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December 04, 2015

## Streaming Audio and Media at Different Electronic Devices

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### Recommended Citation

Faaborg, Alexander James, "Streaming Audio and Media at Different Electronic Devices", Technical Disclosure Commons, (December 04, 2015)

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# **STREAMING AUDIO AND VIDEO OF MEDIA AT DIFFERENT ELECTRONIC DEVICES**

## **ABSTRACT**

A content streaming system can be used for streaming audio and video of a multimedia content at different electronic devices. The content streaming system receives an instruction to play video of a multimedia content at a first electronic device. The system then determines whether to play audio of the multimedia content at a second electronic device which is capable of audio output. Accordingly, the system streams the audio of the multimedia content to the second electronic device and the video of the multimedia content to the first electronic device.

## **PROBLEM STATEMENT**

Streaming multimedia content like movies, videos, games, sitcoms, etc., has become increasingly popular. Users stream multimedia content both on small screen and big screen devices. The experience of watching multimedia content on big screen devices is often preferred. Content casting services provide casting of content from one device to another, for example, from a user's mobile device (small screen device) to a wall mounted 52-inch television (big screen device).

Users cast content using cast applications present at both the casting and displaying devices. While streaming and watching multimedia content at the big screen device, the user may be in an environment where the user cannot listen to the multimedia content audio at a desired volume. This happens, for example, when users are in close proximity to other users and do not

wish to disturb other users with the audio. Thus, a method and system is described for streaming audio of the multimedia content at a different device and continue streaming the video at the big screen device or any other suitable device.

### DETAILED DESCRIPTION

The systems and techniques described in this disclosure relate to a content streaming system that streams multimedia content audio at a device different from which multimedia content video is being streamed. The system can be implemented for use in an Internet, an intranet, or another client and server environment. The system can be implemented locally on a client device or implemented across a client device and server environment. The client device can be any electronic device such as a mobile device, a smartphone, a tablet, a handheld electronic device, high definition television, streaming media devices, etc.

Fig. 1 illustrates an example method 100 to stream video of a multimedia content at a first electronic device and audio of the same multimedia content at a second electronic device. The system receives an instruction to play video at the first electronic device (110). The multimedia content may include, for example, movies, TV shows, or music videos. The first electronic device may be any device capable of streaming and playing video and/or audio. For example, the first electronic device can be a light emitting diode (LED) display device, a streaming media device, a television, a laptop, and a monitor. The user may provide the first electronic device instructions to play the multimedia content using an application stored locally at the first electronic device and at one or more electronic devices of the system or at a server of the system.

The system determines to play audio of the multimedia content at a second electronic device capable of audio output (120). The second electronic device may be, for example, wireless headphones, wireless speakers, a computer, a desktop, or a mobile device.

To determine whether to play audio at a particular electronic device, the system first detects all electronic devices that are in close physical proximity to the first electronic device. In one example, the system detects presence of nearby electronic devices by identifying nearby devices that are logged into the same accounts (e.g., email, social network) as the first electronic device. In another example, the system may use ultrasonic pings (co-presence) to detect the nearby electronic devices. After detecting all nearby devices, the system shortlists the devices that are capable of audio output. The system may use stored device capability information (e.g., audio capability) for the electronic devices to shortlist devices.

The system may rank the shortlisted electronic devices based on certain factors. Factors may include current location of the devices, status of connection of the devices, etc. For example, the device that is currently located with the user (most nearby to the user) is ranked higher than other far located devices. As another example, the device that is switched ON is ranked higher than a device that is switched OFF. The system may select the top ranking electronic device, for example, as the second electronic device. In an embodiment, the system may determine to stream audio at multiple electronic devices.

The system streams the audio of the multimedia content to the second electronic device and the video of the multimedia content to the first electronic device (130). The system maintains synchronization between audio and video streaming timestamps at the first and second electronic devices. Timestamps support the system in tracking various events during streaming of audio and

video of the multimedia content. The timestamps are initiated at the same time when the audio and video streamings are started by the system.

Fig. 2 illustrates an example content streaming system 200. Fig. 2 shows two electronic devices 210 and 250 of the content streaming system. Although, Fig. 2 shows two electronic device, there can be more than two electronic devices. The electronic devices 210 and 250 may store an application or program for streaming multimedia content. The system displays a list of multimedia content at a user interface 220 of the electronic device 210. The system receives a selection of content 1 at the electronic device 210. Then, the system receives an instruction to cast the content 1 video at the electronic device 250. The system determines that the electronic device 210 is connected to a headset 230 capable of audio output. The system streams video of the content 1 at the electronic device 250 and audio of the content 1 at the electronic device 210. Thus, the user experiences video at the electronic device 250 and audio at the headset 230. In another example, the system may detect multiple nearby devices capable of audio output. The system ranks them according to their location, status of connection, etc. The system then streams and plays the audio of content 1 at the top ranking electronic device.

The subject matter described herein can be implemented in software and/or hardware (for example, computers, circuits, or processors). The subject matter can be implemented on a single device or across multiple devices (for example, a client device and a server device). Devices implementing the subject matter can be connected through a wired and/or wireless network. Such devices can receive inputs from a user (for example, from a mouse, keyboard, or touchscreen) and produce an output to a user (for example, through a display and/or a speaker). Specific

examples disclosed are provided for illustrative purposes and do not limit the scope of the disclosure.

DRAWINGS

100

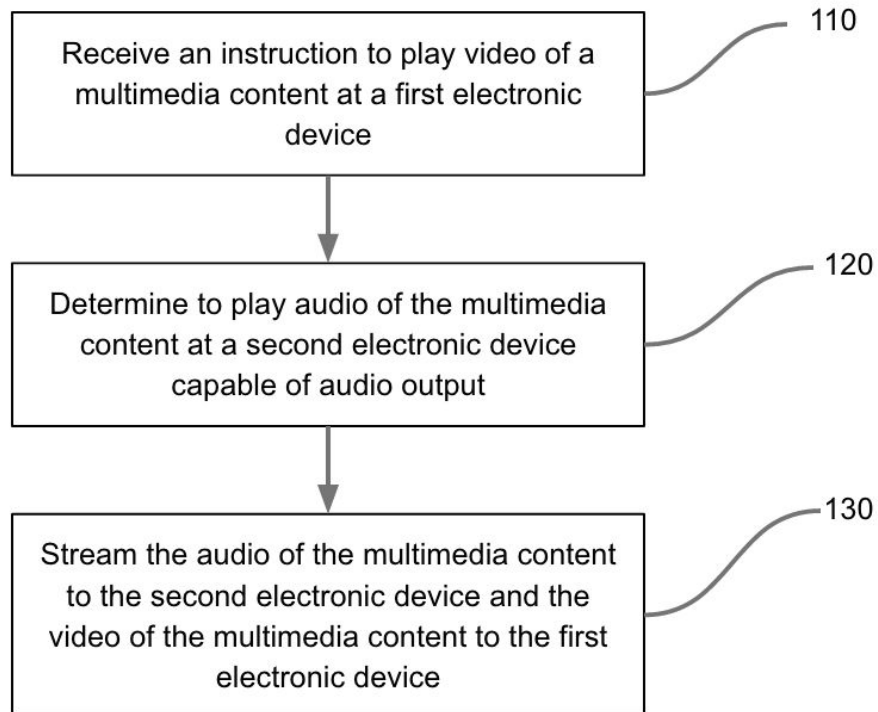


Fig. 1

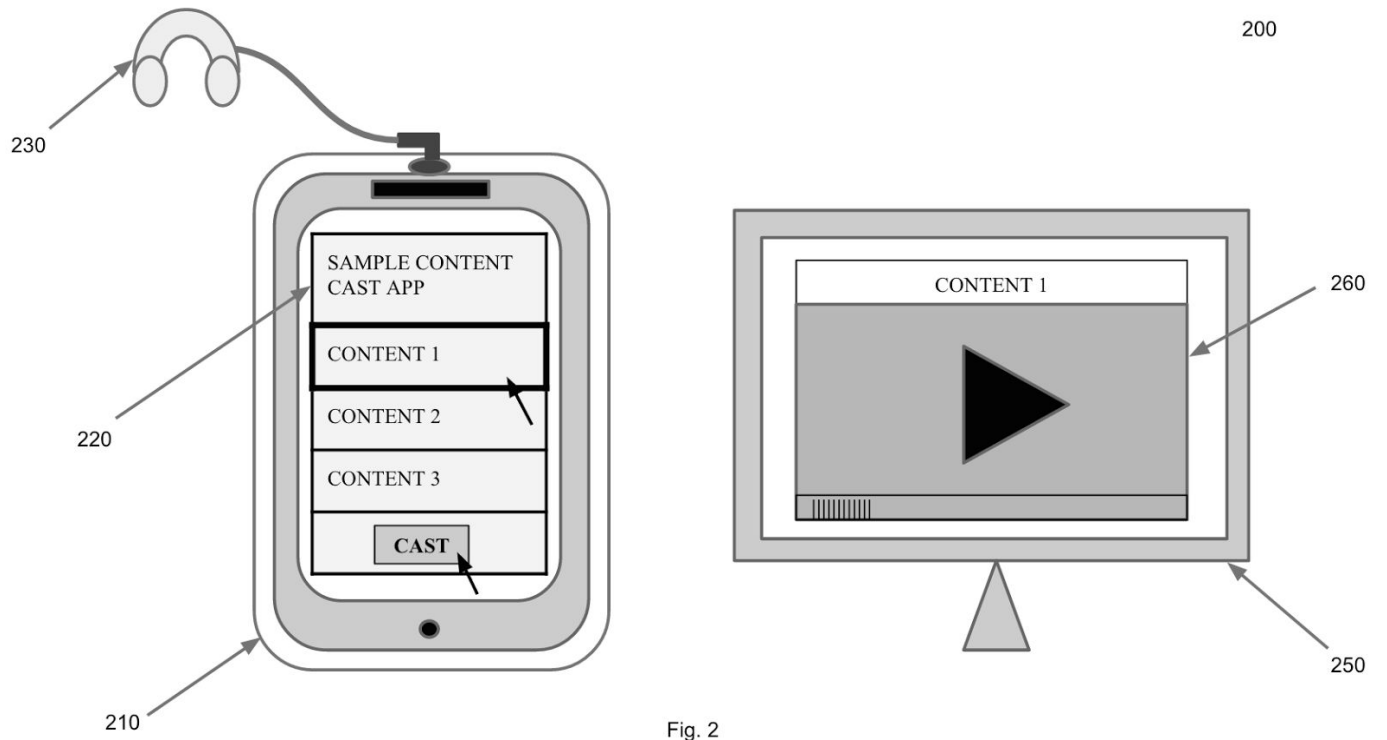


Fig. 2