PMT (Personal Mobile Television)

The Challenges and The Risks

David Wood - EBU

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The European Broadcasting Union

- The collective organisation of Europe's 72 national broadcasters, from Iceland to the Urals.
- Programme co-production, contracts, network operator (Eurovision and Euroradio), spectrum management software, new technology development.
- We believe in Europe and in helping European industry

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Decisions about PMT

- Probably the most complex decision about media systems to be yet made.
- It seems the 'natural' extension of our 'personal space', but there are...
- Complexities of the 'technologies'
- Complexities of the 'economics'
- Complexities of 'user behaviour'
- Complexities of 'regulation'
- +…

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Whether new technology is successful is influenced by:

- **Low score please**
- Opportunity Costs incurred
- Substitutes available

- **High score please**
- Technological lead
- Availability of receivers
- Value to customer of content
- Use-ability of receiver
- Relationship of disposable income to cost of receiver.
- Relationship of disposable income to service costs
- Complements available
- Fashion/momentum

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Four main ways to handheld TV.

- **Unicast (cellular), Multicast (MBMS), Broadcast, Podcast,** also OTA download, off-line download possible. Do they fit together? Which could succeed?
- US studies suggest that, with only 5% of subscribers watching TV, Unicast TV will overload network capacity, and it can only be financially viable with short duration pay items. Is it the same in Europe?
- Broadcast mobile TV offers high-quality, as long as your battery lasts - advertising funding, pay TV, or subscription are possible.
- But will Podcasting provide a 'substitute' for broadcast mobile TV, with no subscription costs?
- And what is the role of OMA BCAST?

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The technological complexity for PMT…

- No common PMT standard for Europe.
- European Union declares itself in favour of 'technological neutrality' (Telecom Directive) – the EU will not favour any unique standards for Europe any more.
- All nations/companies have to make their own choices.
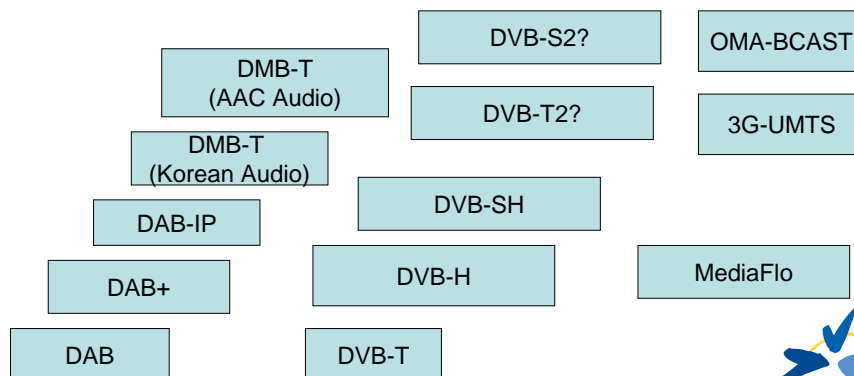- Is this in the interest of the European consumer? There are different views on this.

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PMT Technology options

- DVB-H (Terrestrial only)
- DVB-SH (Terrestrial and Satellite)
- T-DMBa (Korean, Terrestrial)
- T-DMBb (German/French, Terrestrial)
- S-DMB (Korean, Satellite)
- DAB-IP (UK)
- Qualcomm MediaFlo (US proprietary)
- OMA BCAST (European)
- 3G UMTS
- ISDB Tn (Japanese)
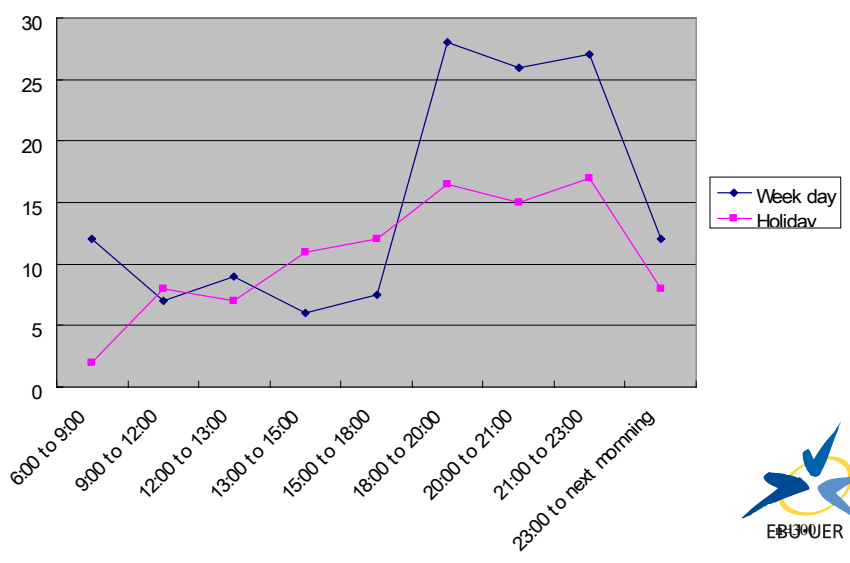- CMMB (Chinese)

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And you thought it was just PMT?

DVB-S2?		OMA-BCAST
DMB-T (AAC Audio)		
	DVB-T2?	3G-UMTS
DMB-T (Korean Audio)		
DAB-IP	DVB-SH	
DAB+	DVB-H	MediaFlo
DAB	DVB-T	

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Which audience?
Which programmes?
Which period?

Some of the many insights….

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Survey of Mobile broadcasting service (Japan)
Viewing Time
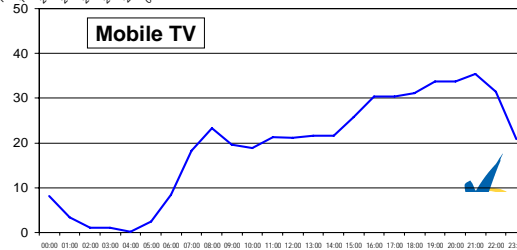

Legend: Week day, Holiday
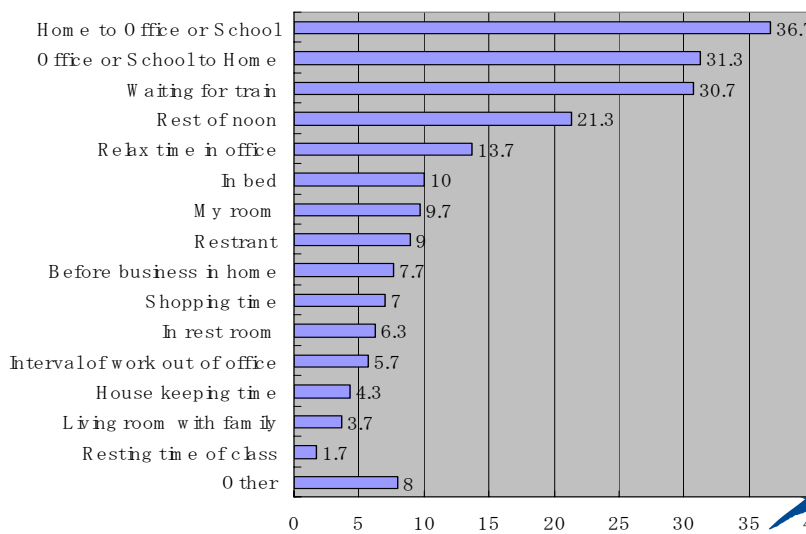
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Where is mobile TV watched (Finland)?

TV
Radio
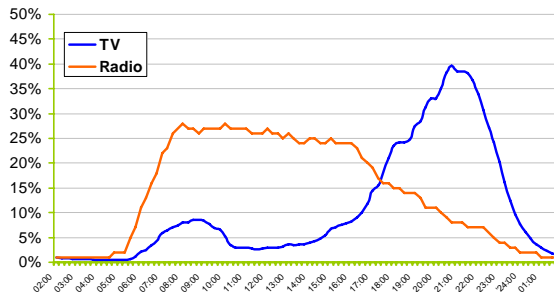
Watching mobile TV indoors (work, home) is quite popular

But viewers start to become accustomed to watching TV «*on the go*»

Mobile TV

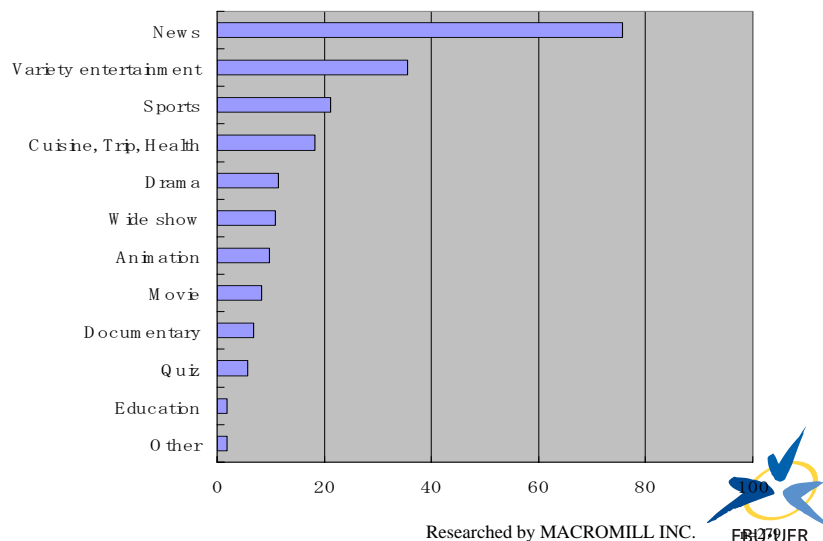**Source: Finnish mobile TV research international**

Survey of Mobile broadcasting service (Japan)
Viewing chance or place

Place	Value
Home to Office or School	36.7
Office or School to Home	31.3
Waiting for train	30.7
Rest of noon	21.3
Relax time in office	13.7
In bed	10
My room	9.7
Restrant	9
Before business in home	7.7
Shopping time	7
In rest room	6.3
Interval of work out of office	5.7
House keeping time	4.3
Living room with family	3.7
Resting time of class	1.7
Other	8

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Survey of Mobile broadcasting service (Japan)
Favourite Genre

Researched by MACROMILL INC.

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The decisions..

- Which content?
- Which infrastructure arrangement?
- Whether to start?
- When to start?
- Which technical system to start with?
- …?

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The regulation environment

Towards the 'wild west'?

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European Mobile Broadcasting Council

bmcoforum
Broadcast_Mobile_Convergence

dF
Digital
Interoperability
Forum

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GSM
ASSOCIATION
GSM EUROPE
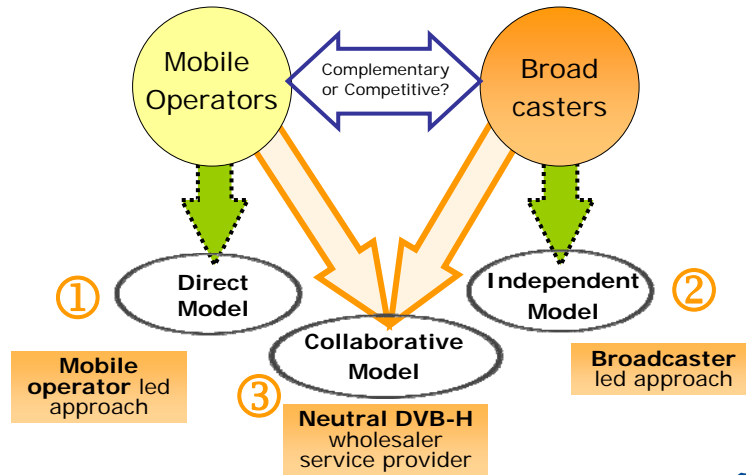The European Interest Group

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EMBC conclusions…

- No new legislation for (hybrid) handheld services please
- No common technical system likely for Europe
- Unlikely to have harmonised spectrum in Europe for mobile broadcasting
- 'Technological Neutrality'
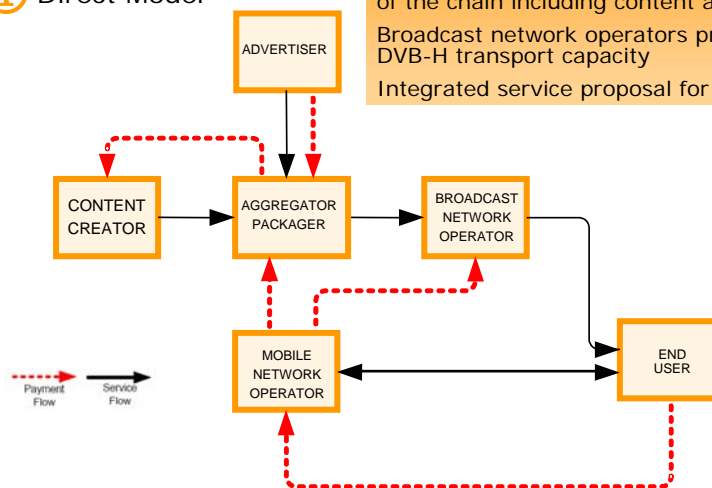- 'Interoperability'

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The Infrastructure options

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Mobile TV Business Models

Mobile Operators

Complementary or Competitive?

Broad casters

① Direct Model

② Independent Model

Collaborative Model

③

Mobile operator led approach

Neutral DVB-H wholesaler service provider

Broadcaster led approach

Source DigiTAG
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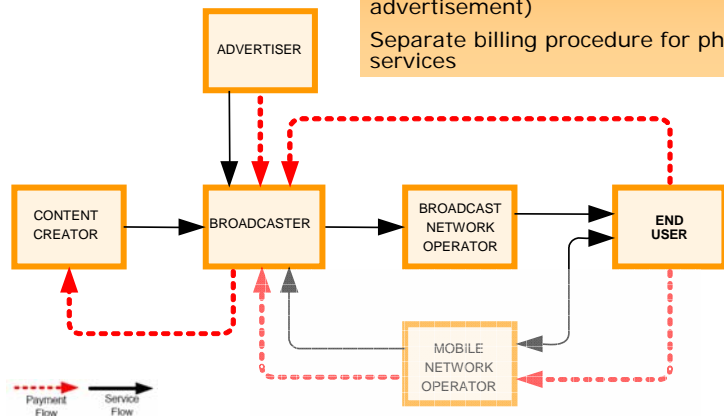
Mobile Operator led approach

① Direct Model

Mobile operator responsible for all aspects of the chain including content aggregation

Broadcast network operators provide the DVB-H transport capacity

Integrated service proposal for viewers

ADVERTISER

CONTENT CREATOR

AGGREGATOR PACKAGER

BROADCAST NETWORK OPERATOR

MOBILE NETWORK OPERATOR

END USER

Payment Flow

Service Flow

Source DigiTAG
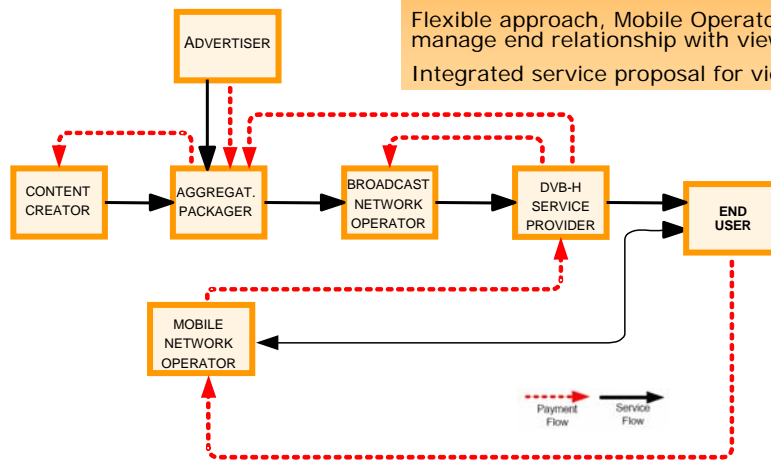EBU·UER

Broadcast led approach

② Independent Model

Broadcasters manage end relationship with viewers

Broadcaster receives payment for services (pay services, licence fee, advertisement)

Separate billing procedure for phone services

ADVERTISER

CONTENT CREATOR

BROADCASTER

BROADCAST NETWORK OPERATOR

END USER

MOBILE NETWORK OPERATOR

Payment Flow

Service Flow

Source DigiTAG
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Neutral DVB-H Wholesaler

③ Collaborative Model

Independent service provider acts as wholesale facilitator for content aggregation and use of spectrum

Flexible approach, Mobile Operator can manage end relationship with viewers

Integrated service proposal for viewers

ADVERTISER

CONTENT CREATOR

AGGREGAT. PACKAGER

BROADCAST NETWORK OPERATOR

DVB-H SERVICE PROVIDER

END USER

MOBILE NETWORK OPERATOR

Payment Flow

Service Flow

Source DigiTAG
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Who will manage the value chain?

- Broadcaster-led with mobile telecom operator?
- Mobile telecom operator-led with broadcaster?
- Independent DVB-H service provider?
- Mobile telecom operator-led?
- **National administrations need to decide on legal frameworks**.

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Some thoughts about content for mobiles

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Why do we 'consume' media

- To help establish our own **identity**.
- To be able to **share an experience** with others.
- For **diversion**.
- For **information** we need.
- Young people like **multi-tasking** and **risk taking**
- Mobile television (like all television) has to offer these.

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New Age content

- The Podcasting audience loves short duration, off the wall, content. This is the new age 'pop video'.
- The 'Web 2.0' user loves '**User Produced Content**' (UPC).
- The 'Web 2.0 user loves '**Synthetic Worlds**'.
- The Web 2.0 user loves '**Social Networks**'
- '**Reality**' shows are strangely compelling.
- We need to develop a mobile TV world that draws on these elements.
- **We need to invent a new age mobile TV content world**.

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Most Wanted:
frequency channels

- National administrations need to decide how to use the new frequency plan for Bands III, IV, and V after analogue television broadcast channels are switched off.
- There are many factors to consider, and several potential candidates for the spectrum.
- L-band?
- S-band?
- UMTS bands?

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PMT will succeed if…

- **Frequency channels are available**
- **The content available is attractive**
- **The receivers are available**
- **They are easy to use**
- **The receivers and subscriptions are affordable**
- **…but the most critical are probably: frequency channels, frequency channels, and frequency channels.**

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DVB-SH (Satellite to handhelds)

- Recently developed by DVB Project
- Intended for S band, 2170 – 2200 MHz band
- OFDM/TDM, time slicing, IP datacast
- Mix of satellite and terrestrial (always OFDM)
- 1.7MHz channels.
- Services 2009?

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DVB-H

How it works

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A mobile TV system needs to..

- Work well in **poor reception conditions** much worse than those we find for normal television.
- Work for a long time with a **small battery**
- Move from transmitter to transmitter - '**handover**' - without the viewer noticing.
- Be able to carry **any content** to any user.
- Work with the mobile telephone system when needed (the '**return path**') to request programmes, pay subscriptions, etc.
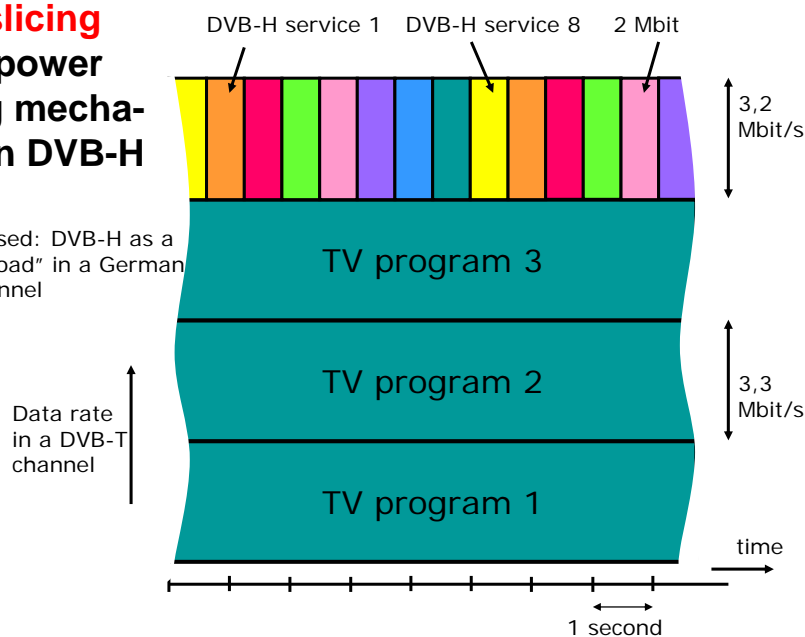
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Solving the battery problem

- In the DVB-T signal there is a constant stream being broadcast for each service.
- In the DVB-H services, the programmes are 'time compressed'. For example, five seconds is time compressed to 0.2 seconds.
- This means that the receiver can go to sleep for 4.8 seconds. This saves 90% of the battery power he would have used.

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Time slicing
is the power saving mecha-nism in DVB-H

Example used: DVB-H as a "25% payload" in a German DVB-T channel

DVB-H service 1   DVB-H service 8   2 Mbit

3,2 Mbit/s

TV program 3

Data rate in a DVB-T channel

TV program 2

3,3 Mbit/s

TV program 1

time

1 second

Adding the return channel

- DVB-H itself is only a 'downlink'
- Need a return channel
- Use mobile telephone services like UMTS
- Mobile operator handles requests
- Broadcast and mobile need a 'cooperation platform' and this has been defined through the **IP Datacast** specification

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IP Datacast brings it all together

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Architecture of the IP Datacast System
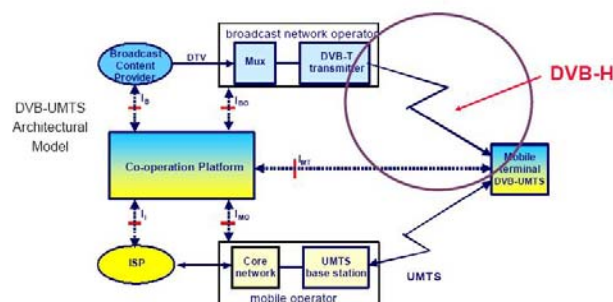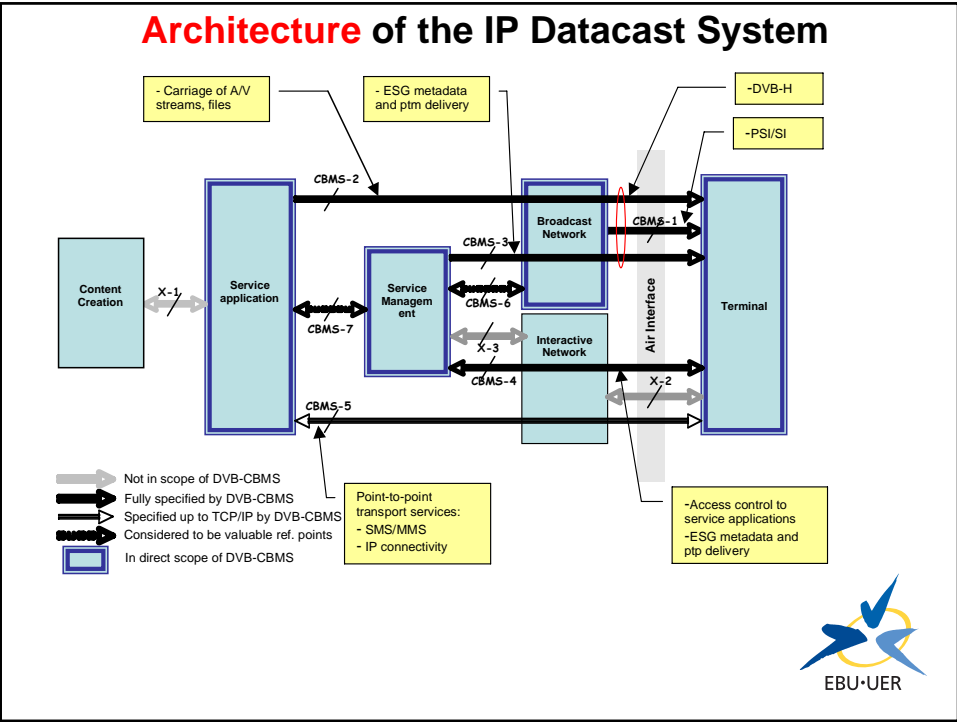
The set of IP Datacast (Phase 1) specifications consists of the following:

- Set of Specifications for Phase 1
- Use Cases and Services
- Architecture
- PSI/SI
- Content Delivery Protocols (CDP)
- Electronic Service Guide (ESG)
- Service Purchase and Protection" (SPP)

And in addition, audio and video coding formats are described in the DVB guidelines document TS 102 005

The Electronic Service Guide (ESG)

- The ESG gives an overview of the offer. The time required to switch between services is typically 1 second.
- The ESG supports information about the content and of the operator etc. Video, audio, teletext, and many other forms of content can be integrated. Interactive links are possible.
- One multiplex can carry several ESGs. Customers of various operators sharing one multiplex therefore can be offered content specific to each operator and content offered by more than one operator.

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