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Digital Video Broadcasting and its roll out scenario

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Abstract.People all over in the world want to connect not only by the audio however they are having curiosity to see each other or we can say they want to be connect by video conferencing also. Digital video broadcasting is one of the powerful technique which connects people by video also.3DTV (three dimensional television mobile broadcasting) distribution and broadcasting systems have been in use for providing stereoscopic images to the users. In this paper 3DTV services implied on DVB-H and DMB are discussed along with high definition 3DTV implied on terrestrial broadcasting system is studied. work of the recent developments in the T-DMB and 3D content delivery. The main aim of this part is to present an outline to readers about the different In this paper second part presents a related research approaches using DVB-In the next part terrestrial TV along with content delivery types and different broadcasting problems is highlighted. 3D TV and its types with technical issues are summarized in the next part of the paper. Finally conclusion is presented in the last section.

1. Introduction

For digital video broadcasting system, terrestrial digital broadcasting networks are DVB-T or DVBT2 are either single frequency or multi frequency when we are using single frequency scheme spectrum efficiency is more than that of when we are using multi frequency scheme less efficiency is obtained. Several transmitter serve to receiving location and these transmitter have same frequency .All DVB receiver work on OFDM modulation, In wireless communication scheme to achieve high data capacity ,greater spectrum efficiency and to obtain high throughput OFDM is very popular scheme .DVB is famous standard for video transmission.There has been tremendous improvement in the development of TV specifically in scene representation after having its first broadcast in 1928. There has been a long gap of about 12 years from first color broadcast to implementing a particular standard for TV that is (NTSC, 1953). After adoption of this standard another standard called European pal standard is adopted in 1963.It yielded around two decades for the complete growth of the high Definition technology event decades require for auspicious research results to get mature to HDTV sets.TV technology has become decades and is still dominating the market of home TV.

The viable illustration of the success of HD TV is that the 3DTV business gets increased in the course of the FIFA world cup 2010 in South -Africa. [4] Sony employs around eight stereoscopic cameras for.

Soccer games and then captured signal is broadcasted in different parts of world like Korea, Europe, and United States with the use of digital cable network and satellite. Even terrestrial television network is deployed to broadcast in Korea.

After this huge success it has been predicting that ray title, digital audio system, players and flat panel 3D TV can be deployed for home entertainment 3D TV system. It is now inherent to move high quality high

definition TV from cinemas to home market. Even many Japanese and Korean manufacturers have forward a step towards this effort by trading in HD entertainment system to increase their returns.

2. Related Research Work

DVB project initially inaugurated in SEPTEMBER 1993 and on carry on by EUROPIAN GROUP OF DIGITAL VIDEO BROADCASTING. This project consist of 200 organizations ,there is no political concerned with this organization. This organization work indecently and have own rules and regulations.

In Korean and European countries research work for T-DMB (Terrestrial digital multimedia broadcasting system) [2] digital video broadcasting handheld system i.e. DVB-H is still in progress [3] [4] [5]. The base of this research work is obtained from wide growth of mobile for easy handled devices and the speedy growth of the mobile market, dedicated TV services in various fields like of arts and sports as well as user eagerness to swap to the use of smart phones.

The availability of various standards like T-DMB and DVB-H make it possible for the 3DTV that it can be readily use. As so much change in infrastructure require for transmission is not demanded by these standards which further lead to the deployment of backward well - suited services.

European scheme, ATTEST intended a new DVB-T employing broadcasting approach of 3DTV [6] based on video and depth depiction. In this notion an ordinary video stream is enhanced along with depth mapping sequence in order to provide a proper Z value for a particular video pixel.

A standard MPEG-2 approach is employed for coding and transmission of the video using DVB. The Sequence depth is encoded independently and transferred in form of sided information. [8] Depth image based rendering (DIBR) is also employed on the receiver to regenerate the right and left parts of the signal.

But DIBR imparts a reluctant match for the prevailing services of DVB. Even for implementing services for the various 3D display schemes and for effectual compression [7] Depth map encoding scheme explains about overhead in comparison to the textual image encoding. Therefore it is assumed that

video and depth presentation is the best aspirant for 3DTV systems. It can be easily created and it appears at the top position of the DVB infrastructure. In India DVB system is not completely developed however information and broadcast ministry announced the deadline for completely conversion of analog to digital system tll 31st march 2015 .This proposal has been sent to TELECOM REGULARITY AUTHORITY OF INDIA(TRAI).This processing of switching from analog to digital takes place in phases. In phase one metro cities (DELHI,MUMBAI,CALCUTTA,CHENNAI) will cover. And in phase two another important cities like CHANDIGARH,BANGLORE and more other cities will cover under second phase. Thus by dividing the work in phases whole project cover till 2015.

3. High-definition terrestrial 3DTV

High-definition 3DTVsystem is implied on ATSC standard. High-definition means to maintain picture quality of the TV at a constant level as in 2D TV system. It restrains both images which happen in the squeezing process.

Here 3C content delivery is done with the help of both right and left images as they get capture in 3DTV camera. The images get authorize with the help of computer graphics and established as a right image data and left image data as well as audio data which constitutes 3D video program and is put inside head-end system. .

After encoding, each stream of element is put together for multiplexing. In multiplexer all the basic signals are combined along with some extra data to enhance the signal performance like closed caption, access control along with extra functionalities. Then transport data is plunged into a transmission system for modulation and error correction purpose.

After amplifying RF signal the modulated signal is broadcast by transmission system. Broadcasted signal is finally received by 3DTV (STB) set-top box and is Retransmitted on receiver.3D AV data is decoded into a 3DTV and retransmitted after completing the decoding and demodulation of the signal.

In this broadcasting system, stereoscopic pair images pair is composed, by MPEG-2 video codec. It encodes left-view image to obtain it like primary data video stream, and right image-view is encoded by the H.264 video codec to form additional video data stream. MPEG-2 codec for video is used for maintaining backward compatibility.

3D/2D mixed Service and dedicated 3D service are the two mechanisms, used for delivering 3D video data. Now 3D/2D mixed Service tells about broadcasting channel which is put up by using both 3D and 2D Video data to broadcast it up in time scheduled way. Dedicated 3D service tells about programs composed on 3D-content only for broadcasting channel.

3.1. Broadcasting issues

There are various challenging issues that occur in developing a 3DTV experimental broadcasting system in Korean countries. Now the main issue is to optimally divide bit rate used for transmitting the signal like image quality for a particular view is someway preserved in a particular level of 2DTV broadcasting. Another issue is of multiplexing of encoded streams in both right and left views. The next issue is basically technical one that occur on the receiver side.

4. Mobile 3DTV and its types

Various types of technology of mobile broadcasting are available in the international market. In all the types, 3D contents delivery is the first one to be adopted by the use of T-DMB. It proves itself a fruitful service for commercial use. In present times Auto stereoscopic technology is being deployed to the T-DMB for having different fruitful service mechanisms. In this part of paper 3D contents delivery scheme is being discussed for different types specifically DVB -H and 3D DMB mobile broadcasting technologies considering service and system points.

4.1. 3D DMB broadcasting technologies

This technology specifies on receiving various data and mobile video services mainly implied on Eureka -147 (DAB) digital audio broadcasting systems. As DAB system was mainly structured for digital broadcasting. While T-DMB requires to add up and to specify audio visual services like audio video synchronization and compression. These services are practically realized for the audio compression [10] with the help of MPEG-4BSAC or AAC H.264and for the video compression [9] with the help of MPEG-4AVC ITU –T H.264.

Shared data services utility is also defined by T-DMB to provide supplementary data to the audio visual services for the synchronization purpose.MPEG-4 system and BIFS (binary format for scenes) along with MPEG-4 is utilized to realize these functions. .MPEG-4 SL packetization to synchronize a particular encoded scheme comprising of the interactive and audio visual data streams

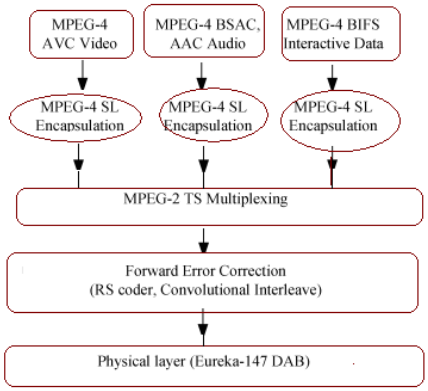

Fig.1 Basic layers of T-DMB

MPEG-4 SL packetization to synchronize a particular encoded scheme comprising of the interactive and audio visual data streams. MPEG-4 SL mainly performs encapsulation. The synchronized streams are then multiplexed using MPEG-2 system and MPEG-2 TS. RS is used to multiplex the MPEG. The error corrected

data is given to the physical layer to support Eureka -147 DAB. Stereoscopic data and video is delivered by scheming 3D DMB above the T-DMB. It also provides three dimensional (3D) effects to the users in a particular mobile environment.

On the sender part complementary parts of 3D service are assimilated into prevailing DMB systems. The range of these parts is from captured 3D content to the multiplexed contents before undergoing transmission. DMB includes all the underlying stacks to fulfill the requirements. Mainly research work is done in 3D display and fusing for the stereoscopic view. With this 3D terminal future characteristics can be completely identified.

4.2. Broadcasting issues

3D DMB system provides its users with Different 3D services around S-DMB or T-DMB. Now different Broadcasting problems occurring in 3D DMB system are of backward-compatibility, transmission of overhead reduction, along with extension for efficient viewing angle for auto-stereoscopic display.

4.3. DVB –H broadcasting technologies

Mobile TV broadcast mainly comprises of the play out system, real-time encoder, diversity unit, transmitter, dual antenna system. Here encoder is basically used for developing the MPEG-4/H.264 coded audio visual content for the mobile. Play out provides IP encapsulation and to develop theMPEG-2 [14]. Transport Stream is used for broadcasting the transmission.

The system also bear channel filters for having error free signal for emitting the signal. All the components are shown in figure 2. Diversity unit is a device used to execute various diversity profiles. . Dual antenna system is placed on 25 meters above ground level. Even Omni directional antenna is also

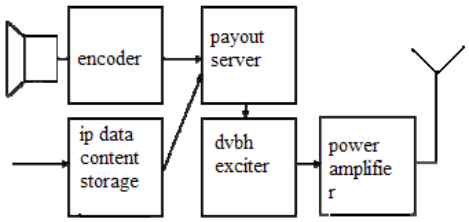

Fig.2 DVB transmitter system

Employed for having vertical and horizontal separation and for the delivery, using the services and testing a particular development environment is employed.

4.4. Broadcasting issues

It has been seen experimentally that DVB-H is somewhat a practical option in order to broadcast stereo video for the portable device. Around 600 KBs of Bitrates along with 3/4 of FEC rate are quite enough for -appropriate quality for a user.Small changes for the standard is being requiring to gurrantee3D video ESG aware. For this a proper signaling of 3D contents is require.

5. System Model

DVB-T system mainly operates in 8K or 2K mode relying on the subcarriers present. DVB-T system for 2K mode is discussed in which 1705 subcarriers out of total 2048 sub carriers transmit the data along with around 142 scattered pilots and 45 continuous pilots.

Fig.3 System Model

In it K max and K min represents the largest and smallest sub carrier indices among the active sub carrier used to transfer various symbols [11]. Pilot signal values are same for the entire OFDM symbol for equal sub carrier index. [14] All the SP is inserted periodically [11] that are around 12 sub carriers in a particular OFDM symbol.The n-th sample of the OFDM symbol is created using inverse Fourier transform (IFFT).

6. Conclusion

The mobile 3D TV types and various technical or broadcasting issues interrelated to mobile 3DTV development are listed along with the broadcasting systems of the terrestrial 3DTV. For mobile 3DTVs, there are mainly two new systems created on DVB-H and DMB are discussed in brief. Along with this high-definition 3DTV created on the terrestrial broadcasting, cable/IP network and satellite, are pioneered for providing the information of different types specifically for-home 3DTV. Furthermore a system model for the broadcasting service is also being discussed in brief.

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