by and/or for the content sources 130 and installed on the user platform 140 to enable a user of the user platform 140 to browse content directories of the content source 130, gain access to content, and play selected content items.

Additionally, the user platform software 372 may be configured to include content integration manager 1310 as installed in the user platform software 372. The content integration manager 1310 is configured to communicate with the various components of the architecture 100, 101, and/or 700 and/or content sources 130 directly to coordinate the delivery of selected items of content to a user platform 140. The content integration manager 1310, in an example embodiment, includes a content acquisition module 1315, a media framework module 1317, and a Document Object Model (DOM) plug-in module 1319. The content acquisition module 1315 of an example embodiment is configured to communicate with the content integration module 221 and content integration manager 222 of the processing system 200 of Figure 7 to coordinate the delivery of selected items of content from a particular content source 130 to a user platform 140 via a content distribution component 733. As described above, the content integration module 221 and content integration manager 222 of the processing system 200 is responsible for managing the delivery of content

items 731, but not content information 732, to particular user platforms 140, with which users have made content selections. The content integration manager 222 coordinates the delivery of selected content items 731 from content sources 130 to particular user platforms 140 via the content distribution component 733 and the network 105. The delivery of selected content items 731 is processed as a content download or a streamed content feed, in some implementations. The content acquisition module 1315 of an example embodiment is configured to communicate directly with the content sources 130 via network 105 to direct the transmission of selected content 731 to the requesting user platform 140. The content acquisition module 1315 can also be configured to communicate directly with the content sources 130 via network 105 for the acquisition of selected content 731. The media framework module 1317 of an example embodiment provides the structure and functionality definitions of the media playback and rendering capabilities of a particular user platform 140. The document object model module 1319 of an example embodiment provides access to the media framework 1317 so the content can be played or recorded.

Content integration via the processing system 200 enables the ability to adapt to protocol changes without updating the software on the user platform 140, thereby providing flexibility as business models and understanding of use cases evolve. As described in relation to Figure 7, the architecture 700 enables a user platform 140 to obtain content information from a database 112. The content information provides a user with searchable information related to particular items of content available from various content sources 130. When using the architecture 700, if a user platform 140 requests availability information for a particular item of content 731, the search returns hits for the content sources 130 that provide the particular item of content 731, as well as results from the database 112. When using the architecture 700, a native application 374 on the user platform 140 may allow the user of the user platform 140 to acquire the selected content 731 via the content acquisition module 1315 and jump directly to playing the content 731 by using the media framework module 1317 and document object model module 1319. In a particular embodiment, there is no need to jump into another application associated with that particular content source 130.

In an alternative embodiment, the user platform 140 acquires the selected content 731 directly from the content sources 130 by using the source services 734. The primary drawback to this approach is that changes to the services and/or protocols used by the content sources 130 require an update of the user platform 140 such as, for example, a software update. The primary advantage of this alternative approach is simplified registration either for the user, the user platform 140, for the architecture 100, 101, and/or 700, and/or for the content sources 130.

In another alternative embodiment, the user platform 140 acquires the selected content 731 by using the architecture 700 or by using source services 734 provided by the content sources 130 directly. In this implementation, the user platform 140 may acquire related advertising by using the architecture 700 and the ad services component 265 therein, as described in relation to Figure 7. Because the integration of content 731 and related advertising on a user platform 140 may require a higher level of control and/or device-specific information, the ad services component 265 in cooperation with the user platform software 372 may provide the necessary level of control to support ad services on the user platform 140.

Figure 14 illustrates an alternative implementation of a user platform according to another example embodiment, wherein the example user platform 140 includes components for content integration by using custom integration applications 1420 and/or 1421 on the user platform 140. When it is mutually advantageous to a host (e.g., a service provider 110) or a user platform 140 manufacturer and/or one or more content sources 130, custom integration applications 1420 and/or 1421 are generated for a user platform 140 to enable a user to browse and play content on the user platform 140. In this case, the user browsing experience is highly customized and well integrated into the overall user experience. Implementing the custom integration applications 1420 and/or 1421 natively allows for a sophisticated browsing experience and the use of advanced rendering and animation techniques. The custom integration applications 1420 and/or 1421 provide the presentation layer for browsing, acquiring rights to, and initiating playback of content from the content source 130. As shown in Figure 14, a user platform 140 is configured to include user platform software 372. All or portions of the user platform software 372 can be

installed within the user platform 140 firmware or downloaded into the user platform 140 via a network 105. The user platform software 372 may include custom integration applications 1420 and/or 1421, which perform customized content-related functions on the user platform 140. Custom integration applications 1420 and/or 1421 on the user platform 140 are used to couple the user platform 140 to platform services 252, or directly to the source services 734 provided by the content sources 130, to search and browse content directories, gain access to content, and play selected content items. The template applications 1422 and 1423 preferably include content integration applications that are not customized or specific to a particular content source 130. The guided browse module 1425 handles the data model for browsing and searching content by using a protocol compatible with the architecture 100, 101, and/or 700. The guided browse module 1425 of the content integration manager 1410 is used to retrieve content information by using a protocol compatible with the architecture 100, 101, and/or 700, and to provide this content information to the template applications 1422 and 1423 provided in the presentation layer of the user platform software 372. This content information may be used to retrieve the selected content 731, itself. The custom guided browse module 1427 preferably uses a specific protocol or service of a particular content source 130. The custom guided browse module 1427 is used to retrieve content information by using a specific protocol compatible with a particular content source 130 and to provide this content information 732 to the custom integration applications 1420 and 1421 provided in the presentation layer of the user platform software 372. This content information may be used to retrieve the content 731, itself in a customized application. The media player 1429 is provided to authenticate a user platform 140 with the content distributor 733 and to play the media with the selected content 731. The user interface (UI) toolkit 1431 is provided to support some basic user interface structures, functionality, and data objects from which a particular user interface is built and customized. The content sources 130 that either want full control of the user experience or that do not integrate with the architecture 100, 101, and/or 700 may provide web pages for access to their content catalogs and content, provided that the content sources 130 develop those web pages according to pre-established guidelines. These guidelines are based on the capabilities of the browser that is embedded into a user platform

140. In order to facilitate media playback of content provided by using this mechanism, the document object model module 1319 may be required to provide access to the media player on the user platform 140. The user interface toolkit 1431 also supports conventional user interface technologies, e.g., AJAX, CSS-TV, CE-HTML and may provide a wide array of layout options and advertising capability for the content sources 130.

Figure 15 illustrates a sequence of processing operations in an example embodiment. As shown in Figure 15, the processing operations performed by an example embodiment 1500 include: gathering available content information related to particular items of content from a plurality of content sources via a data network, at processing block 1510; processing the content information, by using a data processor, to provide a searchable database of processed content information, at processing block 1512; providing a service, accessible via the data network, to enable a user platform to request a search of the processed content information and identify a selected content item, at processing block 1514; and, directing at least one content source to provide the selected content item directly to the user platform, at processing block 1516.

Figure 16 illustrates a sequence of processing operations in an example embodiment. As shown in Figure 16, the processing operations performed by an example embodiment 1600 at a user platform include: invoking a service from a user platform, via a data network, to search processed content information in a database, at processing block 1610; retrieving a search result from the service via the data network, the search result including selected content information, at processing block 1612; using a data processor to identify a selected content item from the search result, at processing block 1614; requesting delivery of the selected content item, at processing block 1616; and receiving the selected content item at the user platform from a content source via a content distributor, at processing block 1618.

Figure 17 shows a diagrammatic representation of a machine in the example form of a computer system 1700 within which a set of instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed. In alternative embodiments, the machine operates as a standalone device or may be coupled, e.g., networked, to other machines. In a networked deployment, the machine may operate in the capacity of a server or a

client machine in client-server network environment, or as a peer machine in a peer-to-peer and/or distributed network environment. The machine may be a server computer, a client computer, a personal computer (PC), a tablet PC, a set-top box (STB), a Personal Digital Assistant (PDA), a cellular telephone, a web appliance, an audio or video player, a network router, switch or bridge, or any machine capable of executing a set of instructions, sequential or otherwise, that specify actions to be taken by that machine. Further, while a single machine is illustrated, the term "machine" shall also be taken to include any collection of machines that individually or jointly execute a set, or multiple sets, of instructions to perform any one or more of the methodologies discussed herein.

The example computer system 1700 includes a data processor 1702, e.g., a central processing unit (CPU), a graphics processing unit (GPU), or both, a main memory 1704 and a static memory 1706, which communicate with each other via a bus 1708. The computer system 1700 may further include a video display unit 1710, e.g., a liquid crystal display (LCD), a cathode ray tube (CRT), or other imaging technology. The computer system 1700 also includes an input device 1712, e.g., a keyboard, a cursor control device 1714, e.g., a mouse, a disk drive unit 1716, a signal generation device 1718, e.g., a speaker, and a network interface device 1720.

The disk drive unit 1716 includes a machine-readable medium 1722 on which is stored one or more sets of instructions, e.g., software 1724, embodying any one or more of the methodologies or functions described herein. The instructions 1724 may also reside, completely or at least partially, within the main memory 1704, the static memory 1706, and/or within the processor 1702 during execution thereof by the computer system 1700. The main memory 1704 and the processor 1702 also may constitute machine-readable media. The instructions 1724 may further be transmitted or received over a network 1726 via the network interface device 1720.

Applications that may include the apparatus and systems of various embodiments broadly include a variety of electronic and computer systems. Some embodiments implement functions in two or more specific interconnected hardware modules or devices with related control and data signals communicated between and through the modules, or as portions of an application-specific integrated circuit. Thus, the example system is applicable to

software, firmware, and hardware implementations. In example embodiments, a computer system, e.g., a standalone, client or server computer system, configured by an application may constitute a "module" that is configured and operates to perform certain operations as described herein. In other embodiments, the "module" may be implemented mechanically or electronically. For example, a module may comprise dedicated circuitry or logic that is permanently configured, e.g., within a special-purpose processor, to perform certain operations. A module may also comprise programmable logic or circuitry, e.g., as encompassed within a general-purpose processor or other programmable processor, that is temporarily configured by software to perform certain operations. It will be appreciated that the decision to implement a module mechanically, in the dedicated and permanently configured circuitry, or in temporarily configured circuitry, e.g. configured by software, may be driven by cost and time considerations. Accordingly, the term "module" should be understood to encompass an entity that is physically or logically constructed, permanently configured, e.g., hardwired, or temporarily configured, e.g., programmed, to operate in a certain manner and/or to perform certain operations described herein. While the machine-readable medium 1722 is shown in an example embodiment to be a single medium, the term "machine-readable medium" should be taken to include a single medium or multiple media, e.g., a centralized or distributed database, and/or associated caches and servers that store the one or more sets of instructions. The term "machine-readable medium" shall also be taken to include any medium that is capable of storing, encoding or carrying a set of instructions for execution by the machine and that cause the machine to perform any one or more of the methodologies of the present description. The term "machine-readable medium" shall accordingly be taken to include, but not be limited to, solid-state memories, optical media, and/or magnetic media. As noted, the software may be transmitted over a network using a transmission medium. The term "transmission medium" shall be taken to include any medium that is capable of storing, encoding or carrying instructions for transmission to and execution by the machine, and includes digital or analog communications signal or other intangible medium to facilitate transmission and communication of such software.

The illustrations of embodiments described herein are intended to provide a general understanding of the structure of various embodiments, and they are not intended to serve as a complete description of all the elements and features of apparatus and systems that might make use of the structures described herein. Many other embodiments will be apparent to those of ordinary skill in the art upon reviewing the above description. Other embodiments may be utilized and derived therefrom, such that structural and logical substitutions and changes may be made without departing from the scope of this disclosure. The figures provided herein are merely representational and may not be drawn to scale. Certain proportions thereof may be exaggerated, while others may be minimized. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a restrictive sense.

The description herein may include terms, such as “up”, “down”, “upper”, “lower”, “first”, “second”, etc. that are used for descriptive purposes only and are not to be construed as limiting. The elements, materials, geometries, dimensions, and sequence of operations may all be varied to suit particular applications. Parts of some embodiments may be included in, or substituted for, those of other embodiments. While the foregoing examples of dimensions and ranges are considered typical, the various embodiments are not limited to such dimensions or ranges.

The Abstract is provided to comply with 37 C.F.R. §1.74(b) to allow the reader to quickly ascertain the nature and gist of the technical disclosure. The Abstract is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims.

In the foregoing Detailed Description, various features are grouped together in a single embodiment for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments have more features than are expressly recited in each claim. Thus, the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separate embodiment.

The system of an example embodiment may include software, information processing hardware, and various processing steps, which are described herein. The features and process steps of example embodiments may be embodied in articles of manufacture as machine or computer executable

instructions. The instructions can be used to cause a general purpose or special purpose processor, which is programmed with the instructions to perform the steps of an example embodiment. Alternatively, the features or steps may be performed by specific hardware components that contain hard-wired logic for performing the steps, or by any combination of programmed computer components and custom hardware components. While embodiments are described with reference to the Internet, the method and system described herein is equally applicable to other network infrastructures or other data communications systems.

Various embodiments are described herein. In particular, the use of embodiments with various types and formats of user interface presentations and/or application programming interfaces may be described. It can be apparent to those of ordinary skill in the art that alternative embodiments of the implementations described herein can be employed and still fall within the scope of the claimed invention. In the detail herein, various embodiments are described as implemented in computer-implemented processing logic denoted sometimes herein as the "Software". As described above, however, the claimed invention is not limited to a purely software implementation.

Thus, a computer-implemented system and method for enabling data delivery in a content browsing and recommendation system are disclosed. While the present invention has been described in terms of several example embodiments, those of ordinary skill in the art can recognize that the present invention is not limited to the embodiments described, but can be practiced with modification and alteration within the spirit and scope of the appended claims. The description herein is thus to be regarded as illustrative instead of limiting.

CLAIMS

What is claimed is:

1. A computer-implemented method comprising:

gathering available content information related to particular items of content from a plurality of content sources via a data network;

processing the content information, using a data processor, to associate particular items of content information with content catalogs;

storing the processed content information into a database with information identifying associated content catalogs; and

providing a service, accessible via the data network, to enable a user platform to search the processed content information in the database based on a content catalog identifier.

2. The computer-implemented method of claim 1 including normalizing the gathered content information by using an ingestion engine.

3. The computer-implemented method of claim 1 including processing the content information to associate particular items of content information with content groupings.

4. The computer-implemented method of claim 1 including processing the content information to associate particular items of content information with content types.

5. The computer-implemented method of claim 1 including processing the content information by extracting keywords from the content information.

6. The computer-implemented method of claim 1 including processing the content information by extracting metadata from the content information.

7. The computer-implemented method of claim 1 including providing a service, accessible via the data network, to enable a user platform to obtain a

recommendation for processed content information in the database that is likely of interest to a user based on user behavior information retrieved from a user platform of the user.

8. The computer-implemented method of claim 1 including delivering a selected item of content to a user platform of a user.

9. A system comprising:

one or more data processors;

a data network interface in communication with the one or more data processors;

a database for storing processed content information and accessible to the one or more data processors;

a data delivery manager having a data network interface, the data delivery manager being executable by the one or more data processors to:

gather available content information related to particular items of content from a plurality of content sources via a data network;

process the content information to associate particular items of content information with content catalogs; and

store the processed content information into a database with information identifying associated content catalogs; and

a cross-platform service component having a data network interface, the cross-platform service component being executable by the one or more data processors to:

provide a service, accessible via the data network, to enable a user platform to search the processed content information in the database based on a content catalog identifier.

10. The system of claim 9 wherein the data delivery manager being configured to normalize the gathered content information by using an ingestion engine.

11. The system of claim 9 wherein the data delivery manager being configured to process the content information to associate particular items of content information with content groupings.

12. The system of claim 9 wherein the data delivery manager being configured to process the content information to associate particular items of content information with content types.

13. The system of claim 9 wherein the data delivery manager being configured to process the content information by extracting keywords from the content information.

14. The system of claim 9 wherein the data delivery manager being configured to process the content information by extracting metadata from the content information.

15. The system of claim 9 wherein the cross-platform service component being configured to provide a service, accessible via the data network, to enable a user platform to obtain a recommendation for processed content information in the database that is likely of interest to a user based on user behavior information retrieved from a user platform of the user.

16. The system of claim 9 being further configured to deliver a selected item of content to a user platform of a user.

17. An article of manufacture comprising a machine-readable storage medium having machine executable instructions embedded thereon, which when executed by a machine, cause the machine to:

gather available content information related to particular items of content from a plurality of content sources via a data network;

process the content information, using a data processor, to associate particular items of content information with content catalogs; and

store the processed content information into a database with information identifying associated content catalogs; and

provide a service, accessible via the data network, to enable a user platform to search the processed content information in the database based on a content catalog identifier.

18. The article of manufacture of claim 17 wherein the executable instructions being further configured to process the content information to associate particular items of content information with content groupings.

19. The article of manufacture of claim 17 wherein the executable instructions being further configured to provide a service, accessible via the data network, to enable a user platform to obtain a recommendation for processed content information in the database that is likely of interest to a user based on user behavior information retrieved from a user platform of the user.

20. The article of manufacture of claim 17 wherein the executable instructions being further configured to deliver a selected item of content to a user platform of a user.

21. A user platform with a data network interface, the user platform comprising:

a content information cache; and

a content manager being executable by one or more data processors to:

invoke a service, via a data network, to search processed content information in a database based on a content catalog identifier;

retrieve a search result from the service via the data network, the search result including selected content information; and

store the selected content information in the content information cache on the user platform.

22. The user platform of claim 21, wherein the content manager being further configured to generate an electronic program guide (EPG) from the selected content information in the content information cache.

23. The user platform of claim 21, wherein the content manager being further configured to periodically retrieve selected content information from the database and to store the retrieved selected content information in the content information cache.

24. The user platform of claim 21, wherein the content manager being further configured to send user behavior information to a clickstream processing system via the data network.

25. The user platform of claim 24, wherein the content manager being further configured to invoke a service, accessible via the data network, to enable the user platform to obtain, from the database, a recommendation for processed content information that is likely of interest to a user based on the user behavior information sent from the user platform.

26. A computer-implemented method comprising:

gathering available content information related to particular items of content from a plurality of content sources via a data network;

receiving user behavior information from a user platform via a clickstream processing system;

processing the content information, using a data processor, to provide a searchable database of processed content information, the processed content information including a recommendation for processed content information that is likely of interest to a user based on the user behavior information received from the user platform;

providing a service, accessible via the data network, to enable the user platform to request the recommendation for processed content information and to identify a selected content item; and

directing at least one content source to provide the selected content item directly to the user platform.

27. The computer-implemented method of claim 26 including directing at least one content source to provide the selected content item directly to the user platform via a content distributor.

28. The computer-implemented method of claim 26 wherein the user behavior information includes information from the group: mouse click events, mouseover events, webpage access/view events, object selection events, purchase events, and bid events.

29. The computer-implemented method of claim 26 wherein the user behavior information includes user profile information.

30. The computer-implemented method of claim 26 wherein the service is not provided by the at least one content source.

31. The computer-implemented method of claim 26 including providing the user behavior information to an advertising component that can serve advertising to the user platform based on the user behavior information.

32. The computer-implemented method of claim 26 wherein the service directs the at least one content source to provide the selected content item directly to the user platform.

33. The computer-implemented method of claim 26 including delivering the selected content item to the user platform via a public data network.

34. A system comprising:

one or more data processors;

a data network interface in communication with the one or more data processors;

a database for storing processed content information and accessible to the one or more data processors;

a cross-platform service component having a data network interface, the cross-platform service component being executable by the one or more data processors to:

provide a service, accessible by a user platform via the data network, to process a request for a recommendation for processed

content information that is likely of interest to a user based on user behavior information received from the user platform and to receive information identifying a selected content item; and

a content integration manager having a data network interface, the content integration manager being executable by the one or more data processors to:

direct at least one content source to provide the selected content item directly to the user platform.

35. The system of claim 34 wherein the content integration manager being configured to direct the at least one content source to provide the selected content item directly to the user platform via a content distributor.

36. The system of claim 34 wherein the user behavior information includes information from the group: mouse click events, mouseover events, webpage access/view events, object selection events, purchase events, and bid events.

37. The system of claim 34 wherein the user behavior information includes user profile information.

38. The system of claim 34 wherein the service is not provided by the at least one content source.

39. The system of claim 34 including an advertising component being executable by the one or more data processors to serve advertising to the user platform based on the user behavior information.

40. The system of claim 34 wherein the service being configured to request the content integration manager to direct the at least one content source to provide the selected content item directly to the user platform.

41. The system of claim 34 being further configured to deliver the selected content item to the user platform via a public data network.

42. An article of manufacture comprising a machine-readable storage medium having machine executable instructions embedded thereon, which when executed by a machine, cause the machine to:

gather available content information related to particular items of content from a plurality of content sources via a data network;

receive user behavior information from a user platform via a clickstream processing system;

process the content information, using a data processor, to provide a searchable database of processed content information, the processed content information including a recommendation for processed content information that is likely of interest to a user based on the user behavior information received from the user platform; and

provide a service, accessible via the data network, to enable the user platform to request the recommendation for processed content information and to identify a selected content item; and

direct at least one content source to provide the selected content item directly to the user platform.

43. The article of manufacture of claim 42 wherein the executable instructions being further configured to direct the at least one content source to provide the selected content item directly to the user platform via a content distributor.

44. The article of manufacture of claim 42 wherein the user behavior information includes information from the group: mouse click events, mouseover events, webpage access/view events, object selection events, purchase events, and bid events.

45. The article of manufacture of claim 42 wherein the user behavior information includes user profile information.

46. The article of manufacture of claim 42 being further configured to provide the user behavior information to an advertising component that can serve advertising to the user platform based on the user behavior information.

47. A user platform with a data network interface, the user platform comprising:

a content information cache; and

a content manager being executable by one or more data processors to:

send user behavior information from the user platform via a clickstream processing system;

invoke a service, via a data network, to search processed content information in a database for a recommendation for processed content information that is likely of interest to a user based on the user behavior information sent from the user platform;

retrieve a search result from the service via the data network, the search result including the recommendation for processed content information; and

store the recommendation in the content information cache on the user platform.

48. The user platform of claim 47, wherein the content manager being further configured to generate an electronic program guide (EPG) from the recommendation in the content information cache.

49. The user platform of claim 47, wherein the content manager being further configured to periodically retrieve the recommendation from the database and to store the recommendation in the content information cache.

50. A computer-implemented method comprising:

gathering available content information related to particular items of content from a plurality of content sources via a data network;

normalizing the gathered content information by using an ingestion engine;

processing the content information, using a data processor, to associate particular items of content information with content catalogs; and

storing the processed content information into a database with information identifying associated content catalogs.

51. The computer-implemented method of claim 50 wherein the content sources are from the group: television or radio broadcasters, Internet sites, printed media authors or publishers, and magnetic or optical media creators or publishers.

52. The computer-implemented method of claim 50 wherein normalizing the gathered content information includes reformatting the gathered content information into a pre-defined format.

53. The computer-implemented method of claim 50 including processing the content information to associate particular items of content information with content groupings.

54. The computer-implemented method of claim 50 including processing the content information to associate particular items of content information with content types.

55. The computer-implemented method of claim 50 including processing the content information by extracting keywords from the content information.

56. The computer-implemented method of claim 50 including processing the content information by extracting metadata from the content information.

57. The computer-implemented method of claim 50 including providing a service, accessible via the data network, to enable a user platform to search the processed content information in the database based on a content catalog identifier.

58. The computer-implemented method of claim 50 including delivering a selected item of content to a user platform of a user.

59. A system comprising:

one or more data processors;

a data network interface in communication with the one or more data processors;

a database for storing processed content information and accessible to the one or more data processors;

an ingestion engine having a data network interface, the ingestion engine being executable by the one or more data processors to:

gather available content information related to particular items of content from a plurality of content sources via a data network, and

normalize the gathered content information;

a data delivery manager having a data network interface, the data delivery manager being executable by the one or more data processors to:

process the normalized content information to associate particular items of content information with content catalogs; and

store the processed content information into a database with information identifying associated content catalogs; and

a cross-platform service component having a data network interface, the cross-platform service component being executable by the one or more data processors to:

provide a service, accessible via the data network, to enable a user platform to search the processed content information in the database based on a content catalog identifier.

60. The system of claim 59 wherein the content sources are from the group: television or radio broadcasters, Internet sites, printed media authors or publishers, and magnetic or optical media creators or publishers.

61. The system of claim 59 wherein normalizing the gathered content information includes reformatting the gathered content information into a pre-defined format.

62. The system of claim 59 wherein the data delivery manager being configured to process the content information to associate particular items of content information with content groupings.

63. The system of claim 59 wherein the data delivery manager being configured to process the content information to associate particular items of content information with content types.

64. The system of claim 59 wherein the data delivery manager being configured to process the content information by extracting keywords from the content information.

65. The system of claim 59 wherein the data delivery manager being configured to process the content information by extracting metadata from the content information.

66. The system of claim 59 wherein the cross-platform service component being configured to provide a service, accessible via the data network, to enable a user platform to search the processed content information in the database based on a content catalog identifier.

67. The system of claim 59 being further configured to deliver a selected item of content to a user platform of a user.

68. An article of manufacture comprising a machine-readable storage medium having machine executable instructions embedded thereon, which when executed by a machine, cause the machine to:

gather available content information related to particular items of content from a plurality of content sources via a data network;

normalize the gathered content information by using an ingestion engine;

process the content information, using a data processor, to associate particular items of content information with content catalogs; and

store the processed content information into a database with information identifying associated content catalogs.

69. The article of manufacture of claim 68 wherein the content sources are from the group: television or radio broadcasters, Internet sites, printed media authors or publishers, and magnetic or optical media creators or publishers.

70. The article of manufacture of claim 68 wherein the executable instructions being further configured to provide a service, accessible via the data network, to enable a user platform to search the processed content information in the database based on a content catalog identifier.

71. The article of manufacture of claim 68 wherein the executable instructions being further configured to deliver a selected item of content to a user platform of a user.

72. A user platform with a data network interface, the user platform comprising:

a content information cache; and

a content manager being executable by one or more data processors to:

invoke a service, via a data network, to search processed content information in a database based on a content catalog identifier;

retrieve a search result from the service via the data network, the search result including selected content information; and

store the selected content information in the content information cache on the user platform.

73. The user platform of claim 72, wherein the content manager being further configured to generate an electronic program guide (EPG) from the selected content information in the content information cache.

74. The user platform of claim 72, wherein the content manager being further configured to periodically retrieve selected content information from the database and to store the retrieved selected content information in the content information cache.

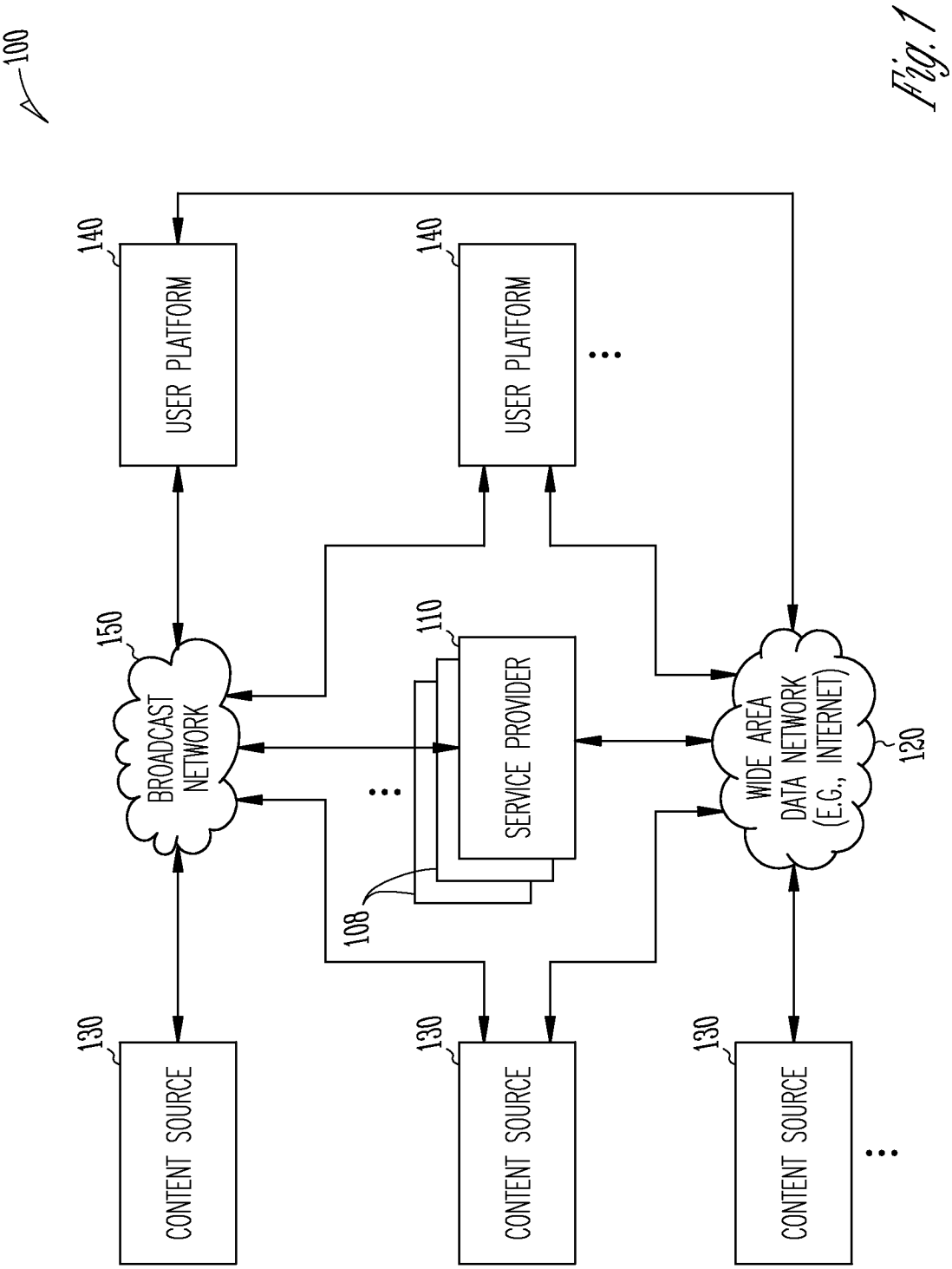
100
140
USER PLATFORM
140
USER PLATFORM
150
BROADCAST NETWORK
110
SERVICE PROVIDER
108
WIDE AREA DATA NETWORK (E.G., INTERNET)
120
130
CONTENT SOURCE
130
CONTENT SOURCE
130
CONTENT SOURCE

Fig. 1

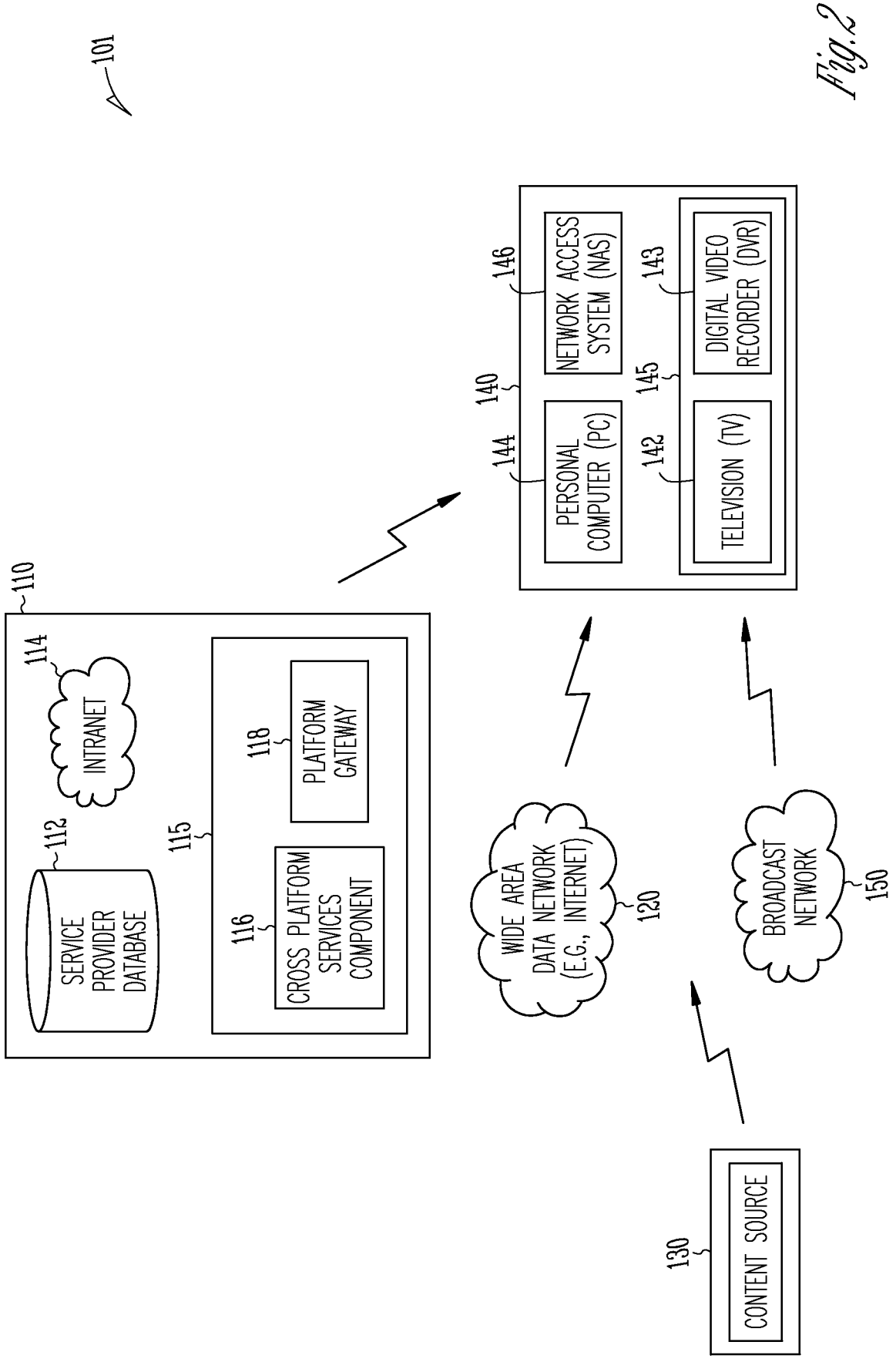
101
110
114
INTRANET
112
SERVICE PROVIDER DATABASE
115
118
PLATFORM GATEWAY
116
CROSS PLATFORM SERVICES COMPONENT
140
144
PERSONAL COMPUTER (PC)
142
TELEVISION (TV)
145
146
NETWORK ACCESS SYSTEM (NAS)
143
DIGITAL VIDEO RECORDER (DVR)
WIDE AREA DATA NETWORK (E.G., INTERNET)
120
BROADCAST NETWORK
150
130
CONTENT SOURCE

Fig.2

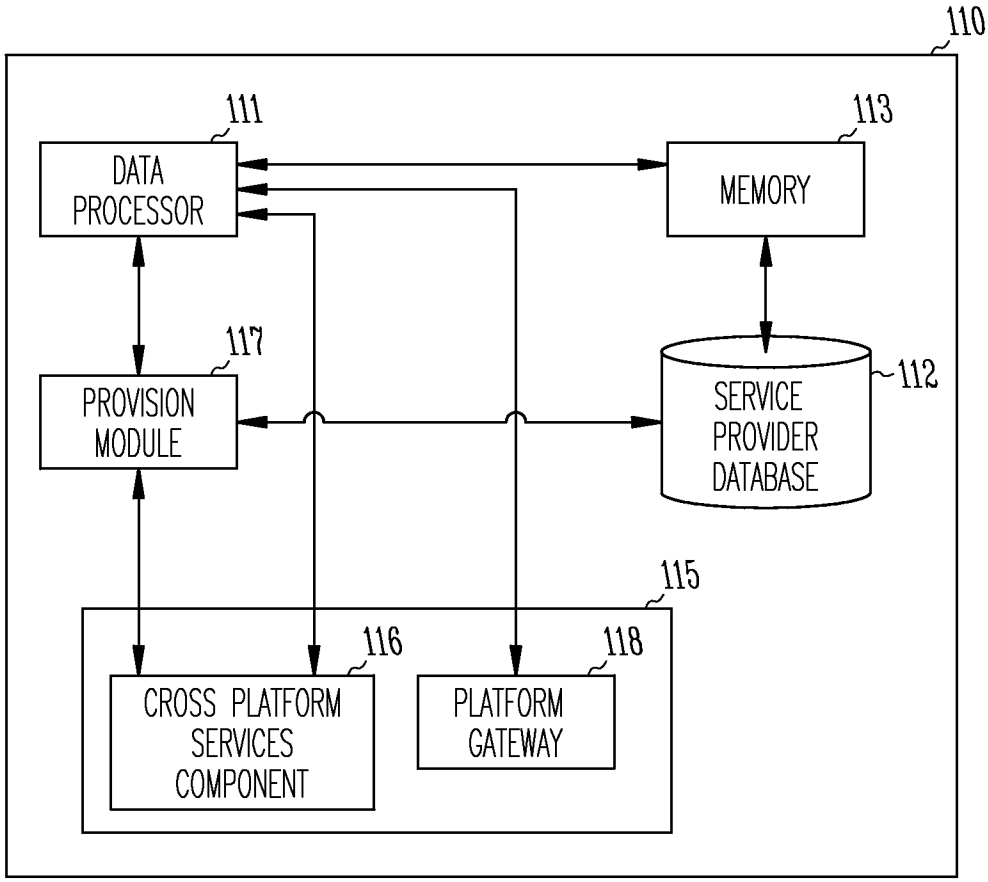
110
111
DATA PROCESSOR
113
MEMORY
117
PROVISION MODULE
112
SERVICE PROVIDER DATABASE
115
116
CROSS PLATFORM SERVICES COMPONENT
118
PLATFORM GATEWAY

Fig. 3

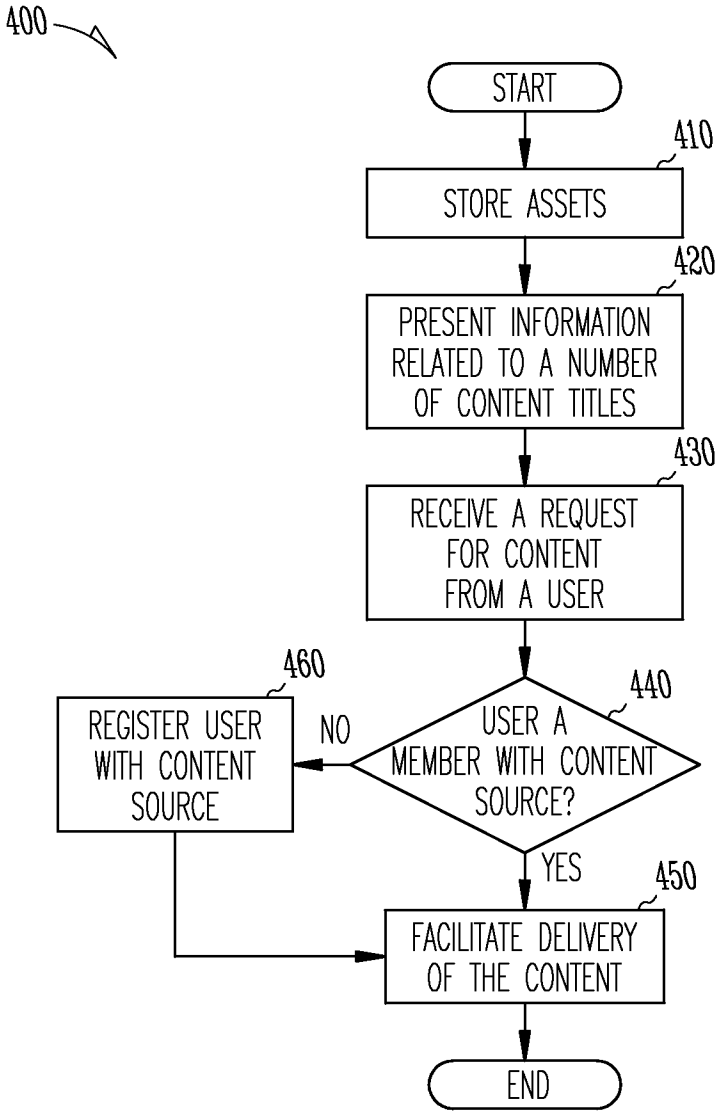
400
START
410
STORE ASSETS
420
PRESENT INFORMATION RELATED TO A NUMBER OF CONTENT TITLES
430
RECEIVE A REQUEST FOR CONTENT FROM A USER
440
USER A MEMBER WITH CONTENT SOURCE?
NO
460
REGISTER USER WITH CONTENT SOURCE
YES
450
FACILITATE DELIVERY OF THE CONTENT
END

Fig. 4

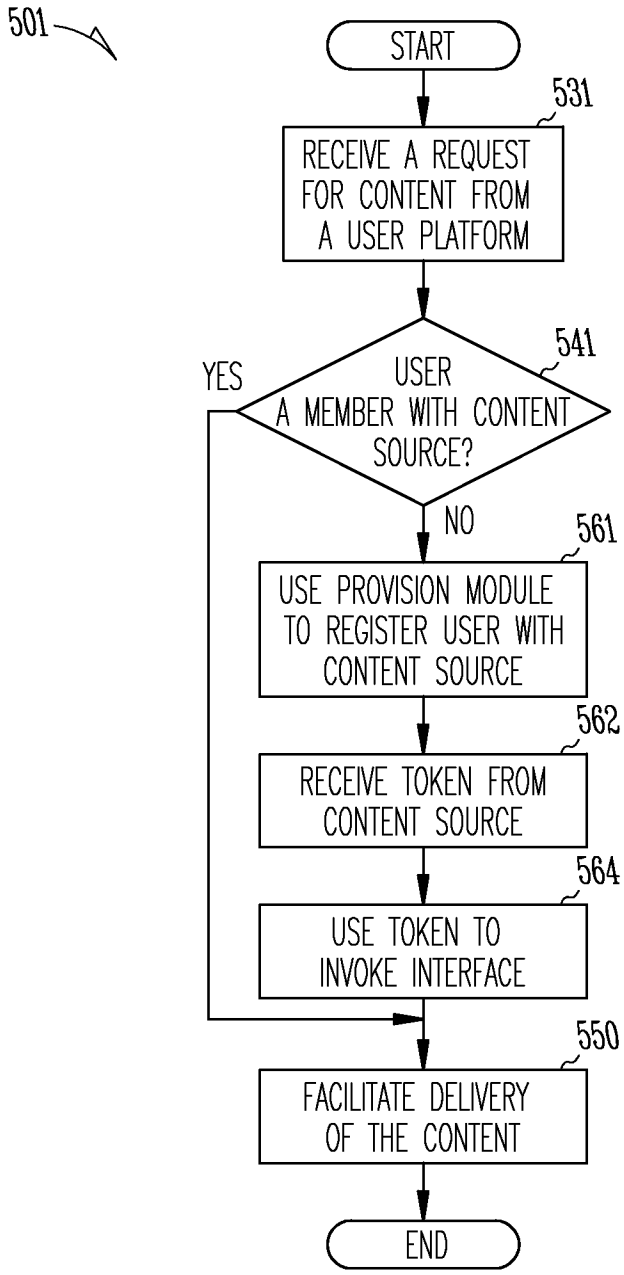
501
START
531
RECEIVE A REQUEST FOR CONTENT FROM A USER PLATFORM
541
USER A MEMBER WITH CONTENT SOURCE?
YES
NO
561
USE PROVISION MODULE TO REGISTER USER WITH CONTENT SOURCE
562
RECEIVE TOKEN FROM CONTENT SOURCE
564
USE TOKEN TO INVOKE INTERFACE
550
FACILITATE DELIVERY OF THE CONTENT
END

Fig. 5

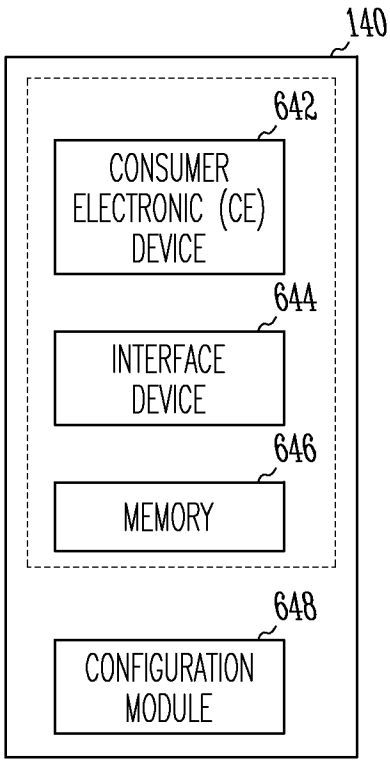
140
642
CONSUMER ELECTRONIC (CE) DEVICE
644
INTERFACE DEVICE
646
MEMORY
648
CONFIGURATION MODULE

Fig. 6

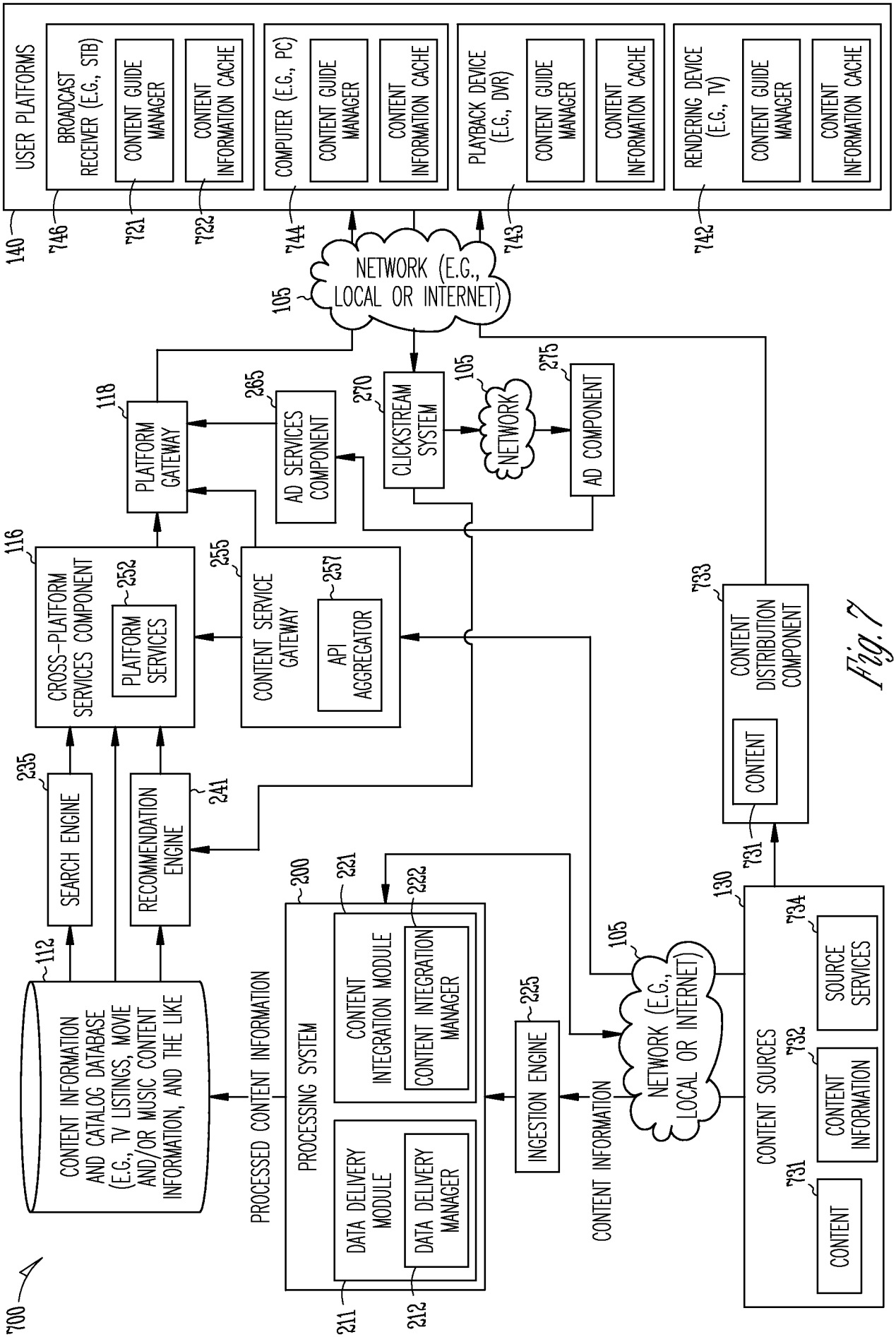
USER PLATFORMS
BROADCAST RECEIVER (E.G., STB)
CONTENT GUIDE MANAGER
CONTENT INFORMATION CACHE
COMPUTER (E.G., PC)
CONTENT GUIDE MANAGER
CONTENT INFORMATION CACHE
PLAYBACK DEVICE (E.G., DVR)
CONTENT GUIDE MANAGER
CONTENT INFORMATION CACHE
RENDERING DEVICE (E.G., TV)
CONTENT GUIDE MANAGER
CONTENT INFORMATION CACHE
140
746
721
722
744
743
742
NETWORK (E.G., LOCAL OR INTERNET)
105
PLATFORM GATEWAY
118
AD SERVICES COMPONENT
265
CLICKSTREAM SYSTEM
270
NETWORK
105
AD COMPONENT
275
CROSS-PLATFORM SERVICES COMPONENT
116
PLATFORM SERVICES
252
CONTENT SERVICE GATEWAY
255
API AGGREGATOR
257
CONTENT DISTRIBUTION COMPONENT
733
CONTENT
SEARCH ENGINE
235
RECOMMENDATION ENGINE
241
200
PROCESSING SYSTEM
221
CONTENT INTEGRATION MODULE
222
CONTENT INTEGRATION MANAGER
DATA DELIVERY MODULE
211
DATA DELIVERY MANAGER
212
INGESTION ENGINE
225
112
CONTENT INFORMATION AND CATALOG DATABASE (E.G., TV LISTINGS, MOVIE AND/OR MUSIC CONTENT INFORMATION, AND THE LIKE
PROCESSED CONTENT INFORMATION
CONTENT INFORMATION
105
NETWORK (E.G., LOCAL OR INTERNET)
130
CONTENT SOURCES
731
CONTENT
732
CONTENT INFORMATION
734
SOURCE SERVICES
731
700

Fig. 7

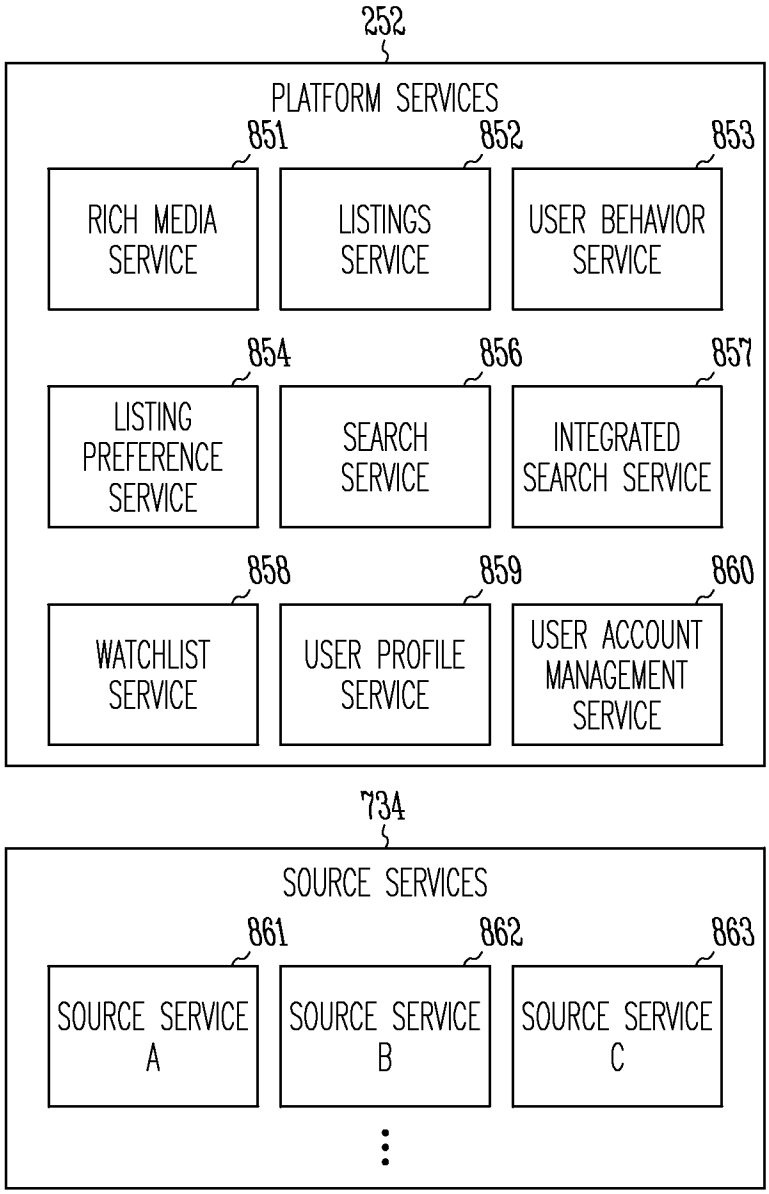
252
PLATFORM SERVICES
851
852
853
RICH MEDIA SERVICE
LISTINGS SERVICE
USER BEHAVIOR SERVICE
854
856
857
LISTING PREFERENCE SERVICE
SEARCH SERVICE
INTEGRATED SEARCH SERVICE
858
859
860
WATCHLIST SERVICE
USER PROFILE SERVICE
USER ACCOUNT MANAGEMENT SERVICE
734
SOURCE SERVICES
861
862
863
SOURCE SERVICE A
SOURCE SERVICE B
SOURCE SERVICE C

Fig. 8

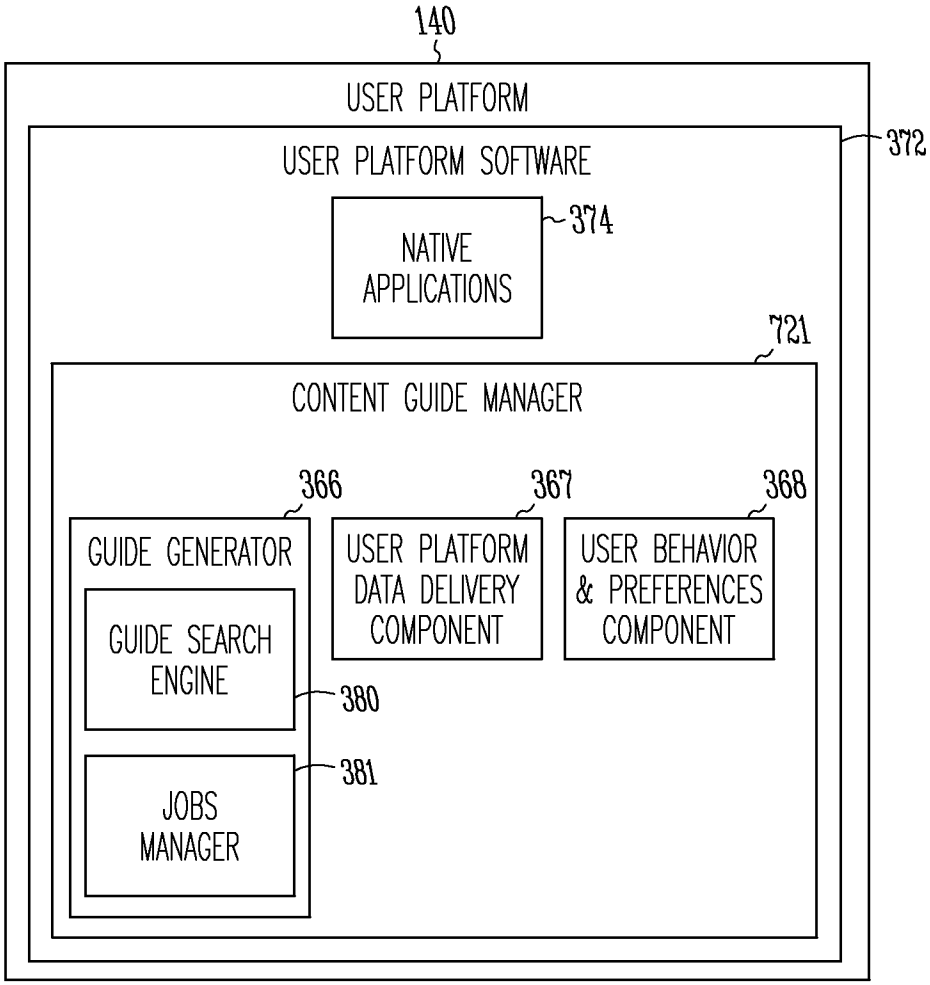
140
USER PLATFORM
372
USER PLATFORM SOFTWARE
374
NATIVE APPLICATIONS
721
CONTENT GUIDE MANAGER
366
367
368
GUIDE GENERATOR
USER PLATFORM DATA DELIVERY COMPONENT
USER BEHAVIOR & PREFERENCES COMPONENT
GUIDE SEARCH ENGINE
380
381
JOBS MANAGER

Fig. 9

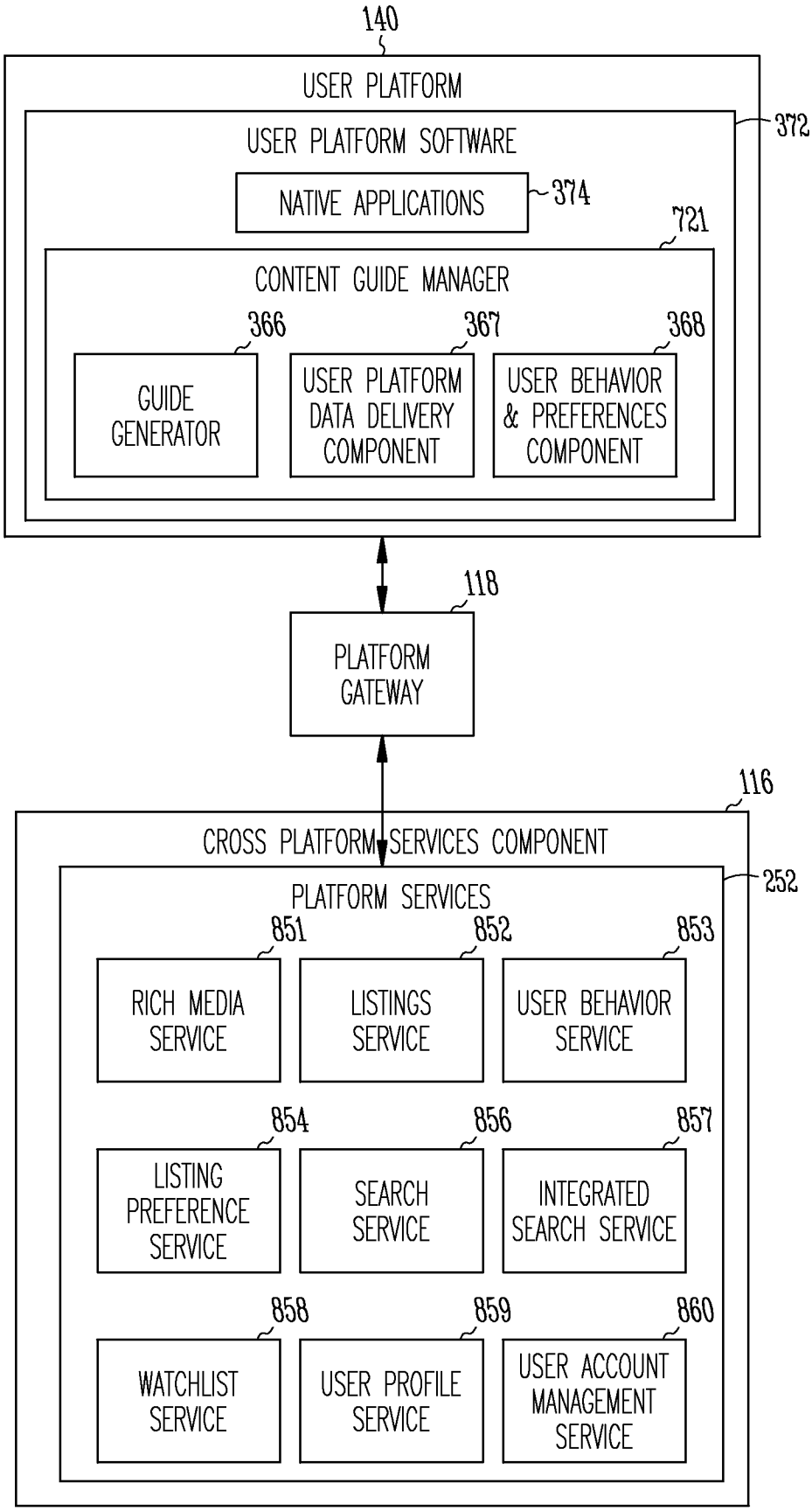
140
USER PLATFORM
372
USER PLATFORM SOFTWARE
NATIVE APPLICATIONS
374
721
CONTENT GUIDE MANAGER
366
367
368
GUIDE GENERATOR
USER PLATFORM DATA DELIVERY COMPONENT
USER BEHAVIOR & PREFERENCES COMPONENT
118
PLATFORM GATEWAY
116
CROSS PLATFORM SERVICES COMPONENT
252
PLATFORM SERVICES
851
852
853
RICH MEDIA SERVICE
LISTINGS SERVICE
USER BEHAVIOR SERVICE
854
856
857
LISTING PREFERENCE SERVICE
SEARCH SERVICE
INTEGRATED SEARCH SERVICE
858
859
860
WATCHLIST SERVICE
USER PROFILE SERVICE
USER ACCOUNT MANAGEMENT SERVICE

Fig. 10

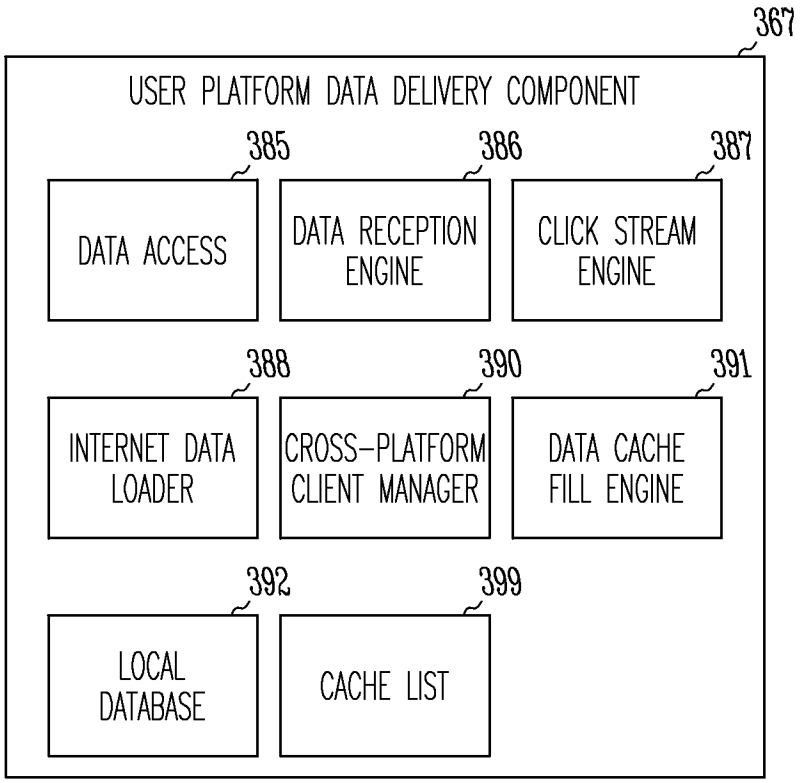
367
USER PLATFORM DATA DELIVERY COMPONENT
385
386
387
DATA ACCESS
DATA RECEPTION ENGINE
CLICK STREAM ENGINE
388
390
391
INTERNET DATA LOADER
CROSS-PLATFORM CLIENT MANAGER
DATA CACHE FILL ENGINE
392
399
LOCAL DATABASE
CACHE LIST

Fig. 11

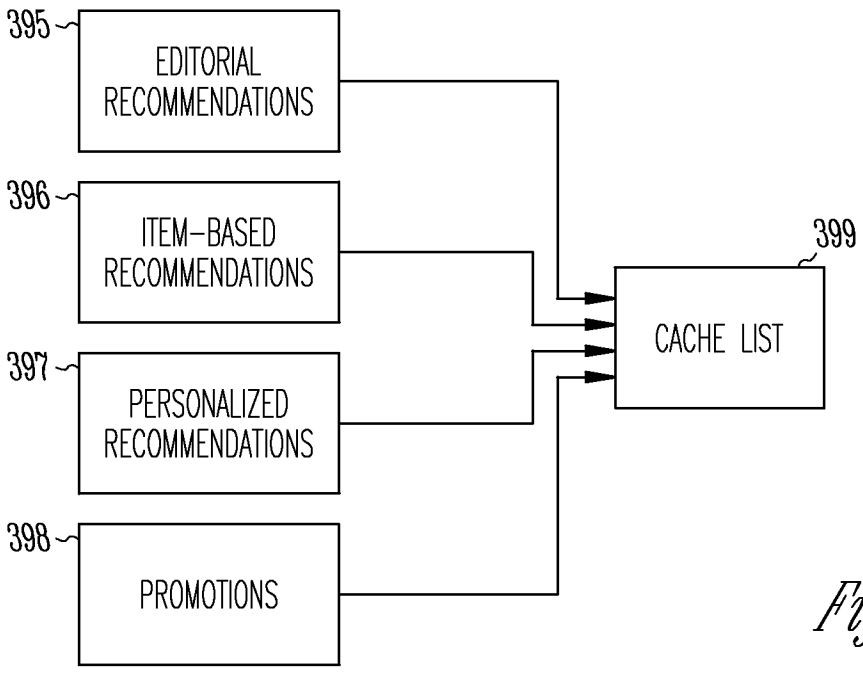
395
EDITORIAL RECOMMENDATIONS
396
ITEM-BASED RECOMMENDATIONS
397
PERSONALIZED RECOMMENDATIONS
398
PROMOTIONS
399
CACHE LIST

Fig. 12

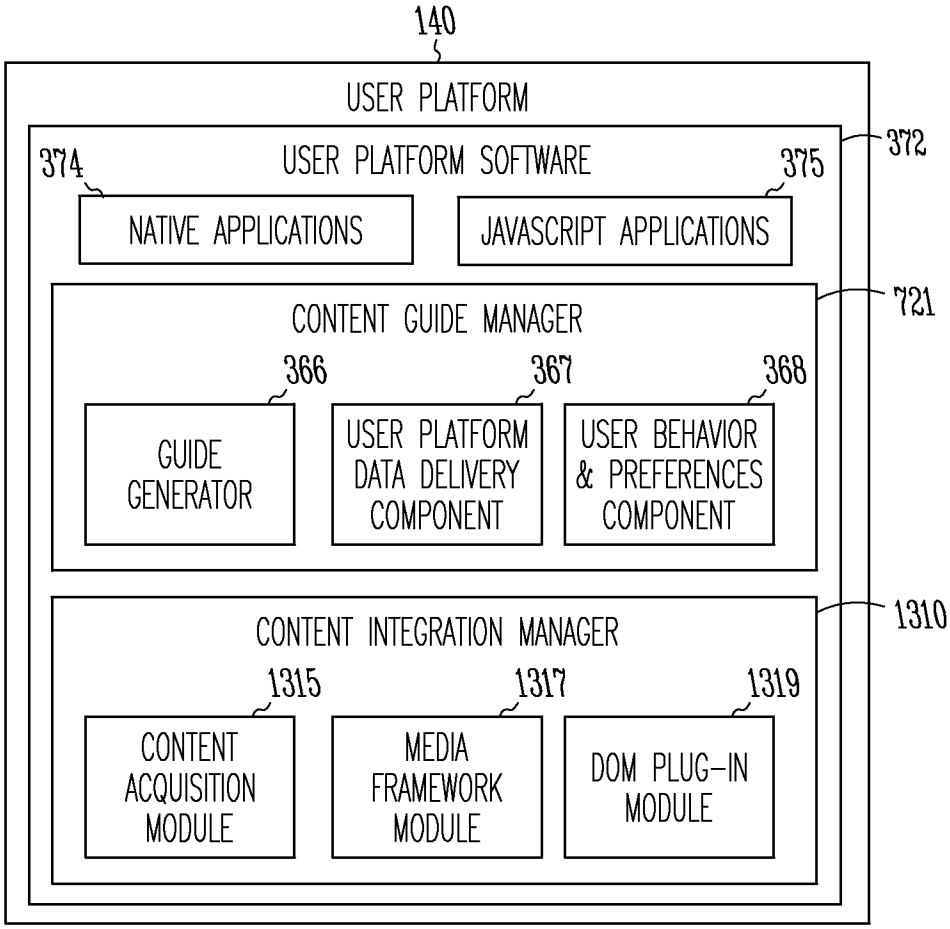
140
USER PLATFORM
372
374
USER PLATFORM SOFTWARE
375
NATIVE APPLICATIONS
JAVASCRIPT APPLICATIONS
721
CONTENT GUIDE MANAGER
366
367
368
GUIDE GENERATOR
USER PLATFORM DATA DELIVERY COMPONENT
USER BEHAVIOR & PREFERENCES COMPONENT
1310
CONTENT INTEGRATION MANAGER
1315
1317
1319
CONTENT ACQUISITION MODULE
MEDIA FRAMEWORK MODULE
DOM PLUG-IN MODULE

Fig. 13

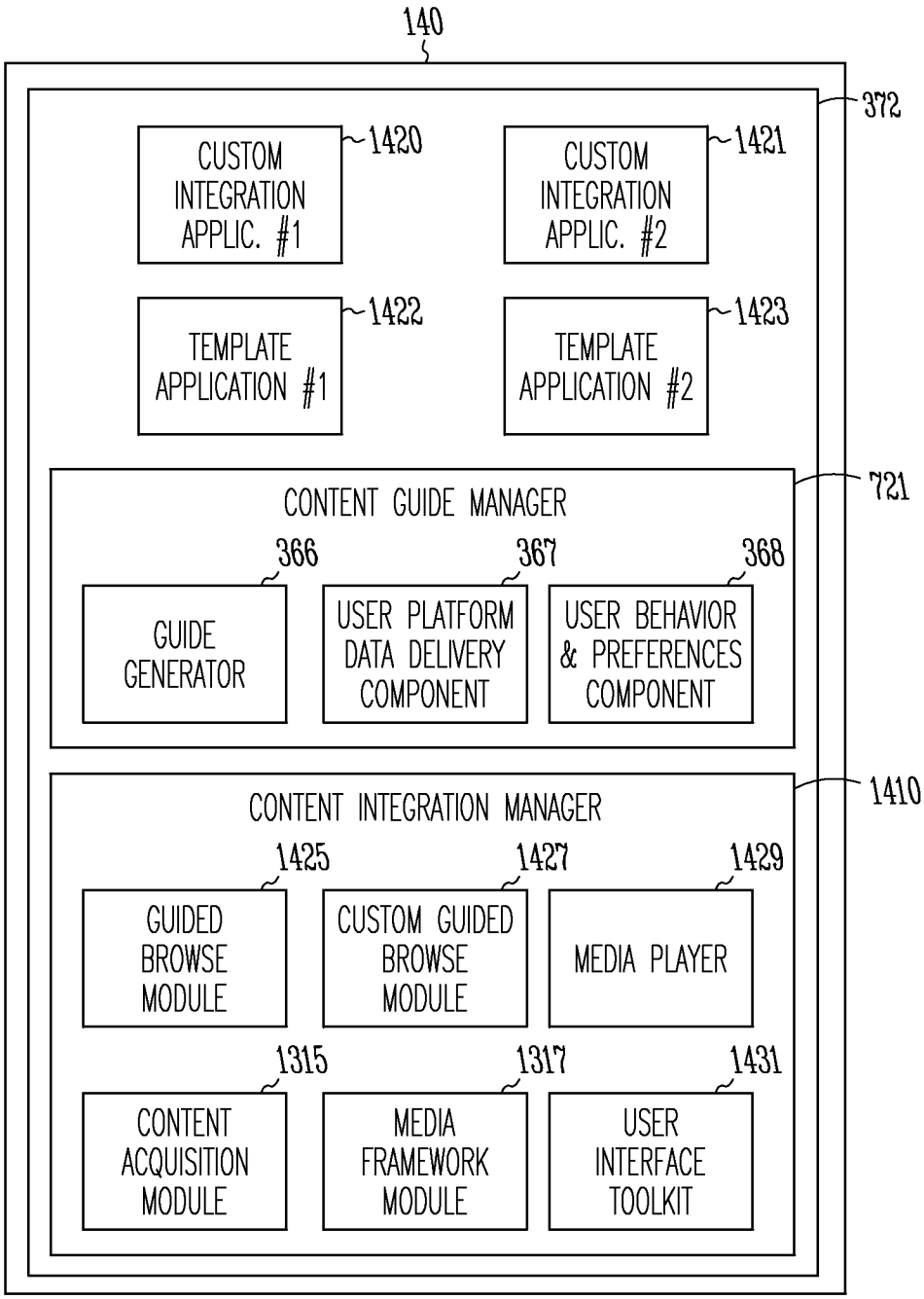
140
372
CUSTOM INTEGRATION APPLIC. #1
1420
CUSTOM INTEGRATION APPLIC. #2
1421
TEMPLATE APPLICATION #1
1422
TEMPLATE APPLICATION #2
1423
CONTENT GUIDE MANAGER
721
366
367
368
GUIDE GENERATOR
USER PLATFORM DATA DELIVERY COMPONENT
USER BEHAVIOR & PREFERENCES COMPONENT
CONTENT INTEGRATION MANAGER
1410
1425
1427
1429
GUIDED BROWSE MODULE
CUSTOM GUIDED BROWSE MODULE
MEDIA PLAYER
1315
1317
1431
CONTENT ACQUISITION MODULE
MEDIA FRAMEWORK MODULE
USER INTERFACE TOOLKIT

Fig. 14

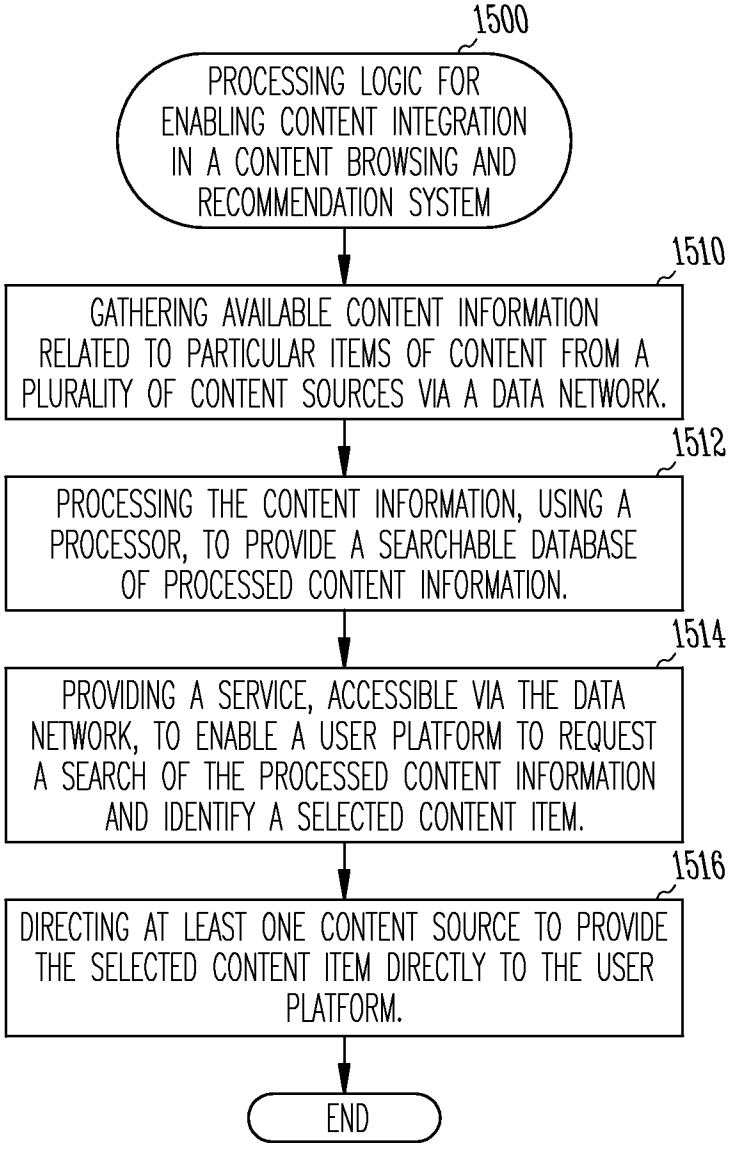
1500
PROCESSING LOGIC FOR ENABLING CONTENT INTEGRATION IN A CONTENT BROWSING AND RECOMMENDATION SYSTEM
1510
GATHERING AVAILABLE CONTENT INFORMATION RELATED TO PARTICULAR ITEMS OF CONTENT FROM A PLURALITY OF CONTENT SOURCES VIA A DATA NETWORK.
1512
PROCESSING THE CONTENT INFORMATION, USING A PROCESSOR, TO PROVIDE A SEARCHABLE DATABASE OF PROCESSED CONTENT INFORMATION.
1514
PROVIDING A SERVICE, ACCESSIBLE VIA THE DATA NETWORK, TO ENABLE A USER PLATFORM TO REQUEST A SEARCH OF THE PROCESSED CONTENT INFORMATION AND IDENTIFY A SELECTED CONTENT ITEM.
1516
DIRECTING AT LEAST ONE CONTENT SOURCE TO PROVIDE THE SELECTED CONTENT ITEM DIRECTLY TO THE USER PLATFORM.
END

Fig. 15

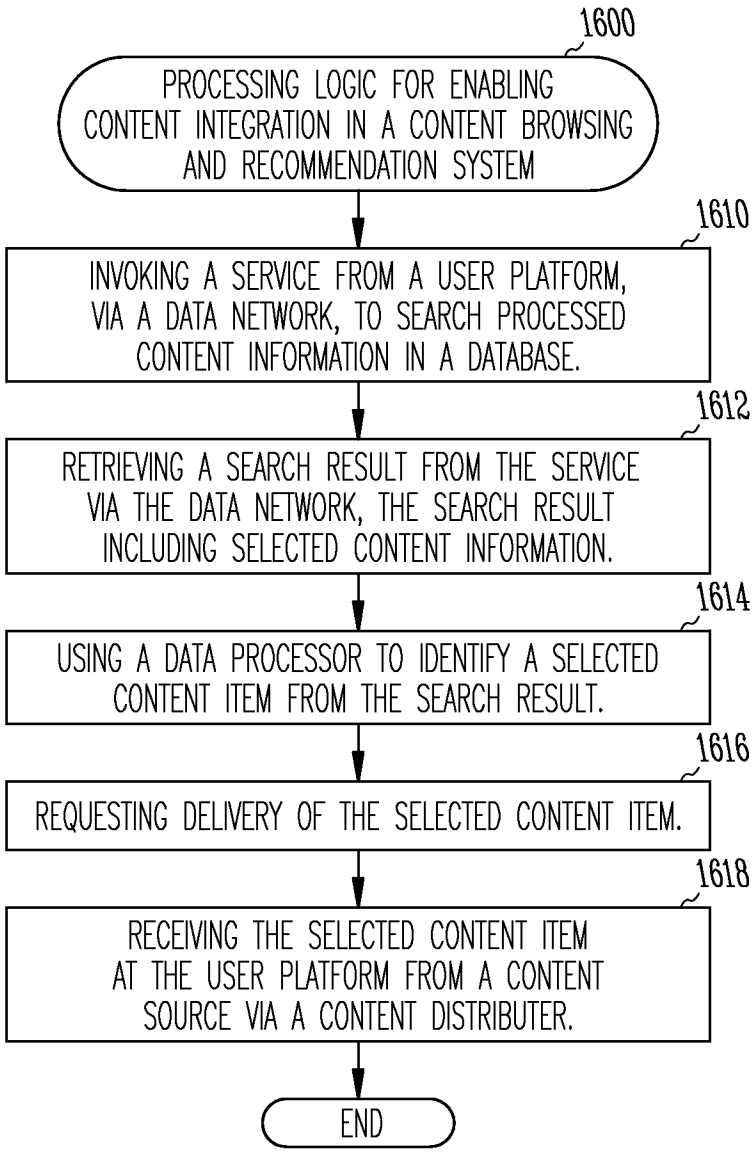
1600
PROCESSING LOGIC FOR ENABLING CONTENT INTEGRATION IN A CONTENT BROWSING AND RECOMMENDATION SYSTEM
1610
INVOKING A SERVICE FROM A USER PLATFORM, VIA A DATA NETWORK, TO SEARCH PROCESSED CONTENT INFORMATION IN A DATABASE.
1612
RETRIEVING A SEARCH RESULT FROM THE SERVICE VIA THE DATA NETWORK, THE SEARCH RESULT INCLUDING SELECTED CONTENT INFORMATION.
1614
USING A DATA PROCESSOR TO IDENTIFY A SELECTED CONTENT ITEM FROM THE SEARCH RESULT.
1616
REQUESTING DELIVERY OF THE SELECTED CONTENT ITEM.
1618
RECEIVING THE SELECTED CONTENT ITEM AT THE USER PLATFORM FROM A CONTENT SOURCE VIA A CONTENT DISTRIBUTER.
END

Fig. 16

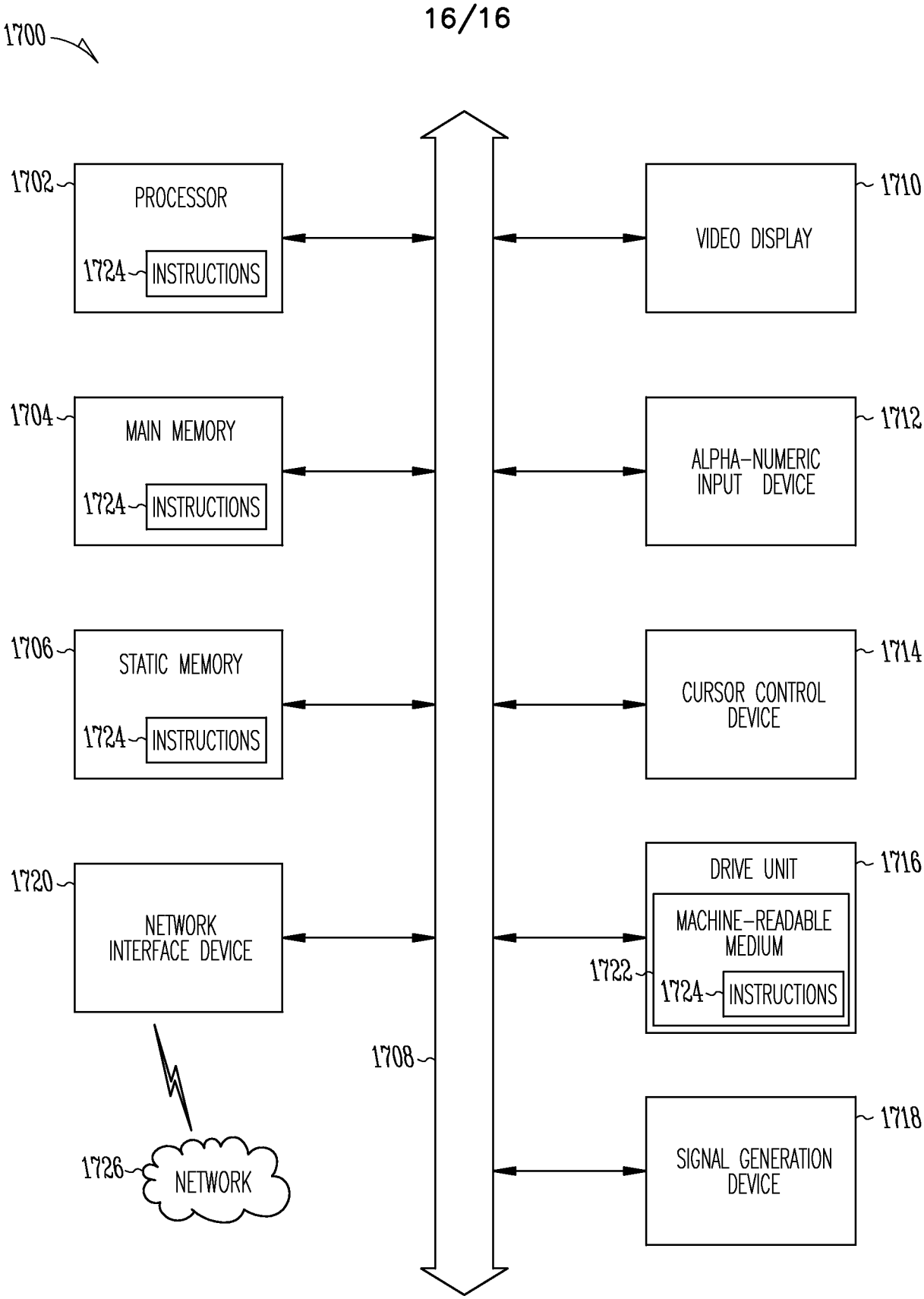
1700
1702
PROCESSOR
1724
INSTRUCTIONS
1704
MAIN MEMORY
1724
INSTRUCTIONS
1706
STATIC MEMORY
1724
INSTRUCTIONS
1720
NETWORK INTERFACE DEVICE
1726
NETWORK
1708
1710
VIDEO DISPLAY
1712
ALPHA-NUMERIC INPUT DEVICE
1714
CURSOR CONTROL DEVICE
1716
DRIVE UNIT
MACHINE-READABLE MEDIUM
1722
1724
INSTRUCTIONS
1718
SIGNAL GENERATION DEVICE

Fig. 17

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/051506

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F17/30
ADD.

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)
G06F

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007/073704 A1 (BOWDEN JEFFREY L [US] ET AL) 29 March 2007 (2007-03-29) * abstract paragraph [0034] - paragraph [0037] paragraph [0046] paragraph [0049] paragraph [0052] - paragraph [0054] paragraph [0062] paragraph [0068] ----- -/--	1-74

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 January 2011	10/02/2011

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	de Castro Palomares

1

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/051506

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/56066 A1 (WEBTV NETWORKS INC [US]) 21 September 2000 (2000-09-21) * abstract page 2, line 29 - page 3, line 10 page 5, line 6 - line 8 page 5, line 27 - line 32 page 7, line 8 - line 11 page 10, line 31 - line 32 page 12, line 1 - line 17 page 15, line 5 - line 10	1,2,9, 10,17, 21,22, 50-52, 59-61, 68-70, 72-74
X	WO 01/67317 A1 (BETTER T V TECHNOLOGIES LTD [IL]; FEIGIN PAUL [IL]; HUPERT GRAFF SHARO) 13 September 2001 (2001-09-13) page 4, line 2 - line 17 page 6, line 9 - page 7, line 14	1,9,17, 21,47, 50,59, 68,72
X	WO 03/042866 A2 (KONINKL PHILIPS ELECTRONICS NV [NL]) 22 May 2003 (2003-05-22) page 4, line 5 - line 30 page 5, line 1 - line 10 page 6, line 24 - page 7, line 24 * abstract	1,9,17, 21,26, 34,42, 47,50, 59,68,72
A	US 2004/034650 A1 (SPRINGER THOMAS BRIAN [US] ET AL SPRINGER JR THOMAS BRIAN [US] ET AL) 19 February 2004 (2004-02-19) * abstract paragraph [0008] - paragraph [0009] paragraph [0023] paragraph [0028] paragraph [0043] - paragraph [0044] paragraph [0052]	1-74

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2010/051506

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007073704 A1	29-03-2007	WO 2008066503 A2	05-06-2008
WO 0056066 A1	21-09-2000	EP 1166552 A1	02-01-2002
		US 2005183116 A1	18-08-2005
		US 2005177849 A1	11-08-2005
		US 6904609 B1	07-06-2005
WO 0167317 A1	13-09-2001	AU 3951901 A	17-09-2001
		EP 1272956 A1	08-01-2003
		US 2004044677 A1	04-03-2004
WO 03042866 A2	22-05-2003	CN 1585947 A	23-02-2005
		EP 1449124 A2	25-08-2004
		JP 2005509949 T	14-04-2005
		US 2003093794 A1	15-05-2003
US 2004034650 A1	19-02-2004	US 2007073767 A1	29-03-2007