

Forecast 2009
THE ANNUAL UPDATE FOR EBU MEMBERS

EBU **TECHNICAL**



Overview of DMC activities

DMC (Delivery Technology Management Committee)

Gino Alberico, RAI - (Chairman of DMC)



Meetings and ... dissemination

From the last Forecast 3 meetings have been held:

- 5th **DMC** meeting (18-19 February 2009)
- 6th **DMC** meeting (16-17 June 2009)
- 7th **DMC** meeting (18-19 November 2009)

+ telcos between physical meetings

... meanwhile some “DMC related” specialised events were held:

- HBB workshop (Amsterdam, 09 Sep 2009)
- HBB seminar (PMA-online, 21 Aug 2009)
- 3D-TV webinar (DW-online, 24 Jul 2009)
- SVC webinar (AK-online, 15 May 2009)
- 3D-TV workshop (Geneva, 30 Apr 2009)
- DVB-T2 webinar (EW-online, 03 Mar 2009)
- Broad-Thinking (Geneva, 26-27 March 2009)
- Digital Radio Receiver profile summit (Geneva, 19 Mar 2009)
- Digital Radio webinar (MC-online, 20 Feb 2009)
- Broadband webinar (FK-online, 23 Jan 2009)



Main DMC topics

Hybrid Broadcast/Broadband services

Connected Home

P2P

HD receiver specification

HDTV codecs testing

SVC (Scalable Video Coding)

Multichannel Audio

DAB audio



Hybrid Broadcast- Broadband TV



High-level requirements for HBB

- **General**
Pan European approach with IPR assurances
- **HBB System**
A logical system based, as far as possible on open standards
- **HBB Content**
Broadcasters should have control over content super-imposed on theirs.
- **HBB Services**
Co-existence with existing MHEG-5 and MHP services.
- **HBB Delivery**
Synchronisation with various components over BB or BC
- **HBB CE type device**
Expandable, upgradable and use traditional interfaces
- **and the users**
HBB should be exciting, new and allow the user the flexibility to enter URLs if so wished.



WEB Media Technologies

D/WMT group

The group has been focussing on the analysis of “Hybrid Broadcast/Broadband scenarios”

- Considering that there are 4 main initiatives in the hybrid context:
 - MHP & Italy (broadband addendum)
 - HBBTV release 0.95
 - UK: D-book 6 (MHEG-5 with the return channel), Canvas
 - OpenIPTVForum release 2

GOAL:

- to seek a common European perspective



WEB Media Technologies

D/WMT group

After analysing:

- use cases
- reference diagram

A set of **EBU requirements** has been developed and a number of common **technical features** has been identified, for example:

- coding techniques (AVC video, HE AAC audio)
- encapsulation (MPEG-2 TS, MP4)
- delivery protocols: HTTP streaming (RTP/RTSP optional)
- signalling Bcast/Bband: based on DVB-MIS

- Metadata and Content Protection are still open issues



Connected Home

D/CH group

Although attracting only a few participants, the D/CH project group is keen to establish **minimum requirements** for in-home networking from the perspective of the EBU Members.

- The group has already **significantly contributed** to the work of the the various standardization bodies including **DVB, DLNA and UPnP** in order to assure that the broadcast requirements are duly met

The group is preparing a “**Connected Home test bed**” for the evaluation of QoS, latency, synchronizations and other technical parameters that are critical for the high-quality performance of home networks considering:

- various technologies (wired and wireless)
- and functions (e.g. “follow me” as a user moves around the home)
- how quality and **broadcaster brand** are preserved in the home environment

An **article** in the EBU Technical Review (2009 Q2) has been published:

- “Why broadcasters should care about Home Networking”



Peer-to-peer



Peer-to-peer

D/P2P group

- The D/P2P group had its last meeting in May '09
- The major deliverable entitled '**Peer-to-Peer (P2P) Technologies and Services - Today and Tomorrow - EBU Views**' will be ready for approval in **Jan 2010**
 - some additional work about CDNs still ongoing
- D/P2P will be closed following publication of the Technical report but the community of experts will be maintained



Peer-to-peer ...

D/P2P group

P2P is just one of a number of options for “Internet Delivery Technologies” as examined in a technical Study Mission within the DVB project

- Other technologies such as Content Distribution Networks and IP Multicast have to be considered

Some caution about all potential benefits of P2P has to be reminded:

- distinguish between distribution methods for truly mass consumer use and minority gadgets
- IP multicast much more efficient
- distribution efficiency of broadcasting always underplayed or ignored

P2P is NOT the solution for inexpensive distribution of TV on the web



HDTV



HDTV codecs testing

D/HDC group

The group completed his task.

In total 5 encoders have been evaluated (Ateme, Harmonic, Scientific Atlanta, Tandberg, Thomson) and results are available to EBU members in BPNs 85-86-87-90-91

Recommended minimum CBR bit-rates*:

1280x720p/50 – 10.5 Mbit/s

1440x1080i/25 – 12.13 Mbit/s

1920x1080i/25 – 12.8 Mbit/s

- average bit-rates, calculated over 6 critical sequences and 5 different encoder models



* to achieve comparable quality with MPEG-2@24Mbit/s



HDTV codecs testing ...

D/HDC group

General conclusions:

- In general AVC encoders perform up to 50% better than MPEG-2 (even better for certain images)
- AVC encoders reached a mature level with state of the art products from various vendors
- STAT MUX can significantly impact the required bit-rates, more significant than the assumed improvements on CBR distribution encoders. However has not been investigated so far (tests are very difficult)

Impact of the production codec:

- Perceptible in certain cases, but there is no clear dependency on the type of the production codec

Open issues:

- Formats in production and distribution
- Standards conversion
- Stat Mux



HD receiver specification

D/HDrec group

Working on a tight schedule the group produced a comprehensive **Receiver specification:**

- Tech Doc 3333 (EBU HDTV receiver requirements) was first published in March 2009
- Some revisions have been made on sound requirements

It represents the *core minimum* requirements applicable to the whole of Europe

Open issue:

- **HD Content Management** (FTA content management descriptor)
The interpretation on how to apply the functionalities of the content management descriptor is currently under discussion



Scalable Video Coding

D/SVC group

MPEG-4 SVC (H.264/SVC) is the Scalable Video Coding format ratified by MPEG as an alternative to MPEG-4 AVC for HDTV

SVC typical use cases:

- improving QoS for **bandwidth varying** networks (dynamic adaptation to packet loss, jitter, network delay, ...)
- **HDTV** migration scenarios:
 - HD on-top of SD,
 - Full-HD (1080p) on-top of 1080i/720p
- **Mobile TV**: optimizing network costs offering different quality to indoor/outdoor terminals



Scalable Video Coding

D/SVC group

CURRENT SITUATION is that industry development is relatively poor:

- **Internet:** the only domain where SVC products are available (videoconferencing)
- **Mobile:** no SVC based applications deployed
- **HDTV:** possible benefits of SVC are relatively modest compared to simulcast scenarios. Furthermore:

No professional SVC codecs available yet

Backward compatibility with existing AVC receivers ?

Broadcasters are struggling to launch their HD (1080i/720p) services and 1080p for distribution is a subject for the long term

CONCLUSIONS:

- SVC is an attractive technology allowing (in theory) cost effective implementation of different services
- It is realistic to predict the real uptake of SVC technology in 4 to 5 years



Audio



Multichannel Audio

D/MAE group

TASK 1: MCA codecs evaluation

Phase III: most of the evaluation of **cascaded** multichannel audio codecs was already performed and main results were given at the last Forecast

Due to pressure of other work for the participants Phase IV (new codecs and cascading chains) has been suspended

- tests are complex to arrange (six labs involved) and take more time than originally expected due to the level of detailed work

The group will then finalise the complete report by December '09

TASK 2: Stereo-Downmix:

- A new group probably required for studying downmix and upmix in a comprehensive way

TASK 3: System parameters, metadata and tools for MCA

have been covered by a new group of audio experts (**P/LOUD**)



DAB audio

D/DABA group

For the first time judgment by **expert** and **non-expert** listeners was introduced:

- some discrepancies (in absolute value) between the test results of the two groups
- however results are rather similar if you look for which bit-rate of AAC+ is equivalent to a given bit-rate of MPEG Layer II

As an example both experts and non-experts evaluated that AAC+ @96 kbit/s is equivalent to MPEG Layer II @ 128 kbit/s

Consequently, moving to DAB+ the gain is less than 50%
(not as optimistic as WorldDMB suggesting that the number of services which can be accommodated in a Mux can be triplicated)

Results are not applicable to DMB audio



Evaluation of DAB+ sound coding under error-prone reception conditions:

3 types of Rayleigh channel were in use together with a Gaussian white noise channel

Each channel was being tested with different levels of error protection

RESULTS:

- **coverage area of DAB+ is rather close to the equivalent with DAB**
- but the failure characteristic at the edge of service has a slightly more precipitous '**brick wall**'

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FORECAST - Morning sessions

Session 1 - HDTV and beyond

- **HDTV Technology and service update** – *Thomas Wrede (SES-Astra)*
- **3D-TV – How important to broadcasters and how soon ?** – *David Wood (EBU Technical)*

Coffee break

Session 2 - Synergies between broadcast and broadband

- **Introduction to Hybrid Broadcast/Broadband TV** – *Peter MacAvock (EBU Technical)*
- **Example of a trial of HBB** – *Bernard Fontaine (France Télévisions)*
- **The EBU requirements for HBB** – *BFranc Kozamernik (EBU Technical)*

Lunch



FORECAST - Afternoon sessions

Session 3 - The ongoing digitisation of TV and Radio

- The evolving market for terrestrial TV (iDTVs, MPEG-4, DVB-T2, PayTV) – *Natalie Mouyal (DigiTAG)*
- Digital Radio developments (DAB, DRM, Internet, etc....) – *Nick Piggott (Global Radio)*

Coffee break

Session 4 – Simultaneous workshop sessions

- Topic 1: HDTV service introduction
- Topic 2: Hybrid Broadcast Broadband TV
- Topic 3: Digitisation of Radio and TV

Summarising the workshops



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Questions ?

g.alberico@rai.it

