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## HAVI : A NEW APPROACH TO FUTURE OF HOME-BASED ENTERTAINMENT AUDIO/VIDEO DEVICES

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### ABSTRACT

In today's world the use of smart devices increasing day by day, similarly there are many things at home which may work in more smarter ways than their usual use. HAVI (HOME AUDIO VIDEO INTEROPERABILITY) is a technology that allows the home based entertainment devices to share the same resources instead of using new ones, so this will be helpful for the home users to extend the use of the existing resources without adding any kind of extra cost .During this research, I tried to find out the new ways in which the HAVI technology can give us more interesting ways for using the existing resources without adding extra cost.

**Keywords:** *HAVI, Interoperability, Resources, Technology.*

### 1. INTRODUCTION

Home Audio Video Interoperability is a technology for making the communication between different types of home based entertainment and communication devices. It permits such kind of devices to communicate and to be controlled from a single device such as a TV. It enables the users are to make communication devices using a standard set of steps independent of the manufacturer or device. Computers can join an HAVI setup. This standard is based on satisfying the desires of the user for audio and video. HAVI may contain a PC, a laptop, a printer, a TV and set-top box in the room, another TV in the main bedroom, CD player and Home theatre system with wireless speakers. This enables users to watch programs from the set-top box on the drawing room TV, print from both devices to the printer, play music from the DVD/CD player to wireless speakers in the drawing room and many other functions .An HAVI setup connects all the devices with each other and enable the control of all devices using a single controller. The setup also makes the inclusion of latest devices by computerize process of integrating the devices based on Home-Entertainment. In today's time of period, a home contains various types of complicated devices and gadgets. Most of them are devices related to handling different audio/video data that are based on home entertainment. Such types of the devices are computers in nature and specialized in their characteristics than a simple PC. HAVI is a type of technology that is very popular in these days because a house might contain several computer and other devices based on entertainment that need resources which should

be shared resources like wireless speakers or printers etc. Home based entertainment devices of audio and video categories includes like DVC, TV, CD , amplifier, TV-tuner ,Wireless speaker or set-top box and stereo player etc are examples of Devices that form interconnected network based on Home-entertainment.

### 2. WORKING

A set of software programs with the protocols and APIs are required to achieve the goal of interoperability for home based audio video devices .During this process device abstraction will be used with the help of various kinds of device based control models. For purpose of adding the functionality of interoperability, we can use an addressing scheme and lookup service for setting-up the HAVI network for using the same type of resources .In the HAVI system ,which require an open execution environment which has the ability to support the presentation that can be visualized and having control of devices for providing runtime support for applications based on third party .We required a Communication mechanism for extending the existing environment dynamically by enhancing the plug-and- play capabilities .We can implemented the HAVI based system in any kind of the programming language on real-time Operating system on any CPU. Architecture of HAVI is shown in fig.1.

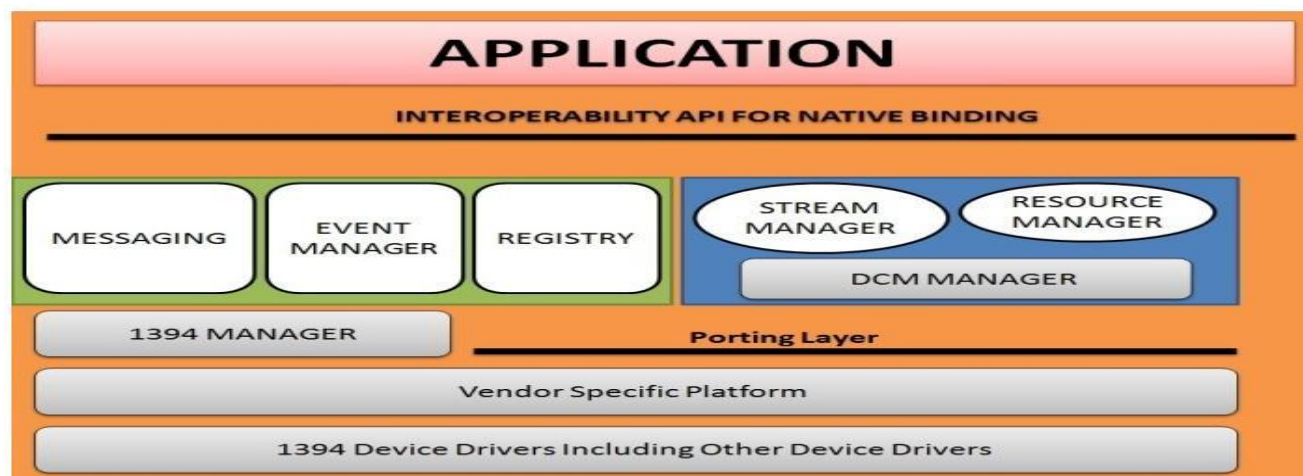


Fig. 1: Architecture of HAVI

#### Elements in HAVI:

**1394 Communication Media Manager:** It will permits perform asynchronous by software elements and isochronous communication

**Messaging System:** It is allows passing messages between software elements.

**Registry:** It works as a directory service which permits any object to locate another object on the home network.

**Event Manager:** It works as an event delivery service. Event is the change in state of the HAVI network

**Stream Manager:** In HAVI network, Stream manager is helps to manage digital data transfer of AV and other media.

**Resource Manager:** It permits the sharing of same resources and scheduling of various types of actions.

**Device Control Module (DCM):** In HAVI network, software elements are used for controlling a device DCM code units are used for obtaining DCM. DCM code unit includes: Code for the DCM and Code for Functional Component Modules.

**DCM Manager:** In HAVI network, a DCM manager is used for installation and removal of the DCM code units.

### 3. EXPERIMENTAL RESULTS

#### Benefits of HAVI:

**Interoperability:** HAVI provides interoperability of home-based entertainment devices like audio-video devices and networking devices .It ensures the interoperability between various audio-video devices.

**Coordination of the Functions:** It coordinates the functionality and functions of the existing devices in home-based network .All the new added devices to home-network get registered so that other devices

will be able to know the functionality of new added devices.

**Automatic Detection:** It automatically detects the existing devices in the home-network. Moreover, it also detects the newly added devices to current network.

**Applications and User Interface:** It automatically installs the software, applications and user-interface on each connected device in home-based network.

**Allows Interpretability:** It permits the home-based network to control the functionality of present devices in the home-based network

**Independence:** Generally, home-based devices are manufactured by various vendors but they can make communication with each other with the use of HAVI network .For example- various entertainment devices like home theatre system ,DVD player, TV, Set-Top boxes etc ,can be controlled with the help of one remote.

**Devices with Plug and Play Capabilities:** In HAVI network, all devices automatically notify about their existence and functionality to the devices present on the HAVI network .This makes the process of installation and set-up simple.

**Automatic Up-gradation Process:** In HAVI network, all connected devices automatically upgraded by the functionality of Updates which can be installed by downloading or uploading via the Internet.

**Protection:** In HAVI network , signed applications are recognized by it .By this process the full functionality is provided to signed applications and limited functionality is provided to un-signed applications within the network .In this way ,authentication process helps to improves the security of network by providing protection for the user.

#### Limitations of HAVI:

**Not Tested on Wide Levels:** There are many problems related to HAVI which are not reveal because HAVI technology has not been tested in real environments. But, they will be appear after testing it on wide levels

#### Complications while Implementing Fire-wire:

Fire-wire is used to implement HAVI network .But; there are many complications while implementing fire-wire. Because it may be possible that device of same brand will work together but there is no about the devices of different brands will work together or not.

#### Difficulties in distributing audio video data:

In HAVI network, various audio-video devices like VCR, DVD/CD player, MP3 player use different types of audio-video formats and there is no common format between all these devices so it becomes difficult for the devices to communicate with each other.

**Issue of Rights:** In HAVI network, the digital data may be transferred to outside the home based network via internet so it becomes issue of rights because digital data may be pirated via internet, which is illegal.

**Security Issues:** While working with HAVI network, there is another issue which security .It may be possible that any outsider may use CCTV-cameras to watch inside the home by breaking the security system outside.

**Complications of Protocols:** In HAVI network, verification of the audio-video device's software becomes complex due to complicated protocols

#### 4. ACKNOWLEDGEMENT

During this research paper, I have put my best efforts for completing this research paper. I hope that this research paper will be helpful for the future authors who want to do further research related to HAVI technology.

#### 5. CONCLUSION

There is no doubt that there will be lots of uses of HAVI technology in future .In this paper, We have discussed working, different types of uses and limitations of HAVI technology .There are many limitations of HAVI technology due to less development and widely testing of this technology .But, In future there will be many advance uses of HAVI technology when will fully develop and tested on higher levels.

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