Defining DTTB network specifications and ensuring Quality of Service

ITU/EBU/BNE/DVB Workshop on DTTB Implementation
Broadcast Networks Europe (BNE)
19 members operating in 22 countries (2016)

A trade organisation for Terrestrial Broadcast Network Operators for Radio and TV in Europe based in Brussels

The DTT Networks in Europe serve about 250 Million viewers watching TV on average some 4 hours every day.
BNE - 19 members, 22 countries

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<tr>
<th>Country</th>
<th>Member Company</th>
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<td>Spain</td>
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<td>Czech Republic</td>
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<td>ELETTRONICA INDUSTRIALE</td>
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<td>Germany</td>
<td>MEDIA BROADCAST</td>
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<td>France, Estonia, Monaco</td>
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<td>Sweden, Denmark</td>
<td>TERACOM</td>
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Context

The aim of this short presentation is to give a “generic” overview of the process to implement a DTTB network and of specifications, implementation and a possible business model.

The BNE member companies all have vast practical experience of Analogue Switch-Off and transition to Digital Terrestrial Television Broadcasting (DTTB).

Several BNE members engage in international development projects and are keen to establish new relations with operators in countries currently establishing DTTB services.

For further and more detailed discussions, contact details of BNE and BNE member companies are provided in the workshop documentation.
How to get started

• Overall Process and Setting the Scene
• Defining the Network
• Implementation
• Business Models
• An example Network Operator
Overall process

Regulatory, Political, Licensing and Financial conditions

“Setting the Scene”
Preparations and Project Implementation

DTTB Launch

Operations
Setting the scene

Regulatory, Political Licensing and Financial conditions

Content Provision

Free-to Air and/or Pay-TV

Technical Definition

Organisational framework

Operations, Maintenance

Information

Project Implementation
Setting the scene

Regulatory, Political Licensing and Financial conditions

Content Provision
Free-to Air and/or Pay-TV
Technical Definition
Organisational framework
Operations, Maintenance
Information

Project Implementation
Technical Definition, Operations

• Services
  – Free-to-Air and/or Pay-TV
  – Number of channels
  – Standard Definition (SD), High Definition (HD), Ultra High Definition (UHD)

• Network
  – Coverage (population, area)
  – Frequency Planning, Coordination
  – Multi Frequency Network (MFN) and/or Single Frequency Network (SFN)
  – High Tower and/or Low Tower infrastructure

• System
  – System choice (DVB-T2 or other)
  – Transmission parameters, robustness, transmission modes
  – Compression technology (MPEG4, HEVC)
  – Capacity (number of multiplexers)
  – Conditional Access System (CA)
  – Subscriber Management System (SMS)

• Reception
  – Reception target – Fixed Rooftop, Indoor and/or Mobile Antennas
  – Representative / Typical / Expected Antenna Installations
  – Receiver technology - availability and price

• Transmission (distribution)
  – Fixed Radio-Links, Fibre, Satellite, Relay
  – Traditional technology (SDI) or IP

• Resilience
  – Power back-up
  – Redundancies
  – Security and Site Management

• Operations
  – Network Operations Center
  – Service and Maintenance
  – Monitoring of Quality of Service
Implementation Phase

Network design

Technical Implementation

Information Activities

DTTB launch

• Frequency plan
• Network plan
• Clean-cut sites (no simulcast)
• Sites to be phased out
• Coverage improvements

• Transmitter, combiner and antenna upgrades
• Converting clean-cut transmitters
• Primary distribution changes
• Site construction if needed
• Logistics
• Information campaigns to all affected parties

• Analogue switch-off
• Frequency changes
• New sites
• Clean-cut sites
• Verification
The network operator’s role in the DTTB project

• To establish the organisation to build, operate and maintain the network in compliance agreed specifications
• To optimize the use of available spectrum
• To inform the general public and the radio and TV retailers about network coverage and frequency changes
• To have the technical competence
• To monitor and ensure the DTTB quality of service
• To establish and run a test facility for set-top-boxes to secure full functionality of boxes [Optional]
Business models

• Who does what
  – Free-to-Air
  – Pay-TV

• Where is the Money
Who does what

Free-to-Air

Network provider
- Infrastructure
- Operations
- Maintenance
- Receiver tests

Receiver Industry
- Development
- Manufacturing
- Sales & Marketing

Radio and TV retail shops

Consumer

TV-channels
- "TV License"
- Advertising Revenues
- Free-to-Air Services

$, £, €

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£,
€
Who does what
Free-to-Air and Pay-TV

Network provider
- Development
- Manufacturing
- Sales & Marketing

Receiver Industry
- Infrastructure
- Operations
- Maintenance
- Receiver tests

TV-channels
- Free-to-Air Services
- Content Services

Pay-TV Operator
- Pay-TV Packages
- Subscriptions and Set-Top-Box bundling
- Smart Cards
- Subscriber Authorisation
- Subscriber Management and Billing

Radio and TV retail shops
- Free-to-Air and Pay-TV

Consumer
- Subscriptions

TV License
- Advertising Revenues

$, £, €
An example Network Operator
An Example Network Operator

**TERACOM**

- Transmission and broadcast networks for radio and TV in Sweden
- 700 sites
- Service and maintenance personnel at more than 50 locations
Infrastructure

Digital national backbone network
120 link segments

~1,600 km

Coverage of “all” inhabited areas
54 high towers (300 m)
~650 lower towers
Not Always Summer ........
Further contact and information

Further information and contact details of several BNE members and European Network Operators are provided in the workshop documentation.

Inquiries are also welcome to:

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Additional reading and viewing:

For interested parties a complete 300 page detailed report issued by the Swedish government on one of the first and very successful European analogue to digital switch-over projects can be found at:
http://www.sweden.gov.se/sb/d/574/a/113008

Animated Video: DTT - A spectacular European Success Story
https://goo.gl/rvNlho
Thank You