



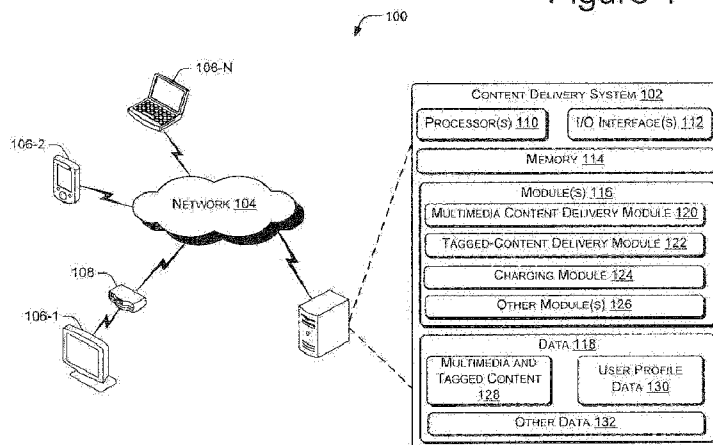
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(54) **Title:** DYNAMIC CONTENT DELIVERY IN A MULTISCREEN DIGITAL TELEVISION ENVIRONMENT

Figure 1



(57) **Abstract:** Method(s) and system(s) for dynamic content delivery in a multiscreen digital television (DTV) environment (100) are disclosed. The method includes streaming a multimedia content to a first content viewing device (106-1) of the multiscreen DTV environment (100), and providing tags on the first content viewing device (106-1) during the streaming of the multimedia content. Each of the tags is associated with a predefined content sequence within the multimedia content. The method further includes receiving a signal indicative of a user selected tag, from amongst the tags provided on the first content viewing device, and providing one of an audio and an audio-video of the predefined content sequence corresponding to the user selected tag to a second content viewing device (106-2) of the multiscreen DTV environment(100).

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**DYNAMIC CONTENT DELIVERY IN A MULTISCREEN DIGITAL
TELEVISION ENVIRONMENT**

FIELD OF INVENTION

[0001] The present subject matter relates to dynamic content delivery and,
5 particularly, but not exclusively, to dynamic content delivery in a multiscreen
digital television environment.

BACKGROUND

[0002] Advancements in digital television (DTV) have led to multiscreen
DTV, in which a user can register multiple electronic devices with the service
10 provider of the DTV and receive multimedia content, offered by the service
provider, on any of the multiple electronic devices. The registered electronic
devices of a user may include, for example, a television, a personal computer, a
smartphone, and a tablet. The user may be referred to as a multiscreen subscriber.
The multimedia content, including audio-video content, can be broadcasted or
15 unicast by the service provider. Broadcasting is understood as the streaming of
multimedia content to the electronic devices of multiple users. Unicasting is
understood as the streaming of multimedia content to an electronic device of a
particular user, based on the request from that user. An example of unicasting is
the streaming of a video-on-demand.

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SUMMARY

[0003] This summary is provided to introduce concepts related to dynamic
content delivery in a multiscreen digital television (DTV) environment. This
summary is not intended to identify features of the claimed subject matter nor is it
directed to use in determining or limiting the scope of the claimed subject matter.

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[0004] In an implementation of the present subject matter, a method for
dynamic content delivery in a multiscreen DTV environment is disclosed. The
method includes streaming a multimedia content to a first content viewing device
of the multiscreen DTV environment, and providing tags on the first content
viewing device during the streaming of the multimedia content. Each of the tags is

associated with a predefined content sequence within the multimedia content. The method further includes receiving a signal indicative of a user selected tag, from amongst the tags provided on the first content viewing device, and providing one of an audio and an audio-video of the predefined content sequence corresponding to the user selected tag to a second content viewing device of the multiscreen DTV environment.

[0005] In accordance with another implementation of the present subject matter, a content delivery system for dynamic content delivery in a multiscreen DTV environment is disclosed. The content delivery system includes a processor, a multimedia content delivery module coupled to, and executable by, the processor, and a tagged-content delivery module coupled to, and executable by, the processor. The multimedia content delivery module may stream a multimedia content to a first content viewing device of the multiscreen DTV environment, and provide tags on the first content viewing device during the streaming of the multimedia content. Each of the tags is associated with a predefined content sequence within the multimedia content. The tagged-content delivery module may receive a signal indicative of a user selected tag, from amongst the tags provided on the first content viewing device, and provide one of an audio and an audio-video of the predefined content sequence corresponding to the user selected tag to a second content viewing device of the multiscreen DTV environment.

[0006] In accordance with another implementation of the present subject matter, a non-transitory computer readable medium comprising instructions to implement a method for dynamic content delivery in a multiscreen DTV environment is disclosed. The method includes streaming a multimedia content to a first content viewing device of the multiscreen DTV environment; and providing tags on the first content viewing device during the streaming of the multimedia content. Each of the tags is associated with a predefined content sequence within the multimedia content. The method further includes receiving a signal indicative of a user selected tag, from amongst the tags provided on the first content viewing device; and providing one of an audio and an audio-video of the predefined

content sequence corresponding to the user selected tag to a second content viewing device of the multiscreen DTV environment.

[0007] In accordance with another implementation of the present subject matter, a content viewing device of a multimedia DTV environment is disclosed.

5 The content viewing device includes a processor configured to display a multimedia content streamed from a content delivery system, and display tags on a screen of the content viewing device during the display of the multimedia content. Each of the tags is associated with a predefined content sequence within the multimedia content. The processor is also configured to receive a user input
10 for a user selected tag, where the user selected tag is amongst the tags displayed of the screen of the content viewing device. The processor is further configured to provide a signal to the content delivery system, where the signal is provided based on the user input for obtaining one of an audio and an audio-video of the predefined content sequence corresponding to the user selected tag on another
15 content viewing device of the multiscreen digital television environment.

BRIEF DESCRIPTION OF THE FIGURES

[0008] The detailed description is described with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The same
20 numbers are used throughout the figures to reference like features and components. Some implementations of system and/or methods in accordance with implementations of the present subject matter are now described, by way of examples, and with reference to the accompanying figures, in which:

[0009] Figure 1 schematically illustrates a multiscreen digital television
25 environment having a content delivery system, in accordance with an implementation of the present subject matter.

[0010] Figure 2 illustrates an exemplary method for dynamic content delivery in a multiscreen digital television environment, in accordance with an implementation of the present subject matter.

[0011] It should be appreciated by those skilled in the art that any block diagrams herein represent conceptual views of illustrative systems embodying the principles of the present subject matter. Similarly, it will be appreciated that any flow charts, flow diagrams, state transition diagrams, pseudo code, and the like represent various processes which may be substantially represented in a non-transitory computer readable medium and so executed by a computer or processor, whether or not such computer or processor is explicitly shown.

DESCRIPTION OF EMBODIMENTS

[0012] The present subject matter relates to systems and methods for dynamic content delivery in a multiscreen digital television (DTV) environment.

[0013] A multiscreen DTV environment may be understood as a network environment in which digital TV services are offered by a service provider to multiscreen subscribers, referred to as users. Content delivery in a multiscreen DTV environment may be understood as provisioning or streaming of multimedia content, through digital TV services, to multiple registered electronic devices of each of the users. The content delivery in a multiscreen DTV environment may be based on Internet Protocol (IP) TV, direct-to-home (DTH) TV, satellite TV, cable TV, and the like, and can be in standard definition format, high definition format or any other format. The registered electronic devices of a user, also referred to as content viewing devices, may include a television, a personal computer, a smartphone, a tablet, and the like. The multimedia content may include audio-video content related to movies, news, sports, etc., and may be provided through different transmission channels. The multimedia content may be broadcast to various registered content viewing devices, or unicast to a registered content viewing device through pay-per-view or on-demand channels.

[0014] Consider a scenario where a user is watching a multimedia content, such as a movie, on a registered content viewing device, such as a TV, and while watching the movie the user likes one or more content sequences, for example, songs, within the movie. The user may wish to have audio or audio-video of one or more of the songs on another content viewing device, such as a smartphone, so

that he can listen to or view the songs again separately. Typically, in such a scenario, the user may search for those songs on an online database and download the songs through internet to save them on the smartphone. Alternatively, the subscriber may visit a store and purchase a storage medium, for example, a compact disc (CD) or a digital video disc (DVD) having the songs compiled thereon. With the conventional methods, as described above, the subscriber may have to spend substantial time and effort in searching and downloading, or visiting a store and purchasing, in order to have the audio or the audio-video of the songs on the smartphone. As will be appreciated, in other examples, the audio or audio-video sequence liked by a user may relate to different portions of the multimedia content watched by the user on the registered content viewing device.

[0015] The present subject matter describes systems and methods for dynamic content delivery in a multiscreen DTV environment. The dynamic content delivery in the multiscreen DTV environment, in accordance with the present subject matter, may be understood as providing, on one content viewing device of a user, an audio or an audio-video of a predefined content sequence within a multimedia content, while the user is viewing the multimedia content on another content viewing device. In an example, the multimedia content can be referred to as a primary multimedia content, such as a movie, being watched by the user, and the predefined content sequence can be a content sequence or a portion of the primary multimedia content, for example, a song sequence, an action-scene sequence, or a comedy-scene sequence within the primary multimedia content, which is selected by the user. Thus, with the systems and the methods of the present subject matter, the user can dynamically obtain the audio or the audio-video of one or more songs, action-scene sequences, and comedy-scene sequences, from the movie, on his smartphone, personal computer or tablet, with substantial ease and without spending much time and effort, while the user is watching the movie on his TV. Although in the example described herein the multimedia content is a movie and the predefined content sequence within the multimedia content is a song sequence, an action-scene sequence, a comedy-scenes; however, the multimedia content can be any audio-video content related to

news, sports, etc., and the predefined content sequence within the multimedia content can be a news clipping, a sports clipping, etc.

[0016] The systems and the methods described herein may be implemented in a variety of multiscreen DTV environments, such as an IP TV environment, a DTH TV environment, a satellite TV environment, and a cable TV environment. Further, the systems and the methods of the present subject matter may be implemented in a content server or any other server or computing device of the service provider of the multiscreen DTV environment, through which the multimedia content and the predefined content sequences within the multimedia content can be provided to various content viewing devices of the users in the multiscreen DTV environment. Although the description herein is with reference to certain multiscreen DTV environments and computing device, the systems and the methods may be implemented in other DTV environments and computing devices, albeit with a few variations, as will be understood by a person skilled in the art.

[0017] In an implementation, a multimedia content may be streamed from a content server to a first content viewing device of a user in a multiscreen DTV environment. The first content viewing device of the user may be a content viewing device registered with the service provider of the multiscreen digital TV environment and may include a TV, a personal computer, a smartphone, or a tablet. For the purpose of dynamic content delivery, tags may be provided on the first content viewing device during the streaming of the multimedia content. Each tag is associated with a predefined content sequence within the multimedia content. In an example where the multimedia content is a movie, the tag can be for a song sequence, an action-scene sequence, a comedy scene sequence, a trailer sequence, etc. In an implementation, each tag can be in the form of a visual indicator that can be displayed on a screen of the first content viewing device for indicating the presence of the corresponding predefined content sequence within the multimedia content, while the multimedia content is being streamed to the first content viewing device.

[0018] In an implementation, each tag may be provided and accordingly displayed on the first content viewing device while the predefined content sequence corresponding to the respective tag is being played on the first content viewing device. With this, in case the user wishes to obtain the predefined content sequence corresponding to a displayed tag, the user can provide an input to the first content viewing device based on the visual indicator for the tag. The tag based on which the user provides the input is referred to as the user selected tag. Based on the user input, a signal indicative of the user selected tag may be received by the content server from the content viewing device. In response, an audio or an audio-video of the predefined content sequence corresponding to the user selected tag is provided from the content server to a second content viewing device of the user. The second content viewing device of the user may be a content viewing device registered with the service provider of the multiscreen digital TV environment and may include a smartphone, a personal computer, and a tablet. In an implementation, the audio or the audio-video of the predefined content sequence may be provided to the second content viewing device in a format that is compatible with the second content viewing device. The audio or the audio-video of the predefined content sequence can then be accordingly saved in the second content viewing device.

[0019] In an implementation, the user may be charged, from a user account, for the predefined content sequence provided to the second content viewing device of the user. The user account may be maintained with the service provider. The user may be charged based on a fixed charging rate for any of the predefined content sequences or based on a variable charging rate depending on the type and/or the duration of the predefined content sequence. In an implementation, the charging rate may be a pre-decided rate, offered to the user account. In an implementation, the charging rate may be a dynamic rate, provided with the tag. The dynamic rate may be varied by the service provider and may depend on the type and/or the duration of the predefined content sequence. Based on the charging rate provided by the tag, the user may decide to obtain the predefined content sequence.

[0020] In an implementation, the tag, or the visual indicator for the tag, may provide details, such as title and/or the genre for the predefined content sequence corresponding to the tag. For example, for a song sequence the tag may provide the title of the song, and for an action-scene sequence the tag may provide the genre as “Action”.

[0021] The above systems and methods are further described in conjunction with the following figures. It should be noted that the description and figures merely illustrate the principles of the present subject matter. It will thus be appreciated that those skilled in the art will be able to devise various arrangements that, although not explicitly described or shown herein, embody the principles of the present subject matter. Furthermore, all examples recited herein are principally intended to aid the reader in understanding the principles of the present subject matter. Moreover, all statements herein reciting principles, aspects, and implementations of the present subject matter, as well as specific examples thereof, are intended to encompass equivalents thereof.

[0022] The manner in which the systems and methods for dynamic content delivery in a multiscreen DTV environment shall be explained in details with respect to the Figures 1 and 2. While aspects of described systems and methods for dynamic content delivery in a multiscreen DTV environment can be implemented in any number of different computing devices, transmission environments, and/or configurations, the implementations are described in the context of the following exemplary system(s).

[0023] Figure 1 illustrates a multiscreen DTV environment 100 having a content delivery system 102, in accordance with an implementation of the present subject matter. The content delivery system 102 may be implemented in a content server, or any other computing device, of the service provider for dynamic delivery of multimedia content to content viewing devices of multiscreen subscribers in the multiscreen DTV environment 100. The multiscreen subscribers in the multiscreen DTV environment 100 may be referred to as users. The content delivery system 102 may be communicatively coupled over a network 104 with multiple content viewing devices 106-1, 106-2, ... , 106-N of a user, as depicted

in Figure 1. The multiple content viewing devices 106-1, 106-2, ... , 106-N of the user are the devices registered with the service provider and are hereinafter collectively referred to as the content viewing devices 106 and individually referred to as the content viewing device 106. The content viewing devices 106 of a user may include a TV, a smartphone, a personal computer, a tablet, and the like. In the multiscreen DTV environment 100, the multimedia content may be transformed into different formats, different bit rates and different resolutions for displaying on different content viewing devices 106. For the sake of simplicity and the description herein, the content viewing devices 106 of one multiscreen subscriber are shown in the multiscreen DTV environment 100; however, the multiscreen DTV environment 100 may include content viewing devices of multiple multiscreen subscribers.

[0024] In an implementation, the multiscreen DTV environment 100 may be based on IP TV, DTH TV, satellite TV, or cable TV. The multimedia content that is sent to various content viewing devices 106 in the multiscreen DTV environment 100 is encoded by an encoder at the service provider's end, for example, in the content server. The encoded multimedia content is transmitted to the content viewing devices 106, where the multimedia content is decoded by a decoder. Thereafter, the content may be displayed on a screen of the respective content viewing device 106. The screen may be, but is not restricted to, an electro luminescent display (ELD) screen, a plasma display panel (PDP), an organic light emitting diode (OLED) screen, a light emitting diode (LED) screen, a liquid crystal display (LCD) screen, and a thin-film transistor LCD (TFT-LCD) screen. In a case where the content viewing device 106 is a TV, the decoder may be implemented in a set top box (STB) 108, as shown. Although, the STB 108 is shown external to the content viewing device 106, the STB 108 can be integrated within the content viewing device 106. In a case where the content viewing device 106 is a personal computer, a TV tuner card may be implemented as the decoder. Further, in a case where the content viewing device 106 is a smart phone or a tablet, a digital TV receiver may be implemented as the decoder.

[0025] In the multiscreen DTV environment 100, the multimedia content may include contents related to movies, news, sports, etc., provided to all the content viewing devices 106 through broadcast channels. In an implementation, the multimedia content may include a video-on-demand (VOD) provided to a particular content viewing device 106, as requested by the user, through a unicast channel. The unicast channel may include pay-per-view channel and VOD channel.

[0026] Further, the network 104 may be a combination of wired and wireless networks. The network 104 may be a collection of individual networks, interconnected with each other and functioning as a single network. The communication over the network 104 may be through satellite communication, terrestrial communication, or through the use of routers and access points connected to various Digital Subscriber Line Access Multiplexers (DSLAMs) of wired networks. The network 104 can be implemented as one of the different types of networks, such as intranet, local area network (LAN), wide area network (WAN), the Internet, and such.

[0027] In an implementation, the content delivery system 102 includes processor(s) 110, I/O interface(s) 112, and a memory 114 coupled to the processor(s) 110. The processor(s) 110 may be implemented as one or more microprocessors, microcomputers, microcontrollers, digital signal processors, central processing units, state machines, logic circuitries, and/or any devices that manipulate signals based on operational instructions. Among other capabilities, the processor(s) 110 are configured to fetch and execute computer-readable instructions stored in the memory 114.

[0028] The functions of the various elements shown in the figure, including any functional blocks labeled as “processor(s)”, may be provided through the use of dedicated hardware as well as hardware capable of executing computer-readable instructions. When provided by a processor, the functions may be provided by a single dedicated processor, by a single shared processor, or by a plurality of individual processors, some of which may be shared. Moreover, explicit use of the term “processor” should not be construed to refer exclusively to

hardware capable of executing software, and may implicitly include, without limitation, digital signal processor (DSP) hardware, network processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), read only memory (ROM) for storing software, random access memory (RAM), and non volatile storage. Other hardware, conventional and/or customized, may also be included.

[0029] The I/O interface(s) 112 may include a variety of software and hardware interfaces, for example, interfaces for peripheral device(s), such as data input output devices, referred to as I/O devices, storage devices, network devices, etc. The I/O device(s) may include Universal Serial Bus (USB) ports, Ethernet ports, host bus adaptors, etc., and their corresponding device drivers. The I/O interface(s) 112 facilitate the communication of the content delivery system 102 with various networks, such as the network 104 and various communication and computing devices, such as the content viewing devices 106.

[0030] The memory 114 may include any non-transitory computer-readable medium including volatile memory, such as Static Random Access Memory (SRAM) and Dynamic Random Access Memory (DRAM), and/or non-volatile memory, such as read only memory (ROM), erasable programmable ROM, flash memories, hard disks, optical disks, and magnetic tapes.

[0031] The content delivery system 102 may also include module(s) 116 and data 118. The module(s) 116, amongst other things, are coupled to, and executable by, the processor(s) 110. The module(s) 116 include routines, programs, objects, components, data structures, etc., which perform particular tasks or implement particular abstract data types. The module(s) 116 may also be implemented as, signal processor(s), state machine(s), logic circuitries, and/or any other device or component that manipulate signals based on operational instructions.

[0032] Further, the module(s) 116 can be implemented in hardware, instructions executed by a processing unit, or by a combination thereof. The processing unit can comprise a computer, a processor, such as the processor 110, a state machine, a logic array or any other suitable devices capable of processing instructions. The processing unit can be a general-purpose processor which

executes instructions to cause the general-purpose processor to perform the required tasks, or the processing unit can be dedicated to perform the required functions.

[0033] In another aspect of the present subject matter, the module(s) 116 may be machine-readable instructions which, when executed by a processor/processing unit, perform any of the described functionalities. The machine-readable instructions may be stored on an electronic memory device, hard disk, optical disk or other machine-readable storage medium or non-transitory medium. The module(s) 116 can be loaded into memory and executed by the processor(s) 110 to implement functions as discussed herein. In one implementation, the machine-readable instructions can be also be downloaded to the storage medium via a network connection.

[0034] In an implementation, the module(s) 116 includes a multimedia content delivery module 120, a tagged-content delivery module 122, a charging module 124, and other module(s) 126. The other module(s) 126 may include programs or coded instructions that supplement applications and functions of the content delivery system 102. The data 118 amongst other things, serves as a repository for storing data processed, received, associated, and generated by one or more of the module(s) 116. The data 118 includes, for example, multimedia and tagged content 128, user profile data 130, and other data 132. The other data 132 includes data generated as a result of the execution of one or more modules in the other module(s) 126. Although the data 118 is shown internal to the content delivery system 102, it may be understood that the data 118 can reside in an external memory which is coupled to the processor(s) 110.

[0035] For receiving multimedia content through DTV services offered by the service provider for the multiscreen DTV environment 100, the users may have to subscribe or register with the service provider. The service provider may create user account for each user, in which a user profile is maintained. The user profile may include user identification details, such as name, address, contact details, along with the details of the DTV services, content, and channels that the respective user has subscribed for may be included. In addition, in the multiscreen

DTV environment 100, the service provider may register each of the content viewing devices 106 of the user through which the user may access the DTV services. The details pertaining to such content viewing devices 106 of the user may be included in the respective user profile. In an implementation, the user profile for each user may be stored in the user profile data 130.

[0036] The description hereinafter describes the dynamic delivery of multimedia content in the multiscreen DTV environment 100 through the content delivery system 102, in accordance with an example implementation. The example described herein considers a case where the user is watching a movie requested through a VOD channel on a first content viewing device, such as a registered TV, as depicted through 106-1, and, while watching the movie, the user wishes to obtain an audio of a song from the movie, on a second content viewing device, such as a registered smartphone, as depicted through 106-2. For the case described herein, the movie is referred to as a multimedia content, and the song is referred to as a predefined content sequence within the multimedia content. Although the description is provided for the above mentioned case; however, the description can be extended to dynamically deliver audio or audio-video of one or more predefined content sequences within a multimedia content on one content viewing device, while the user is viewing the multimedia content on another content viewing device. The multimedia content may include, but is not limited to, an audio-video content related to entertainment, news, sports, etc., and the predefined content sequence within the multimedia content may include, but is not limited to, a song sequence, an action-scene sequence within a movie, a comedy-scene sequence within a movie, a news clipping, and a sports clipping. The first content viewing device may include a TV, a personal computer, a smartphone, or a tablet. The second content viewing device may include a smartphone, a personal computer, and a tablet.

[0037] In an implementation, each of the content viewing devices 106, including the first content viewing device 106-1, has a processor (not shown) configured to receive and display various contents, receive user inputs, and transmit signals in accordance with the present subject matter. In an example, for

the first content viewing device 106-1 being a TV, the STB 108 is integrated within the first content viewing device 106-1, and the processor of the first content viewing device 106-1 is the processor of the STB 108.

[0038] In an implementation, the multimedia content delivery module 120 streams the movie, from the content server, to the first content viewing device 106-1. The first content viewing device 106-1 displays the movie, streamed from the content server. During the streaming of the movie, the multimedia content delivery module 120 provides tags on the first content viewing device 106-1, where each tag is associated with a predefined content sequence within the movie. As mentioned earlier, the predefined content sequence within the movie can be a song sequence, an action-scene sequence, a comedy scene sequence, a trailer sequence, etc. One tag is associated with one of the predefined content sequences within the movie. The multimedia content for the movie and the data for the tags is stored in the multimedia and tagged content 128.

[0039] In an implementation, each tag is a visual indicator that is displayed by the first content viewing device 106-1, while the movie is being streamed to, and displayed on, the first content viewing device 106-1. Each tag is displayed on a screen of the first content viewing device 106-1. The tag, when displayed during the streaming, is indicative of the presence of the corresponding predefined content sequence within the movie. In an implementation, each tag, when displayed, provides a title, theme, genre of the predefined content sequence corresponding to the tag. In an example, for a song sequence, the tag may provide a title of the song along with the genre as “Romantic Song”. In another example, for a comedy sequence, the tag may provide a title of the sequence along with the genre as “Comedy”.

[0040] The tag provided for a predefined content sequence may pop-up and is displayed on the screen of the first content viewing device 106-1 while the predefined content sequence is being played. In an implementation, the tag may be displayed for a duration, hereinafter referred to as the tag time duration. The tag time duration may include the time duration of the corresponding predefined content sequence and a predefined time duration before the beginning and after

the end of the corresponding predefined content sequence. In an example, the predefined time duration, before the beginning and after the end of the predefined content sequence, may be in a range from 1 to 5 seconds.

[0041] Now, while watching the movie on the first content viewing device 106-1 if the user wishes to obtain the audio of a particular song from the movie on the second content viewing device 106-2, the user may provide an input based on the tag associated with that song, which is received by the first content viewing device 106-1. The tag based on which the user provides the input is referred to as the user selected tag.

10 [0042] Based on the user input, the tagged-content delivery module 122 receives a signal, where the signal is indicative of the user selected tag. The signal is provided by the first content viewing device 106-1. The tagged-content delivery module 122, in response to the received signal, provides the audio of the song sequence, corresponding to the user selected tag, to the second content viewing device 106-2. For this, in an implementation, based on the user input, the tagged-content delivery module 122 receives the signal comprising a uniform resource locator (URL) of the song sequence from the first content viewing device 106-1. Based on the URL of the song sequence, the tagged-content delivery module 122 fetches an audio stream of the song from the content server, and transmits the fetched audio stream to the second content viewing device 106-2. The audio stream of the song may be stored in the multimedia and tagged content 128. The user may receive a notification on the second content viewing device 106-2 to access the audio stream of the song. The user may accordingly save the audio of the song in a song directory in the second content viewing device 106-2.

25 [0043] In an implementation, the tagged-content delivery module 122 may provide the audio of the song to all the registered content viewing devices 106 of the user, apart from the first content viewing device 106-1. The user may selectively access the audio of the song to save the audio on one or more of the content viewing devices 106.

30 [0044] In an implementation, the tagged-content delivery module 122 may provide the audio of the song in a format compatible with the second content

viewing device 106-2. For this, the details, such as compatible format(s), for the second content viewing device 106-2 are available in the user profile data 130 of the content delivery system 102. The tagged-content delivery module 122 may refer to the compatible format(s) for the second content viewing device 106-2 and transmit the audio stream in a compatible format. In an implementation, the tagged-content delivery module 122 may convert the audio stream into the compatible format before transmitting it to the second content viewing device 106-2.

[0045] In an implementation, the tags, or the visual indicators of the tags, for the predefined content sequences may be in the form of interactive buttons which the user can select to provide the user input for the user selected tag. For the case where the first content viewing device is a TV, the user may select the interactive button and provide the user input through a remote controller of the TV. For the case where the first content viewing device is a smartphone or a tablet, the user may select the interactive button and provide the user input through a touch-based input or through an input unit, such as keypad or keyboard, of the smartphone or the tablet. For the case where the first content viewing device 106-1 is a personal computer, the user may select the interactive button and provide the user input through a touch-based input or through an input unit, such as keypad or keyboard, of the personal computer.

[0046] In an implementation, the tags, or the visual indicators of the tags, for the predefined content sequences may be in the form of non-interactive symbols. Such tags provide information based on which the user can provide the user input for the user selected tag. For the case where the first content viewing device is a TV, the tag may provide information indicative of a particular button or combination of buttons of the remote controller of the TV, which the user can press to provide the user input. Each tag may provide information indicative of a distinct button or distinct combination of buttons. In an example, the tag for song 1 can provide “Press Button A”, the tag for song 2 can provide “Press Button B”, and so on. In another example, the tag for song 1 can provide “Press Buttons 1-2-3”, the tag for song 2 can provide “Press Button 4-5-6”, and so on. For the case

where the first content viewing device is a smartphone, a tablet, or a person computer, each tag may provide information indicative of distinct character or a distinct combination of characters that can be entered through a touch-based input or through an input unit, such as keypad or keyboard, of the smartphone, the tablet, or the person computer.

5 [0047] In an implementation, each tag, when displayed, may provide an option to the user to provide a user input to obtain either the audio or the audio-video of the predefined content sequence corresponding to the tag. The user may provide the user input depending on whether the user wishes to obtain the audio or the audio-video on the second content viewing device 106-2. With this, in an implementation, the user input received by the first content viewing device 106-1 is indicative of whether to obtain the audio or the audio-video of the predefined content sequence corresponding to the user selected tag on the second content viewing device 106-2.

15 [0048] Further, in an implementation, each tag may provide a charging rate for obtaining the audio or the audio-video of the predefined content sequence corresponding to the tag. The charging rate may vary for obtaining the audio and obtaining the audio-video, and may depend on the duration of the predefined content sequence. The charging rate may also depend on the type of predefined content sequence, where the type may refer to whether it is for a song sequence, or action-scene sequence, or a comedy-scene sequence. The charging rates may be pre-decided rates, fixed by the service provider for the user. Information of such charging rates may be stored in the user profile data 130. The charging rate can be dynamic rates that may be changed by the service provider.

25 [0049] In an implementation, the charging module 124 charges a user account for obtaining each predefined content sequence on the second content viewing device 106-2. The charging module 124 may charge the user account based on the charging provided in the user selected tag. In an implementation, the user account may be a pre-paid account or a post-paid account. In the case of a pre-paid account, the tagged-content delivery module 122 may provide the audio or the

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audio-video of the predefined content sequence for the user selected tag, when the user account has a sufficient account balance.

[0050] Figure 2 illustrates a method 200 for dynamic content delivery in a multiscreen DTV environment, according to an implementation of the present subject matter. The order in which the method is described is not intended to be construed as a limitation, and any number of the described method blocks can be combined in any order to implement the method 200 or any alternative method. Additionally, individual blocks may be deleted from the method without departing from the scope of the subject matter described herein. Furthermore, the method can be implemented in any suitable hardware, software, firmware, or combination thereof.

[0051] The method(s) may be described in the general context of computer executable instructions. Generally, computer executable instructions can include routines, programs, objects, components, data structures, procedures, modules, functions, etc., that perform particular functions or implement particular abstract data types. The methods may also be practiced in a distributed computing environment where functions are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, computer executable instructions may be located in both local and remote computer storage media, including memory storage devices.

[0052] A person skilled in the art will readily recognize that steps of the method 200 can be performed by programmed computers. Herein, some implementations are also intended to cover program storage devices or computer readable medium, for example, digital data storage media, which are machine or computer readable and encode machine-executable or computer-executable programs of instructions, where said instructions perform some or all of the steps of the described method. The program storage devices may be, for example, digital memories, magnetic storage media, such as a magnetic disks and magnetic tapes, hard drives, or optically readable digital data storage media. The implementations are also intended to cover both communication network and communication devices to perform said steps of the method.

[0053] Although the method 200 for dynamic content delivery may be implemented in a variety of network devices or computing devices working in different multiscreen DTV environments; in an implementation described in Figure 2, the method 200 is explained in context of the aforementioned content delivery system 102 in the multiscreen DTV environment 100 for the ease of explanation.

[0054] Referring to Figure 2, at block 202, a multimedia content is streamed to a first content viewing device of the multiscreen DTV environment 100. The multimedia content may include, but is not limited to, an audio-video content related to entertainment, news, sports, etc. The first content viewing device may include a TV, a personal computer, a smartphone, or a tablet, of a user and registered with the service provider of the multiscreen DTV environment 100. The multimedia content is provided by the content delivery system 102.

[0055] At block 204, tags are provided on the first content viewing device during the streaming of the multimedia content. Each tag is associated with a predefined content sequence within the multimedia content. As mentioned earlier, each tag is a visual indicator that can be displayed on a screen of the first content viewing device, while the multimedia content is being streamed to the first content viewing device. The tag, when displayed during the streaming, is indicative of the presence of the corresponding predefined content sequence within the movie. Further, the tag for a predefined content sequence may be displayed on the screen of the first content viewing device while that predefined content sequence is being played. The tags in the multimedia content are provided by the content delivery system 102.

[0056] If the user, while viewing the multimedia content on the first content viewing device, wishes to obtain an audio or an audio-video of a particular predefined content sequence from the multimedia content on the second content viewing device, the user may provide an input to the first content viewing device based on the tag associated with that predefined content sequence. The tag based on which the user provides the input is referred to as the user selected tag.

[0057] Based on the user input, at block 206, a signal indicative of the user selected tag is received, and, at block 208, an audio or an audio-video of the predefined content sequence corresponding to the user selected tag is provided to a second content viewing device of the multiscreen DTV environment 100. The signal is received by the content delivery system 102, and the audio or the audio-video is provided by the content delivery system 102. As mentioned earlier, based on the user input, the signal comprising a URL of the predefined content sequence received from the first content viewing device. Based on the URL of the predefined content sequence, an audio stream or an audio-video stream of the predefined content sequence is fetched from the content server, and the fetched audio stream or audio-video stream is transmitted to the second content viewing device. With this, the user may receive a notification on the second content viewing device to access the audio stream or the audio-video stream of the predefined content sequence, and the user may accordingly save the audio or the audio-video of the predefined content sequence in a directory in the second content viewing device. In an implementation, the audio or the audio-video of the predefined content sequence may be provided in a format compatible with the second content viewing device.

[0058] Further, in an implementation, each tag may provide a charging rate for the predefined content sequence corresponding to the tag, and the user account may be charged based on the charging rate for the predefined content sequence corresponding to the user selected tag.

[0059] Further, in an implementation, each tag may provide an option to the user to provide the user input to obtain either the audio or the audio-video of the predefined content sequence corresponding to the tag. The user may provide the user input depending on whether the user wishes to obtain the audio or the audio-video on the second content viewing device.

[0060] Although implementations for dynamic content delivery in the multiscreen DTV environment have been described in a language specific to structural features or method(s), it is to be understood that the present subject matter is not limited to the specific features or method(s) described. Rather, the

specific features and methods are disclosed as implementations for dynamic content delivery in a multiscreen DTV environment.

I/We claim:

1. A method for dynamic content delivery in a multiscreen digital television environment, the method comprising:
 - streaming, by a processor (110), a multimedia content to a first
5 content viewing device (106-1) of the multiscreen digital television environment (100);
 - providing, by the processor (110), tags on the first content viewing device (106-1) during the streaming of the multimedia content, wherein each of the tags is associated with a predefined content sequence within
10 the multimedia content;
 - receiving, by the processor (110), a signal indicative of a user selected tag, from amongst the tags provided on the first content viewing device (106-1); and
 - providing, by the processor (110), one of an audio and an audio-
15 video of the predefined content sequence corresponding to the user selected tag to a second content viewing device (106-2) of the multiscreen digital television environment (100).
2. The method as claimed in claim 1, wherein each of the tags is provided while the predefined content sequence corresponding to the respective tag
20 is being played on the first content viewing device (106-1).
3. The method as claimed in claim 1, wherein the audio and the audio-video of the predefined content sequence are in a format compatible with the second content viewing device (106-2).
4. The method as claimed in claim 1, wherein each of the tags is a visual
25 indicator for displaying on a screen of the first content viewing device (106-1) and for indicating presence of the predefined content sequence corresponding to the respective tag.
5. The method as claimed in claim 1, wherein the visual indicator is an interactive button on the screen of the first content viewing device (106-1),

wherein the interactive button is selectable by a user to provide a user input for the signal indicative of the user selected tag.

6. The method as claimed in claim 1, wherein each of the tags provides a charging rate for the predefined content sequence corresponding to the respective tag.
7. The method as claimed in claim 1 further comprising charging a user account based on a charging rate for the predefined content sequence corresponding to the user selected tag.
8. The method as claimed in claim 1, wherein the predefined content sequence is a song sequence, a trailer sequence, an action-scene sequence, a comedy-scene sequence, within the multimedia content.
9. A content delivery system (102) for dynamic content delivery in a multiscreen digital television environment (100), the content delivery system (102) comprising:
- 15 a processor (110); and
 - a multimedia content delivery module (120) coupled to, and executable by, the processor (110) to
 - stream a multimedia content to a first content viewing device (106-1) of the multiscreen digital television environment
 - 20 (100); and
 - provide tags on the first content viewing device (106-1) during the streaming of the multimedia content, wherein each of the tags is associated with a predefined content sequence within the multimedia content; and
 - 25 a tagged-content delivery module (122) coupled to, and executable by, the processor (110) to
 - receive a signal indicative of a user selected tag, from amongst the tags provided on the first content viewing device; and
 - 30 provide one of an audio and an audio-video of the predefined content sequence corresponding to the user selected tag

to a second content viewing device (106-2) of the multiscreen digital television environment (100).

10. The content delivery system (102) as claimed in claim 9, wherein each of the tags is provided while the predefined content sequence corresponding to the respective tag is being played on the first content viewing device (106-1).
11. The content delivery system (102) as claimed in claim 9, wherein the audio and the audio-video of the predefined content sequence are provided in a format compatible with the second content viewing device (106-2).
12. The content delivery system (102) as claimed in claim 9, wherein each of the tags provides at least one of a title and a genre for the predefined content sequence corresponding to the respective tag.
13. The content delivery system (102) as claimed in claim 9, wherein each of the tags provides a charging rate for the predefined content sequence corresponding to the respective tag.
14. The content delivery system (102) as claimed in claim 13 further comprising a charging module (124) coupled to, and executable by, the processor (110) to charge a user account based on the charging rate for the predefined content sequence corresponding to the user selected tag.
15. A non-transitory computer-readable medium having embodied thereon a computer program for executing a method for dynamic content delivery in a multiscreen digital television environment (100), the method comprising:
streaming a multimedia content to a first content viewing device (106-1) of the multiscreen digital television environment (100);
providing tags on the first content viewing device (106-1) during the streaming of the multimedia content, wherein each of the tags is associated with a predefined content sequence within the multimedia content;

receiving a signal indicative of a user selected tag, from amongst the tags provided on the first content viewing device; and

providing one of an audio and an audio-video of the predefined content sequence corresponding to the user selected tag to a second content viewing device (106-2) of the multiscreen digital television environment (100).

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16. A content viewing device (106-1) of a multimedia digital television environment (100), the content viewing device (106-1) comprising:

a processor configured to,

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display a multimedia content streamed from a content server;

display tags on a screen of the content viewing device (106-1) during the display of the multimedia content, wherein each of the tags is associated with a predefined content sequence within the multimedia content;

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receive a user input for a user selected tag, wherein the user selected tag is amongst the tags displayed of the screen of the content viewing device (106-1); and

provide a signal to the content server, wherein the signal is provided based on the user input for obtaining one of an audio and an audio-video of the predefined content sequence corresponding to the user selected tag on another content viewing device (106-2) of the multiscreen digital television environment (100).

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17. The content viewing device (106-1) as claimed in claim 16, wherein each of the tag is displayed while the predefined content sequence corresponding to the respective tag is being played on the content viewing device (106-1).

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18. The content viewing device (106-1) as claimed in claim 16, wherein the user input for the user selected tag is indicative of obtaining one of the audio and the audio-video of the predefined content sequence

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corresponding to the user selected tag on the other content viewing device (106-2).

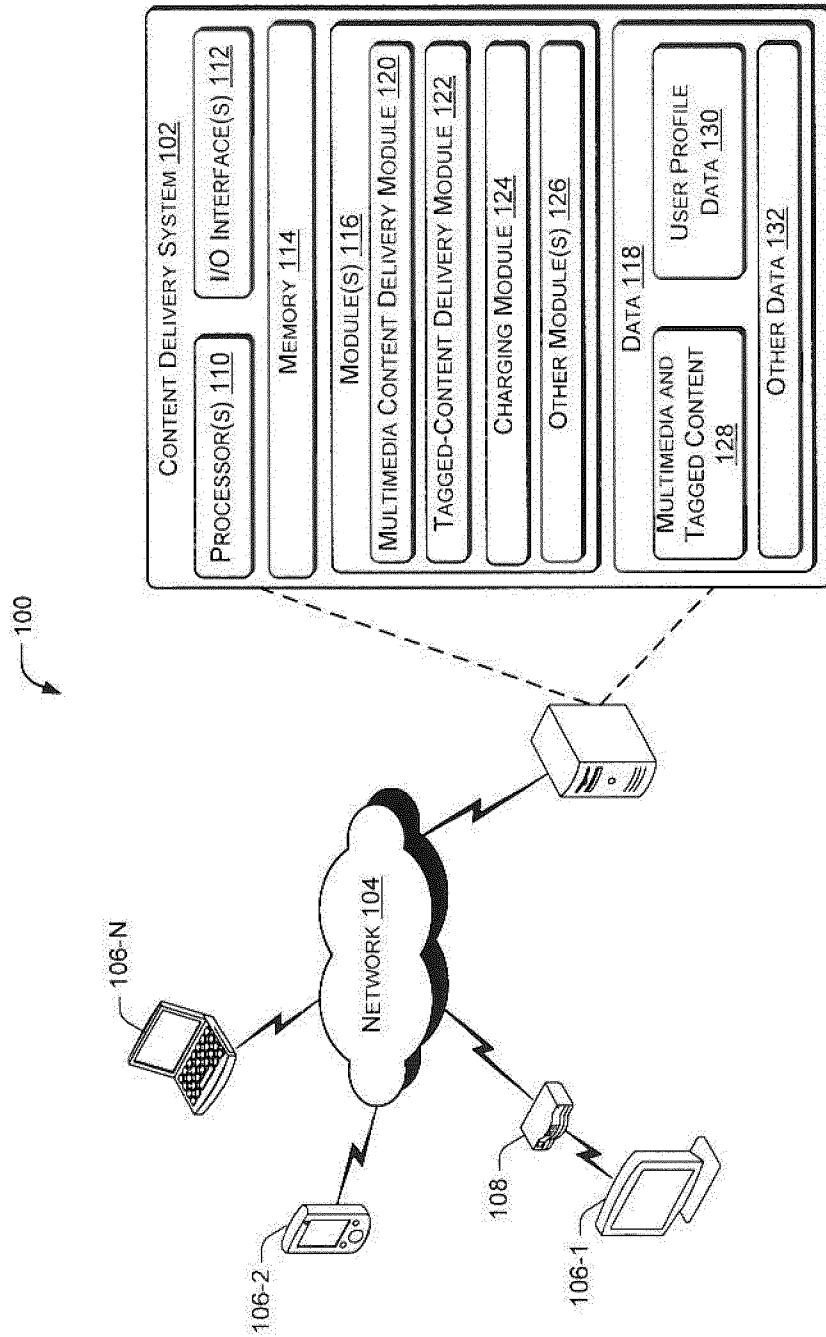


Figure 1

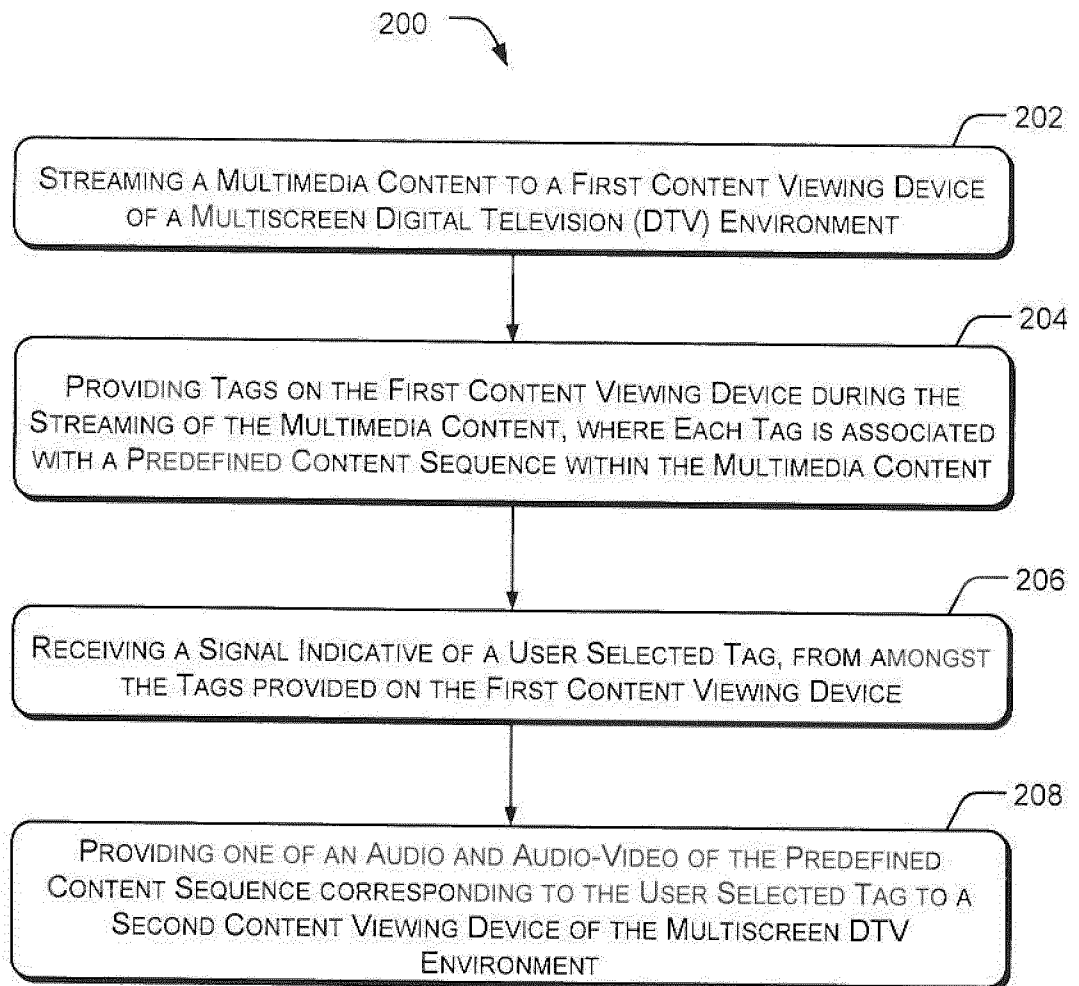


Figure 2

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/054476

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/06 H04N21/858
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)
H04L H04N

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, INSPEC, 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 2011/262103 A1 (RAMACHANDRAN KUMAR [US] ET AL) 27 October 2011 (2011-10-27)	1-5, 8-12, 15-18
Y	page 2, paragraph 23 - page 3, paragraph 41 page 6, paragraph 85 page 8, paragraph 97 - paragraph 100; claims 1-19	6,7,13, 14
Y	----- WO 2007/115224 A2 (STANFORD RES INST INT [US]; MCINTIRE JOHN P [US]; STRINGER-CALVERT DAV) 11 October 2007 (2007-10-11) page 95, paragraph 291 ----- -/--	6,7,13, 14

Further documents are listed in the continuation of Box C.

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 application or patent but published on or after the international filing date
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- "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 8 May 2015	Date of mailing of the international search report 19/05/2015
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Karavassilis, Nick

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/054476

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7 536 706 B1 (SEZAN M IBRAHIM [US] ET AL) 19 May 2009 (2009-05-19) column 3, line 5 - column 7, line 23 page 14, line 11 - line 41 claims 1-29 -----	1-5, 8-12, 15-18
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International application No

PCT/EP2015/054476

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