

Session 3

Broadcasting Standards for digital television (DTMB, ATSC, ISDB-T, DVB T/T2) and radio & Emergency Warning Broadcasting System

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DTMB, ATSC, DVB and ABU working on EWS 2.0 , looking at Asia-Pacific requirements and building a reference model

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Outline

- Digital Broadcasting
- Television Services
 - Free TV or Pay TV
 - OTA or Cable
- DTV Standards
- What are EWS
 - Content delivered from distance, Live, VOD,

Traditional TV

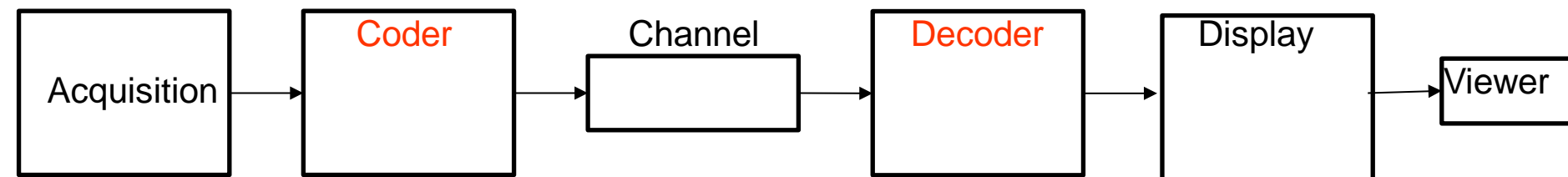
Traditional Broadcasting

- Linear TV
 - At scheduled times, missed it then catch the delayed version, ...
- Public or commercial
 - Funding or business model, FTA, advertizing, License fee, subscription, ...
- Terrestrial, Satellite, Cable
 - Now cloud, IP etc. ...
- Return channel
 - One-to-many service, no return channel
- Telephone, SMS, email and the Internet
 - Return channel for interactivity – request, comments, voting,....



Basic TV Value Chain

- Complete chain from capture to receiver need to be digital to realize the full advantage of digital



- Visuals and audio are acquired using digital cameras
- Source and Channel encoding are done on video and audio data
- Digital receiver receives digitally processed signals

DTV Standards

- **ATSC - Advanced Television System Committee in USA**
 - Currently in USA and Canada
 - Mainly Terrestrial standard, extended to other forms such cable
- **ISDB – Integrated Services Digital Broadcasting**
 - Mainly in Japan, Brazil and some other south American countries
 - Extended to forms such as terrestrial, cable and satellite standard
- **DVB – Digital Video Broadcasting**
 - Most of the countries in the world
 - Developed through a consortium known as DVB in Europe
 - Many variants or forms of DTV operations
- **DTMB – Digital Television Broadcasting System - China**



DTV Standards

- Following table gives the transmission standards overview extracted from the “Guidelines for the Transition from Analogue to Digital Broadcasting”, ITU, page.186, 2010.
Please study reports from the ITU website - <http://www.itu.int/publ/D-HDB-GUIDELINES.01-2010/en>

Standard	Modulation	Description in Report ITU-R BT.2140 ⁶	Recommendation ITU-R BT.1306 ⁷	Applicable standards
ATSC	Single carrier 8-VSB	Brief: part 1 section 2.6.2.1 Detailed: part 2, section 1.5	System A; annex 1 table 1a	A/52,A/53, A/65, A/153
DTMB (also referred to as ChinaDTV)	Multi carrier OFDM	Brief: part 1, section 2.6.2.2 Detailed: -	-	GB 20600-2006
DVB-T	Multi carrier OFDM	Brief: part 1, section 2.6.2.4 Detailed: part 2, section 1.6	System B; annex 1 table 1b	EN 300 744
ISDB-T	Multi carrier Segmented OFDM	Brief: part 1, section 2.6.2.5 Detailed: part 2, section 1.8	System C; annex 1 table 1c	ARIB STD-B31 ABNT NBR 15601



DTV Standards

Interactive Television

- ETS 300 800** Return channels in CATV systems (DVB-RCC)
- ETS 300 801** Network-independent Interactive protocols (DVB-NIP),
- ETS 300 802** Return channels in PSTN / ISDN systems (DVB-RCT),
- ETS 300 813** Interfacing to PDH networks,
- ETS 300 814** Interfacing to SDH networks

Conditional Access

- EN50221** Common Interface for conditional access and other applications,
- TS101 197** Technical specification of SimulCrypt in DVB systems

- Subtitling** **prETS 300 743** Digital broadcasting systems for television, sound and data services; Subtitling systems

- Interfaces** **prETS 300 813** DVB interfaces to PDH networks,
- prETS 300 814** DVB interfaces to SDH networks,
- prETS 300 815** DVB interfaces to ATM networks



EWS Technologies

- ISDB
- ATSC - A/153 part 10
- FOBTv - AEA
- DVB – EWS 2.0

ATSC 3.0 Advanced Emergency Alerts

- Builds on M-EAS, ATSC: A/153 part 10
- Receivable on ALL devices: Mobile and Fixed Home
- IP compatibility
- Ability to deliver rich media content
- Targeted alerting and content delivery
- Geo-locational and User Types
- No all-market interruption of TV service
- Ability to wake up targeted receivers
- Robust delivery



DVB EWS 2.0

Future work of ABU & DVB EWS 2.0



DVB EWS 2.0

- APAC region has to assess the requirements for second generation EWS in DVB.
- DVB has added an Emergency Warning Flag to the L1 signalling bits for the DVB-C2 specification. The purpose of this bit is to inform the receiver at the physical level about the presence of an emergency situation. Having the information available at the physical level facilitates waking up of receivers from stand-by mode. DVB decided to add such a flag also to DVB-T2 and DVB-S2.

DVB EWS 2.0

- DVB will introduce an Emergency Warning bit at the physical level for C2, S2 and T2.
- DVB will specify an optional EWS solution. In addition to this reference solution Administrations should have the freedom to request another EWS.
- For a reference solution DVB wants to define use cases and requirements. Main application area for such a system will be the APAC region. As the intension is to cater to the disaster prone region of APAC, DVB seek assistance from ABU to derive EWS scenarios and requirements from the Asia-Pacific region.

Potential Requirements for DVB EWS 2.0

- The solution shall facilitate to wake up receivers from sleep mode.
- The solution shall support authentication for several authority levels to prevent hackers from hijacking the system and triggering false alarms.
- It shall be possible to address a specific region in case of an emergency situation.
- EWS messages can be video, audio or text. Furthermore the receiver can be forced to tune to a different channel.
- In addition to the broadcast channel, a EWS situation could also be triggered via the broadband access.

Accessibility

- General agreement Closed Captions is its own essence
- Recent decision to move closed captions work out of video group into an Accessibility group



Character set for IMS

- Another project on at ABU
- A survey will be carried out soon