Guidelines on transition from analogue to digital terrestrial TV broadcasting and Thailand DTTB roadmap

An introduction

ITU/NBTC Workshop
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Presentation Overview

1. ITU Guidelines & Assistance
2. Functional Framework
3. Roadmap Development
4. Conclusions
1. ITU Guidelines & Assistance
1. ITU Guidelines & Assistance

- Guidelines for the Transition from Analogue to Digital Television Broadcasting
- First version published in 2010 (Region 1 area)
- 2nd in 2012 (for AP area)
- New release published this year (Global version)
- Available on www.itu.int
- ITU-D assisted countries to develop their Roadmap
1. ITU Guidelines & Assistance

- Roadmap Reports for AP
  - Cambodia
  - Nepal
  - Mongolia
  - Sri Lanka
  - Thailand
  - Tonga

- And for Africa
  - Angola
  - Ethiopia
  - Mali
2. Functional Framework
## 2. Functional Framework

### Functional Layers

<table>
<thead>
<tr>
<th>Functional Layer</th>
<th>Guidelines</th>
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<tbody>
<tr>
<td>A. Policy and regulation</td>
<td>Part 2</td>
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<tr>
<td>B. Analogue switch-off (ASO)</td>
<td>Part 2</td>
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<tr>
<td>C. Market &amp; Business development</td>
<td>Part 3</td>
</tr>
<tr>
<td>D. DTTB &amp; MTV networks</td>
<td>Part 4 &amp; Part 5</td>
</tr>
<tr>
<td>E. Roadmap development</td>
<td>Part 6</td>
</tr>
</tbody>
</table>

In each Layer 3 to 13 functional building blocks have been identified.
## 2. Functional Framework – Layer A

<table>
<thead>
<tr>
<th>A. Policy &amp; Regulation</th>
<th>2.1. Technology &amp; Standards Regulation</th>
<th>2.2. Licensing Framework</th>
<th>2.3. ITU-R Regulations</th>
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<tr>
<td></td>
<td>2.4. National Spectrum Plan</td>
<td>2.5. Assignment Procedures</td>
<td>2.6. License Terms &amp; Conditions</td>
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<tr>
<td></td>
<td>2.7. Local Permits (building &amp; planning)</td>
<td>2.8. Media Permits &amp; Authorizations</td>
<td>2.9. Business Models &amp; Public Financing</td>
</tr>
<tr>
<td></td>
<td>2.13. Communication to consumers &amp; industry</td>
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### Layer A

Policy & regulation

- **Key issues and choices faced by the Regulator when formulating DTTB, MTV or ASO policy objectives**
- **Implementation of policies**
  - By issuing information, funds, rights, licenses and permits to (qualified) market parties
  - In compliance with the relevant legislation
# 2. Functional Framework – Standards Regulation

<table>
<thead>
<tr>
<th></th>
<th>Stipulated</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Presentation format</td>
<td>DTTB: SDTV and/or HDTV (MTV: a minimum bit rate/service)</td>
<td><img src="image1" alt="Flags" /> <img src="image2" alt="Flags" /> <img src="image3" alt="Flags" /> <img src="image4" alt="Flags" /></td>
</tr>
<tr>
<td>2. Transmission standard</td>
<td>DTTB: e.g. ATSC, DVB-T/2, DMB-T, DTMB or ISDB-T (MTV: e.g. DVB-T2L or 1-Seg)</td>
<td><img src="image5" alt="Flags" /> <img src="image6" alt="Flags" /> <img src="image7" alt="Flags" /> <img src="image8" alt="Flags" /></td>
</tr>
<tr>
<td>3. Compression technology</td>
<td>DTTB: MPEG2 or 4 (MTV: e.g. H264/MPEG-4 AVC or open)</td>
<td><img src="image9" alt="Flags" /> <img src="image10" alt="Flags" /> <img src="image11" alt="Flags" /> <img src="image12" alt="Flags" /></td>
</tr>
<tr>
<td>4. CA/DRM</td>
<td>Interoperability between deployed systems for DTTB and MTV platforms</td>
<td><img src="image13" alt="Flags" /></td>
</tr>
<tr>
<td>5. API</td>
<td>DTTB: e.g. MHP/proprietary (MTV: platforms specific)</td>
<td><img src="image14" alt="Flags" /> <img src="image15" alt="Flags" /> <img src="image16" alt="Flags" /></td>
</tr>
</tbody>
</table>
2. Functional Framework – Licensing Framework

- Assigning 3 types of rights
  - Spectrum
  - Broadcast
  - Operating
- Extra = MUX function
- 2 models for spectrum rights
  - **Model A**: spectrum assigned to broadcasters
  - **Model B**: spectrum assigned to multiplex/network operator
### 2. Functional Framework – Licensing Framework

<table>
<thead>
<tr>
<th>Model A</th>
<th>Spectrum license(s) assigned to broadcasters or (single) service provider(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model B</td>
<td>Spectrum license(s) assigned to common multiplex operator(s) or signal distributor(s)</td>
</tr>
</tbody>
</table>
2. Functional Framework – OPN

- Split of Network & Service provisioning is a “Telecom” model and Open Network Provisioning (ONP) principles apply:
  - Obligation to provide Access – but capacity is limited on Terrestrial
  - Fair pricing – Price Cap or Reference Offers
- CATV networks are considered “Telecom” too, but with specifics:
  - OPN for Broadcasting services (incl. connected TV/service portals)
  - Net neutrality

- Cable penetration > 95%
- Dec 2013: Regulator (BIFT) sets wholesale tariffs for:
  - Analogue and Digital cable TV services
  - “Retail minus” pricing

- Cable penetration > 90%
- Jan 2014: Court decides Analogue cable not open
- Network access for A/D cable continues to be under review
2. Functional Framework – OPN

- **Net neutrality** is an regulatory point of attention:
  - Madison River’s blocking of VoIP (2005) and Comcast’s throttling of P2P files sharing (2008)
  - Mobile services: flat rate Internet data bundles drained income from text/voice services

- Net neutrality also important for **Broadcasting** services:
  - P2P architecture for delivering broadcasting services
  - Video streaming may be next service to be throttled or blocked
  - Connected TV (HBB) developments may be hampered
### 2. Functional Framework – Layer B

#### B. ASO

|-------------------------|------------------------------------------|---------------------------------|--------------------------------------|------------------------------|

#### Layer B

**Analogue switch-off (ASO)**

- Process of turning off the analogue terrestrial television signal and replacing it with a digital signal
- Government initiated policy, aiming at
  - More channels and services
  - New revenue streams and business models
- The key objective in the ASO process is reducing the risk of service interruption
2. Functional Framework - Transition Models

1. ASO with Simulcast:
   A. Phased
   B. National

2. ASO without Simulcast

??
## 2. Functional Framework – Layer C

### C. Market & Business Development

|---------------------------------|---------------------------|----------------------------------------|------------------------|--------------------------|

- **Layer C**
  - Market & business development

- **Key business issues and choices faced by Service Providers/Network operators when planning the commercial launch of DTTB and MTV services**
- **A set of business activities and tools**
  - For defining the DTTB/MTV service proposition and associated business case and plan
  - Taking into account demand drivers, service barriers, financial feasibility, receiver availability and customer support issues
2. Functional Framework – Customer Proposition

- Customer Proposition = seeking attributes providing Competitive Advantage
  - 6 dimensions
- DTTB / MTV markets differ:
  - DTTB: mature & many TV platforms
  - MTV: handset driven and mostly mobile operator led
### 2. Functional Framework – Layer D

#### D. Networks

<table>
<thead>
<tr>
<th>DTTB</th>
<th>MTV</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1. Technology &amp; Standards Application</td>
<td>5.1. Technology &amp; Standards Application</td>
</tr>
<tr>
<td>4.2. Design Principles &amp; Network Architecture</td>
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</tr>
<tr>
<td>4.4. System Parameters</td>
<td>5.4. System parameters</td>
</tr>
<tr>
<td>4.6. Network Interfacing</td>
<td>5.6. Network Interfacing &amp; studio facilities</td>
</tr>
<tr>
<td>4.8 Transmitting equipment Availability</td>
<td>5.8 Transmitting equipment Availability</td>
</tr>
<tr>
<td>4.9 Network Rollout Planning</td>
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</tr>
</tbody>
</table>

- **Key issues and choices faced by Network operators when planning transmitter networks for DTTB and MTV services**
- **Choices should be made within framework of**
  - License conditions
  - Business objectives
2. Functional Framework - Network Planning

- Trade-off between
  - Transmission costs (number of stations and power)
  - Service quality (multiplex net bit rate)
  - Coverage quality (reception probability)

- Within limits given by Frequency and Business Plan

- If more power needed than allowed or possible: Power distribution by SFNs

- High service quality (27 MB/s) High coverage quality (95%)*

- Medium service quality (16 MB/s) High coverage quality (95%)*
3. Roadmap development
## 3. Roadmap Development - Model A (top view)

<table>
<thead>
<tr>
<th>By</th>
<th>Layer</th>
<th>Phases of the roadmap (Model A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulator (NRT)</td>
<td>Policy &amp; regulation</td>
<td>1. DTTB policy development</td>
</tr>
<tr>
<td>ASO</td>
<td></td>
<td>3. Licensing policy &amp; regulation</td>
</tr>
<tr>
<td>Operator/Broadcasters</td>
<td>Market &amp; business development</td>
<td>2. ASO planning</td>
</tr>
<tr>
<td>DTTB networks</td>
<td>1. Preparation</td>
<td>2. Planning and implementation DTTB networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Analogue switch-off</td>
</tr>
</tbody>
</table>

### Timeline
- Submission spectrum/broadcast license application
- Issue of licenses
- Sites in operation
- ASO completed

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*ITU: Committed to connecting the world*
### 3. Roadmap Development - Model B (top view)

<table>
<thead>
<tr>
<th>By</th>
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<th>Phases of the roadmap</th>
</tr>
</thead>
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<tr>
<td>Regulator (NRT)</td>
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<td>1. DTTB policy development</td>
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<tr>
<td></td>
<td>ASO</td>
<td>2. ASO planning</td>
</tr>
<tr>
<td></td>
<td>Common mux operator</td>
<td>3. Licensing policy &amp; regulation</td>
</tr>
<tr>
<td></td>
<td>DTTB network</td>
<td>4. Planning and implementation DTTB network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. License administration</td>
</tr>
<tr>
<td></td>
<td>Timeline</td>
<td>Call for bids for multiplex operator partner license</td>
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<tr>
<td></td>
<td></td>
<td>Issue of license</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sites in operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASO completed</td>
</tr>
</tbody>
</table>

**Key Events:**
- Call for bids for multiplex operator partner license
- Issue of license
- Sites in operation
- ASO completed
- Analogue switch-off
3. Roadmap Development – Phase 1

- International Agreements
- National telecom, broadcast & media acts
- Existing policy documents & objectives


- 2.1. Technology & Standards
- 3.3. Receiver Availability Consideration
- 3.2. Customer Proposition

- 2.10. Digital Dividend
- 4.1. Technology & Standards Application

Consultation with Parliament → Draft DTTB Policy

NRT mandated to prepare policy document → Market research conducted → DTTB standard(s) selected → Policy document passed Parliament
3. Roadmap Development - Transition Periods

Selected European Countries

Selected AP countries

<table>
<thead>
<tr>
<th>Country</th>
<th>ASO completion date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>2013</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2013</td>
</tr>
<tr>
<td>South Korea</td>
<td>2012</td>
</tr>
<tr>
<td>Japan</td>
<td>2012</td>
</tr>
<tr>
<td>Taiwan</td>
<td>2012</td>
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</table>
4. Conclusions
4. Conclusions

- **ITU Guidelines focus on:**
  - Regulator, Broadcast Network Operator and Service Provider
  - DTTB and MTV specific activities

- **In practice Roadmaps differ, depending on:**
  - Local circumstances
  - Status of implementation
  - Roles & Responsibilities National Roadmap Team

- **It is important to adopt realistic time schedules:**
  - Implementation of the whole process may take several years and will involve many stakeholders