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## BUILDING AN APPLE IPAD MINI THEATER SYSTEM THROUGH IXSTREAMER

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### Abstrak

*iPad as a tablet PC was designed to be used as personal tablet PC. It offers several exciting features for users to browse, schedule, open documents, play game, listen to music, view photos, and more. Unfortunately, they only can be enjoyed personally. They are possible to extend by the help of couple of peripherals such as Apple Digital AV adapter, Camera Connection Kit, Composite Cable, etc. It may not result the great performance which involves limitation to iPad for wider use. The features offered are possible to extent in the purpose of using iPad not only as personal device but also usage of iPad for larger scope. Xtreamer technology, specifically iXtreamer, make it possible for iPad to enhance and build a mini theater system. Their combination will improve the perform of iPad. A research was conducted to explore the limitations it has and find solutions. By combining iPad and iXtreamer, an enhanced function of iPad will show how the iPad becomes a mini theater system. This system is extending the capability of iPad previously as a personal device only to a great system offering high multimedia features*

**Keywords:** *tablet PC, iPad, mini theater system, multimedia, iXtreamer*

### INTRODUCTION

One of the popular tablet PC is iPad launched by Apple as the same manufacture of other iPod, iPhone, Mac, etc. It is primarily as a platform for audio-visual media including books, periodicals, movies, music, games, apps and web content and mainly designed as personal use purposes. Originally, it has two internal speakers reproducing left and right channel audio located on the bottom-right of the unit. In iPad1, the speakers push sound through two small sealed channels leading to the three audio ports carved into the device [ Djuric, 2010]. Not only the speakers exist, but also it provides a microphone that can be used for voice recording. It also features 1024×768 VGA video output for limited applications, screen capture, connecting an external display or television through an accessory adapter.

There are two ways in iPad possible to view its screen display through the AV Adapter which are (1) Video Mirroring ; and (2) Video Out. By Video mirroring , the external display will show the same content , while in Video out, display only on an external display. To use both ways, an Apple Digital AV Adapter or VGA Adapter is a must. It is possible to display to an external TV, or digital projector. Some applications supporting this feature are Video, Safari, YouTube, Photos and Keynote. Apple also provides some peripheral such as Camera Connection Kit, Composite Cable, to support display to external devices.

Usage of those peripherals may increase iPad functionality which previously for personal use only to become a better media. For example, the use of the composite cable may return the display of the video files it has to a larger view either to a projector or to a big TV. Audio Video (AV) wiring or connections will end up to some advantages as long as they are correctly configured. [Hofstetter, 2001] Another example is, for it is designed to personal use, the level of the sound produced is limited, inadequately to support bigger environment. Therefore connecting iPad to an active speaker may fulfill the demand.

Incorporating additional media may arise some issues to concern. Much of what is considered technical issues with additional issues should be determined carefully. One of the important issue of using additional audio device is the viewer control. [Bennett, 2005]

Unfortunately the two channels source it has will limit the expansion the iPad and it requires other media to produce a high standar Dolby Pro Logic technology. This technology enables production of multichannel home experience that decodes source audio to four-channel

capability [Parekh, 2006]. As a portable mobile device, one of its features is fully supporting the video streaming. Video streaming comprises of three major component: (1) streaming server (sender); (2) the Internet; and (3) a client (receiver) [Fong & Sui, 2006]. Oen of the most useful illusions in sound perception is stereophony. The brain identifies the source of a sound on the basis of differences in intensity and phase between the signals received from the left and right ears [Chapman & Chapman, 2009].

Other important aspect to consider is what is called subjective quality factors. Viewer of the video when watching depends on many factors : (1) individual interests and expectations; (2) display type and properties, (3) viewing conditions; (4) the fidelity of the reproduction; and (5) accompanying soundtrack [Winkler, 2005]. The digital video started when Apple Computer invented FireWire or IEEE 1394, a protocol that allows digital video cameras and computers to transmit digital video signals back and forth. [Rysinger, 2005]

**METHOD**

Initially, substantial amount of literatures have been reviewed to come up with an idea for formulating this paper. Next step is to investigate the limitations of iPad which previously for personal purpose only, as part of the analysis phase. Table 1 shows the standard iPad specs

**Table 1.** Standar iPad Specs.

Audio	Stereo, 3.5 mm TRRS connector audio-out
Screen Display	9.7 inche (250 mm) multi touch display at a resolution of 1024 x 768 pixels with LED backlighting and a fingerprint and scratch-resistant coating
TV Display	Composite AV Cable
External Monitor Display	VGA Mini Adapter

Its audio output is designed for personal use not larger audience, not enough power to connect to external speakers. The screen display in 9.7 inches size, and for displaying to external output device, either a VGA mini adapter cable used if device provides VGA port or a composite AV cable if the device accepts RCA connection. Connection of iPad using mini adapter has a drawback which is an interruption while displaying video files. It is fine for photos but not videos. Figure 1. Shows diagram of the connection.



*Figure 1.* iPad Connection Diagram

To solve this limitations, an excellent hardware is required : (1) to boost level of the audio; (2) to increase the audio control; (2) to enhance sound capability ; (4) to solve the video display problem; and (5) to increase A media player, iXtremer, has this capacity to answer the problems.

## RESULTS AND DISCUSSION

The limitations that exist may get overcome by combining iPad with iXtremer media player. It is capable of streaming High-Definition (MKV H.264) movies or user-generated videos, returning high-quality digital music and displaying high-resolution slideshows photos on your TV. It is also equipped with 1 normal size 3.5" HDD capacity of up to 3TB storage, double memory and docking for the iPad to use iTunes collection on TV. It supports two types of audio output : (1) analog and (2)digital. Its analog type uses stereo audio type but its digital support from 5.1Ch for its optical and coaxial cable connection to 7.1Ch for its HDMI connection. Its video output supports three types : (1)HDMI 1.3a ; (2) Component; and (3) Composite.

Figure 2. shows diagram of the combination of iPad and iXtremer. Figure shows how iPad now not only is available for personal use but combining iPad with also enable it to has greater functions. The combination includes the following new features : (1) easiness and remotely control to multimedia files; (2) higher-quality video display; (3) higher-quality audio environment and (4) internet streaming simplicity.



**Figure 2.** shows diagram of the combination of iPad and iXtremer.

Using iPad as a single device requires full multitouch interactivity of the user while accessing it multimedia files. This combination adds an easy way to play multimedia files by a remote control. The previously 9.7inches screen display now has increased to a high resolution video files through HDMI connection to external device, wide screen LCD / LED TV. More

important new feature is the raise of the standard audio environment, which previous listened by its internal speaker or a headphone, now have combined with iXtreamer media player, iPad has capability to provide high quality audio environment up-to a 7.1Ch Surround environment through HDMI connection or 5.1 Ch audio environment through either optical or coaxial connection.

### **CONCLUSION**

Combining iPad with iXtreamer create an enhanced function of iPad which previously as personal use table computer to become a mini theater system. It extends the capability of iPad to a high quality high multimedia environment

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