The DVB Project: Status and Prospects for Internet TV

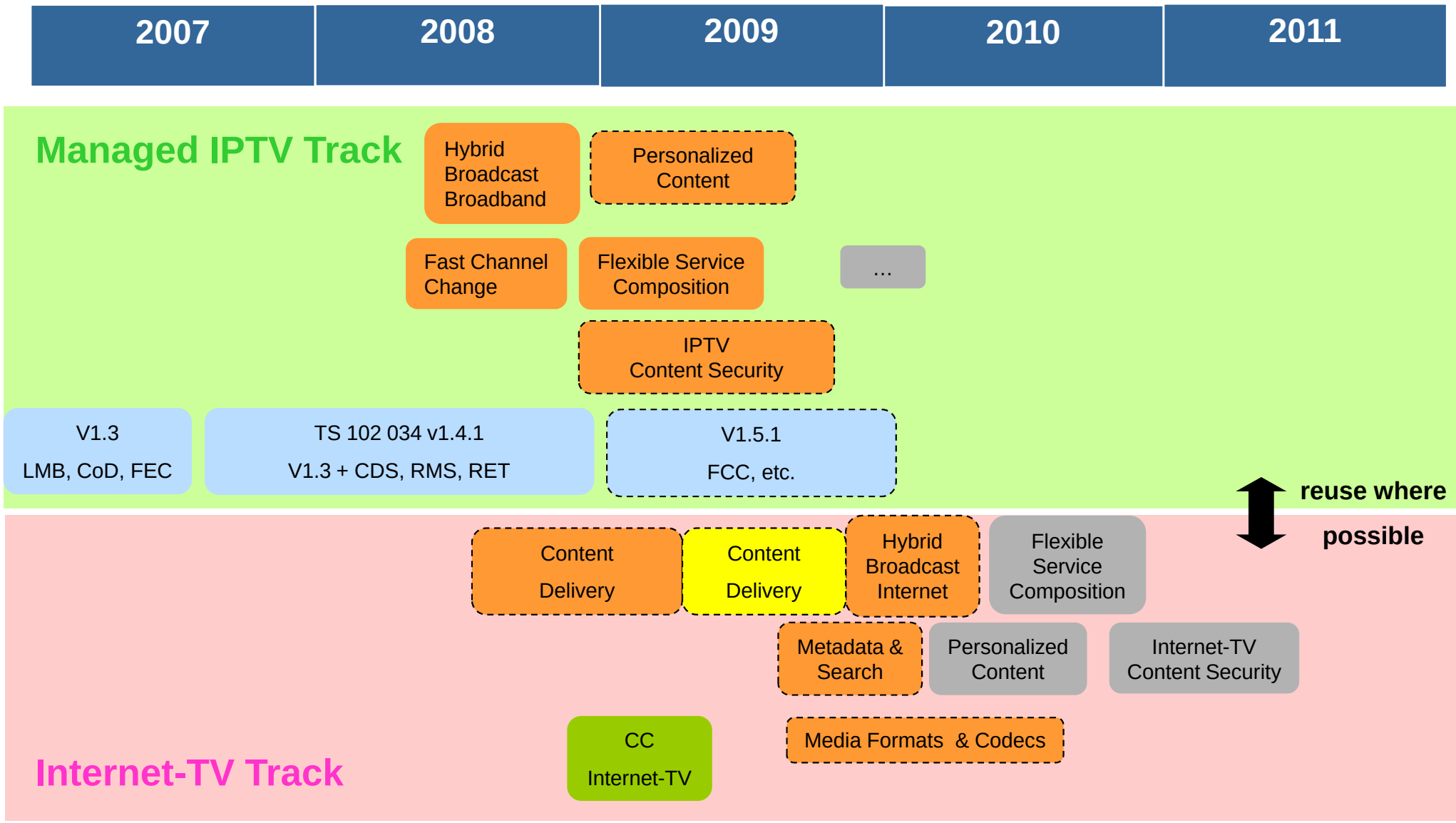
Thomas Stockhammer, Ralf Schäfer

On behalf of DVB

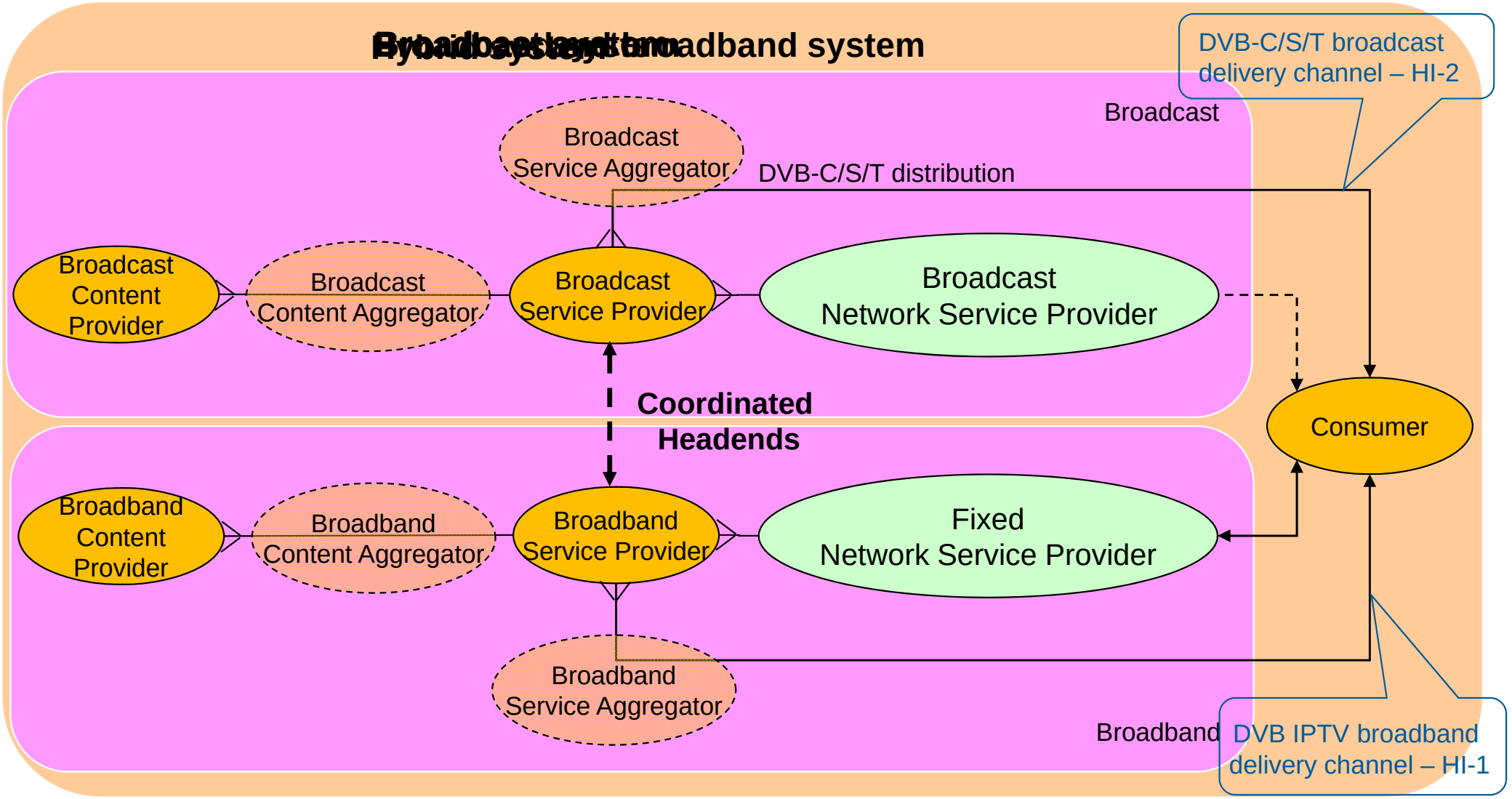
Presentation at EBU / ETSI Hybrid Broadcast Broadband Workshop Sep 2009

Digital Video Broadcasting

Excerpt - DVB Roadmap IPTV / Internet-TV



DVB-IPTV HBB: Concept of the hybrid environment



- Specification of interfaces HI-1 and HI-2 is within scope
- Specification of coordinated Head-end is out of scope
- Definition of Home end point implementation is out of scope

DVB-IPTV HBB: Status

- Work on hybrid signalling/metadata and hybrid A/V synchronization starts slow due to lack of sufficient commitment
- Hybrid application signaling and carriage done (TM-MIS group)
  - The specification addresses most of those HBB commercial requirements relating to interactive applications
  - The specification is independent of any specific technology for interactive applications or services
  - Interactive applications or services can be signalled in broadcast or broadband
  - Files comprising interactive applications or used by interactive services can be delivered by either broadcast or broadband or both
  - Interactive applications and services can be synchronised to video or audio delivered by either broadcast or broadband
  - The specification is intended to be used by deployment-specific specifications which choose the elements from this specification appropriate to their deployment

DVB-IPTV HBI: Status

- Commercial Case on Internet-TV:
  - Goal was to produce a commercial document, describing the Commercial Case for Internet-TV, seen by DVB
    - Comparison between IPTV and Internet-TV
    - What are the principal use cases ?
    - Convergence of Broadcast, IPTV and Internet-TV
    - Evaluation per actor in the value chain
    - What are the regulatory issues?
    - What are other SDOs doing?
    - Make a recommendation for DVB in this area
  - A public version will be available on the DVB web site
- Launched commercial Task Forces on Internet-TV:
  - Content Delivery, first version considers P2P
  - Metadata & Provider Search
  - Media Formats
  - Hybrid Broadcast Internet

DVB-IPTV Internet TV Content Delivery: Status

- Technical Study Mission
  - Overall goal
    - Investigate technology options to deliver DVB type content over the Internet to a large number of CE devices (incl. game consoles), PCs & mobile devices
    - Scope of study mission focus on content delivery, possibly beyond
    - attract subject matter experts in the field of Internet Content Delivery to ensure comprehensive consideration of technology options
    - Kickoff: April 2009, triggered by the creation of CRs on p2p OICD
    - Ultimate goal: Study Mission Report by Sep 2009
    - NO technical specification – Don‘t fight, collect!
  - Process to collect information
    - Public Questionnaire on Technologies, 31 questions, mostly technical
    - Workshops and Meetings (>30 meetings/telcos over the summer)
    - Collection of additional techhnologies through public information

DVB-IPTV Internet TV Content Delivery: Status (2)

- Study Mission Report
  - Work is still in progress:
    - Collected 21 questionnaire technology submissions
    - Collected about 10 additional relevant technologies
    - Currently evaluation of technologies, summary and drafting
  - Outline of Study Mission report
    - Overview Internet TV Content Delivery
    - Information Gathering Process and High Level Review
    - Categorization of Technical Solutions
    - Summary of Information Gathering Process
    - Business Models and Services
    - Architecture Examples (CDN, p2p, etc.)
    - Summary, Options and Recommendations for DVB
    - Annexes: Details on Technologies
    - Current Version around 450 pages, final version around 500 pages.
  - Next Steps
    - DVB will evaluate information and will decide if, how, when and what technical specification work will be started.
    - Public version may be available later this year

DVB-IPTV Internet TV Content Delivery: Technologies

- Questionnaire Replies
  - Open IPTV Forum
  - AnySee
  - Bittorrent
  - GridCast
  - MHEG-5 with IC
  - P2PSIP-IPTV
  - Samsung P2P-TV
  - Vboxcomm
  - StreamForge
  - NPO Hybrid Distribution
  - emundoo
  - CoolStreaming
  - PLPD Media Delivery
  - NextShare
  - ZDF Mediathek
  - GEM-IPTV
  - Scalable Video Coding
  - Apple HTTP Live Streaming
  - DVB-IPTV Content Download Services
  - Microsoft IIS SmoothStreaming
- Other Technologies under Consideration
  - Move Networks
  - Philips Net TV
  - BBC iPlayer
  - Akamai
  - Adobe Flash
  - Velocix
  - Zillion TV
  - ARD/WDR Mediathek
  - HBBTV
  - PPstream
  - Rawflow
  - YahooTV!
  - Zattoo
  - Real Networks
  - Netflix
  - YouTube
  - Hulu
  - Joost
  - PPlive
  - TVUNetworks
  - Abacast
  - Octoshape
  - IETF PPSP

Conclusion: DVB Hybrid and Internet TV Solutions

- Commercial Requirements on DVB-IPTV HBB ready, but take up in technical groups is slow
- Commercial work on Internet-TV has been started and Hybrid solutions (HBI) are part of it
- Technical Study Mission on Internet TV Content Delivery in progress, will help to scope technical specification (if any) on solid technical background and to attract relevant players
- DVB might liaise with other SDO in some areas as to provide complete end-to-end systems

BACKUP SLIDES

DVB-IPTV HBB: Concept of the hybrid environment

- From the user perspective, operation and presentation from either network should be transparent
- Use cases considered are those where DVB components and services available in the **combination** of broadband and broadcast delivery are related and can be used to provide a composite presentation:
  1. Combination of metadata and signalling
     - e.g. use metadata from broadband for broadcast content or vice-versa
  2. Synchronised video and audio components of DVB services
     - e.g. combine broadcast and broadband A/V streams in synchronized way (multi-channel audio)
  3. Applications
     - e.g. combine interactive applications from broadband with broadcast A/V streams
- HBB Commercial Requirements have been finalized in DVB, covering 3 use cases described later on

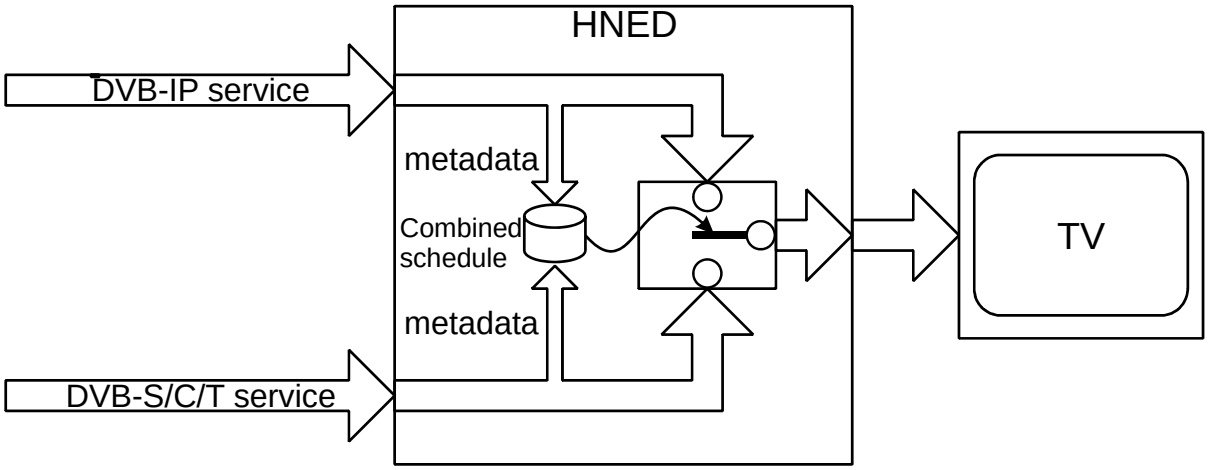
DVB-IPTV HBB: Metadata in the hybrid environment

- The total metadata set made available to the HNED may be made up from more or less complete contribution from one or more of the following:
  - Service, Discovery & Selection (SD&S), coded and delivered according to TS 102 034, carried over the broadband delivery path
  - DVB-SI (Full-SI or Partial-SI) carried over the broadband delivery path
  - Broadband Content Guide (BCG, TS 102 539), TV-Anytime XML based metadata structured and delivered according to DVB specifications (TS 102 323), carried over the broadband delivery path
  - DVB-SI carried over the broadcast delivery path
  - TV-Anytime (or other non-DVB metadata sources) carried over the broadcast delivery path
  - TV-Anytime (or other non-DVB metadata sources) carried over the broadband delivery path
- Aggregation of these metadata is the basis of all the following use cases

DVB-IPTV HBB: Use cases – 1

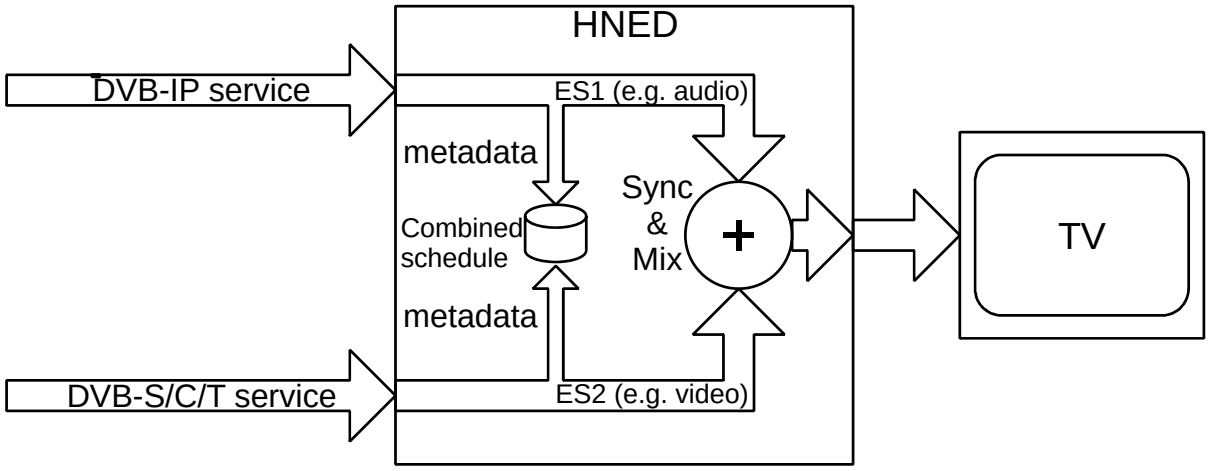
- Consumption of content from broadcast or broadband services where some content items may be available on both networks
  - One service at a time
  - Smooth switch between services
  - Combination of metadata and signaling from multiple sources

  - The combination of metadata must:
    - Allow all available services to be described
    - Allow receiving end-points to manage available content as intended by the broadcaster and service provider
    - Include consistent referencing to the same content items
  - However – note that any one component of the metadata may be incomplete or inconsistent with others and that not all elements of the required service set may be required
    - Broadcasters / Service Providers must maintain consistency
    - End-points must manage whatever information is available



DVB-IPTV HBB: Use cases – 2

- Simultaneous consumption of content items where there is dependence between services or components in terms of synchronization of presentation
  - Combining components from multiple synchronized services
  - Example: To ease bitrate limitations on broadcast networks delivery of some components appropriate to a minority of the audience may be over an IP service to be used in conjunction with the main service components carried on the broadcast network, e.g. multiple languages, sign language signaling
  - The timing and synchronization between the different delivery methods must be within the defined buffer model to prevent delivery delays, bad lip-sync, jitter, etc. at presentation



DVB-IPTV HBB: Use cases – 3

- Cross signaling of data only services between broadcast and broadband
  - Application content delivered over the other bearer, e.g. background digital teletext service
  - Aggregated metadata allows HNED to use application from the other bearer, e.g. AIT for MHP carried in broadcast delivery might identify application delivered in broadband service