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

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Presentation Overview

1. **ITU Guidelines & Assistance**

2. **Functional Framework**
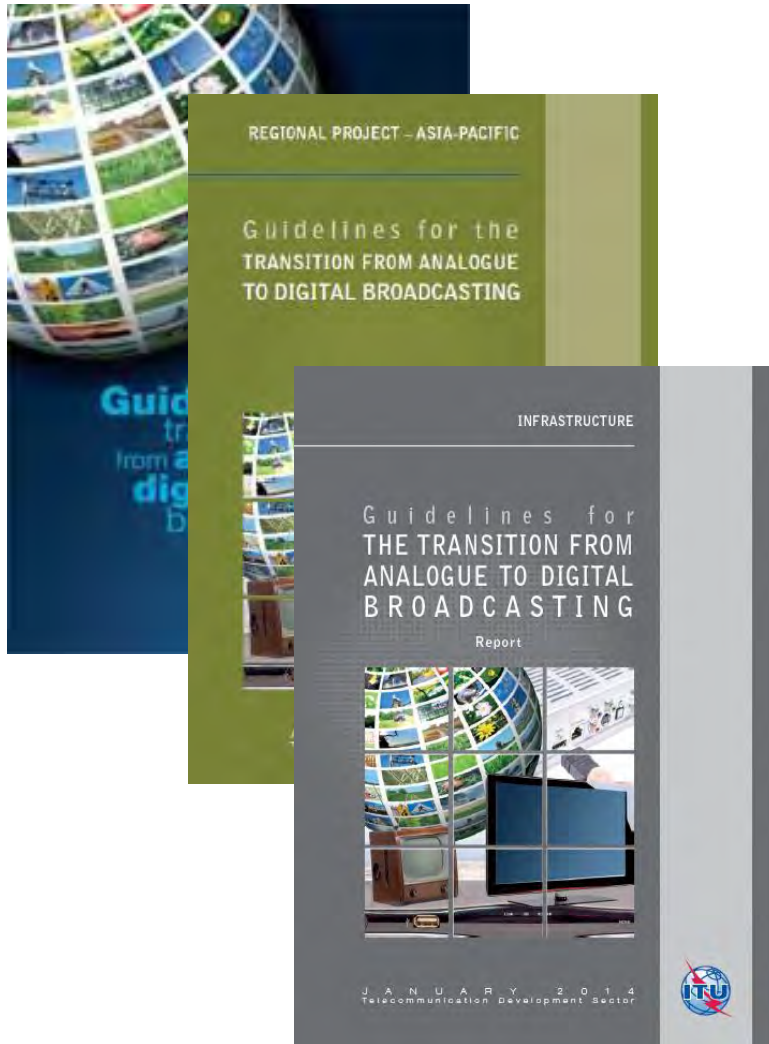
3. **Roadmap Development**

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
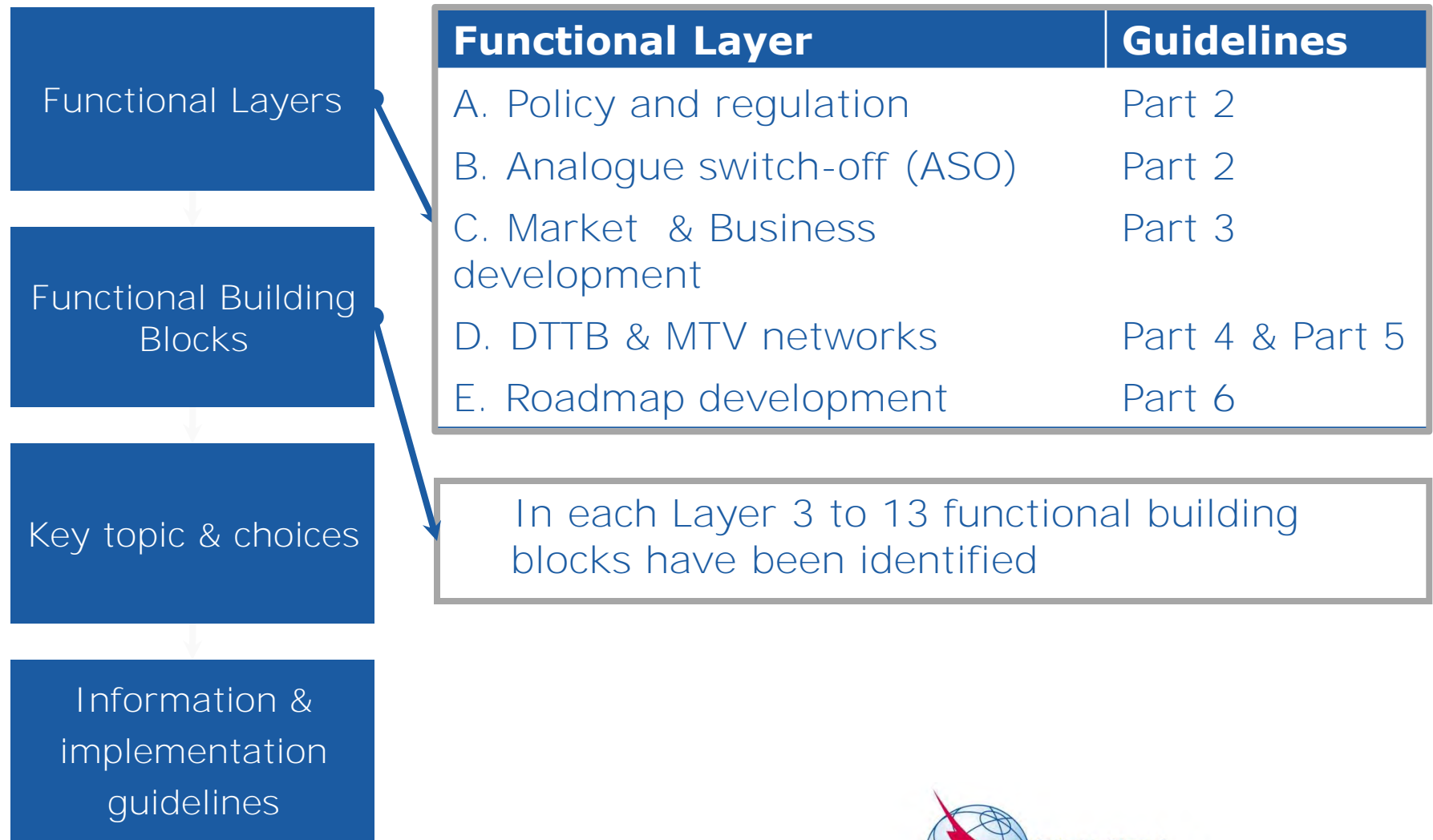
- Roadmap Reports for AP
  - Cambodia
  - Nepal
  - Mongolia
  - Sri Lanka
  - Thailand
  - Tonga
- And for Africa
  - Angola
  - Ethiopia
  - Mali

2. Functional Framework

2. Functional Framework

Functional Layers

Functional Building Blocks

Key topic & choices

Information & implementation guidelines

Functional Layer	Guidelines
A. Policy and regulation	Part 2
B. Analogue switch-off (ASO)	Part 2
C. Market & Business development	Part 3
D. DTTB & MTV networks	Part 4 & Part 5
E. Roadmap development	Part 6

In each Layer 3 to 13 functional building blocks have been identified

2. *Functional Framework* – *Layer A*

A. Policy & Regulation				
2.1. Technology & Standards Regulation	**2.2. Licensing Framework**	2.3. ITU-R Regulations		
2.4. National Spectrum Plan	2.5. Assignment Procedures	2.6. License Terms & Conditions	2.7. Local Permits (building & planning)	2.8. Media Permits & Authorizations
2.9. Business Models & Public Financing	2.10. Digital Dividend	2.11. National Telecom, Broadcast & Media Acts	2.12. Law enforcement & execution	2.13. Communication to consumers & industry

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
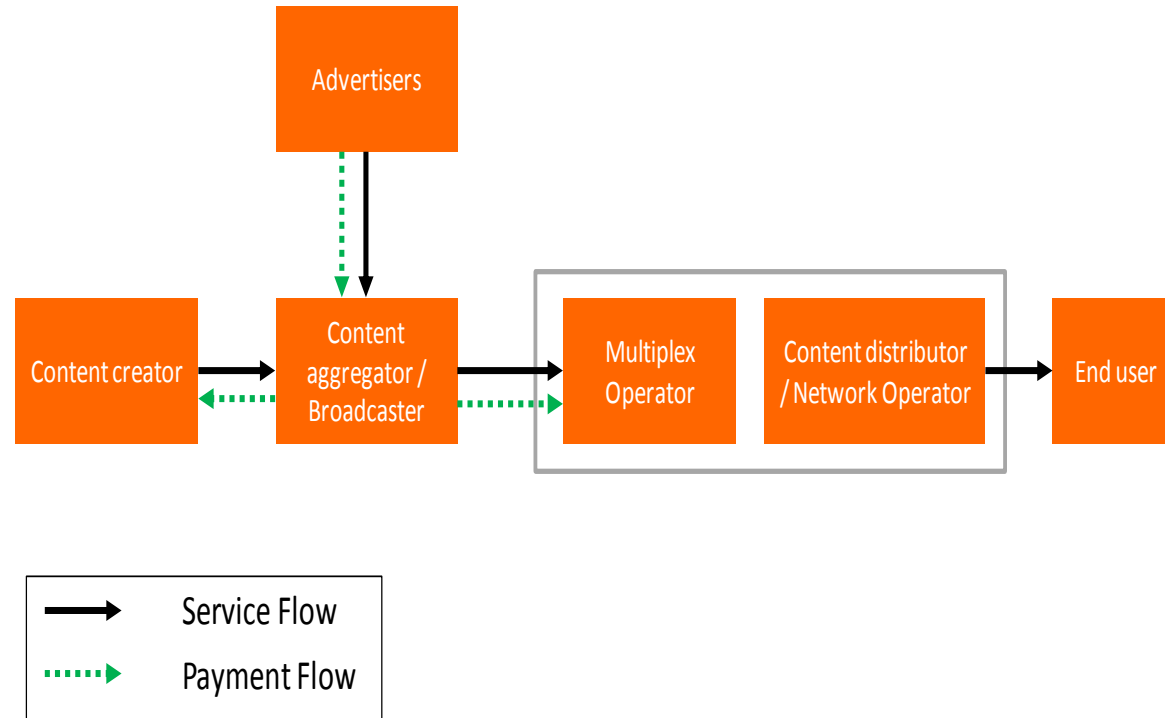 - In compliance with the relevant legislation

2. *Functional Framework* – *Standards Regulation*

		Stipulated	Neutral
1. Presentation format	DTTB: SDTV and/or HDTV (MTV: a minimum bit rate/service)	🇫🇷 🇰🇷 🇺🇸 🇹🇭	🇬🇧 🇸🇪 🇳🇱 🇧🇪
2. Transmission standard	DTTB: e.g. ATSC, DVB-T/2, DMB-T, DTMB or ISDB-T (MTV: e.g. DVB-T2L or 1-Seg)	🇹🇭 🇧🇷 🇰🇭 🇦🇴	
3. Compression technology	DTTB: MPEG2 or 4 (MTV: e.g. H264/MPEG-4 AVC or open)	🇫🇷 🇪🇹 🇹🇭 🇦🇴	🇳🇱 🇸🇪 🇪🇸 🇩🇰
4. CA/DRM	Interoperability between deployed systems for DTTB and MTV platforms	🇷🇼	
5. API	DTTB: e.g. MHP/proprietary (MTV: platforms specific)	🇸🇪 🇦🇴	

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

Advertisers

Content creator → Content aggregator / Broadcaster → Multiplex Operator → Content distributor / Network Operator → End user

Service Flow

Payment Flow

Model A	Spectrum license(s) assigned to broadcasters or (single) service provider(s)	🇧🇷 🇬🇧 🇹🇭 🇺🇸 🇳🇱
Model B	Spectrum license(s) assigned to common multiplex operator(s) or signal distributor(s)	🇫🇮 🇰🇪 🇬🇭 🇿🇦 🇺🇬 🇦🇴

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	2.14. Transition Models	2.15. Organizational Structure & Entities	2.16. ASO Planning & Milestones	2.17. Infra & Spectrum Compatibility	2.18. ASO Communication Plan

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
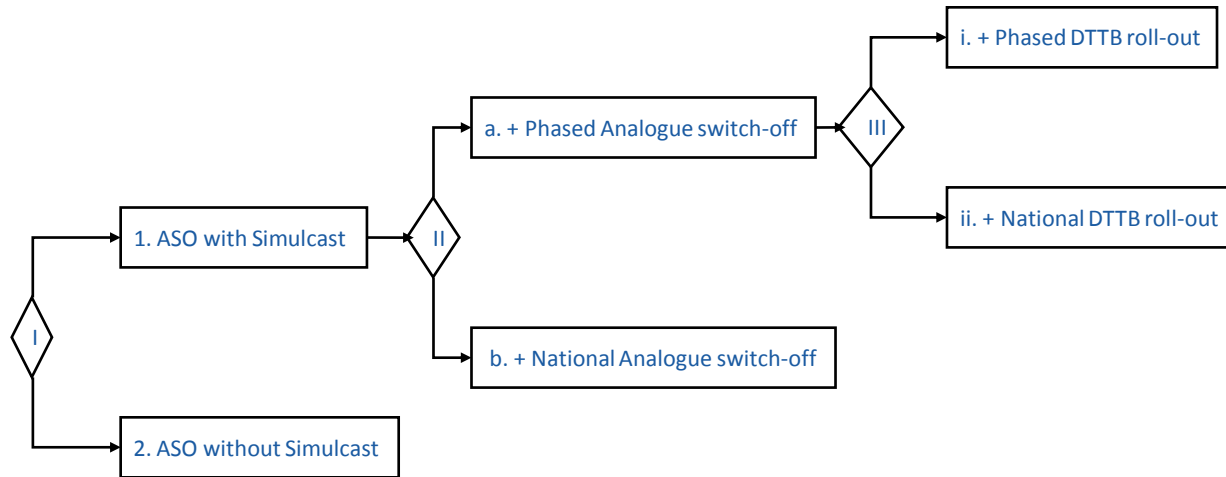
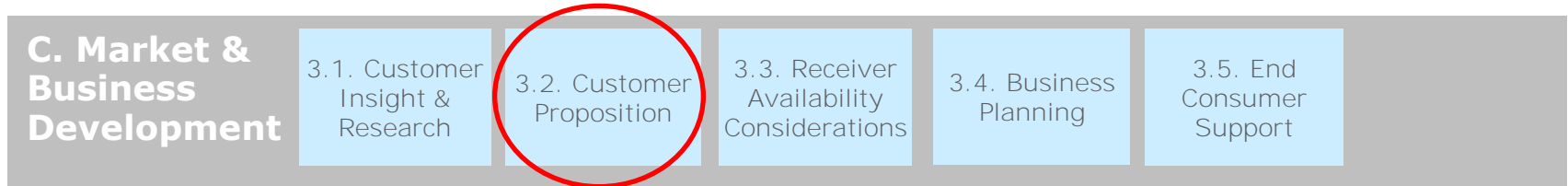1. ASO with Simulcast:

A. Phased

B. National

2. ASO without Simulcast

??

2. *Functional Framework* – *Layer C*

C. Market & Business Development	3.1. Customer Insight & Research	3.2. Customer Proposition	3.3. Receiver Availability Considerations	3.4. Business Planning	3.5. End Consumer Support

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

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- Customer Proposition = seeking attributes providing Competitive Advantage
  - o 6 dimensions
- DTTB / MTV markets differ:
  - o DTTB: mature & many TV platforms
  - o MTV: handset driven and mostly mobile operator led

Interactivity

Additional platform

Usability

Additional Services

Quality

Price

2. *Functional Framework – Layer D*

D. Networks

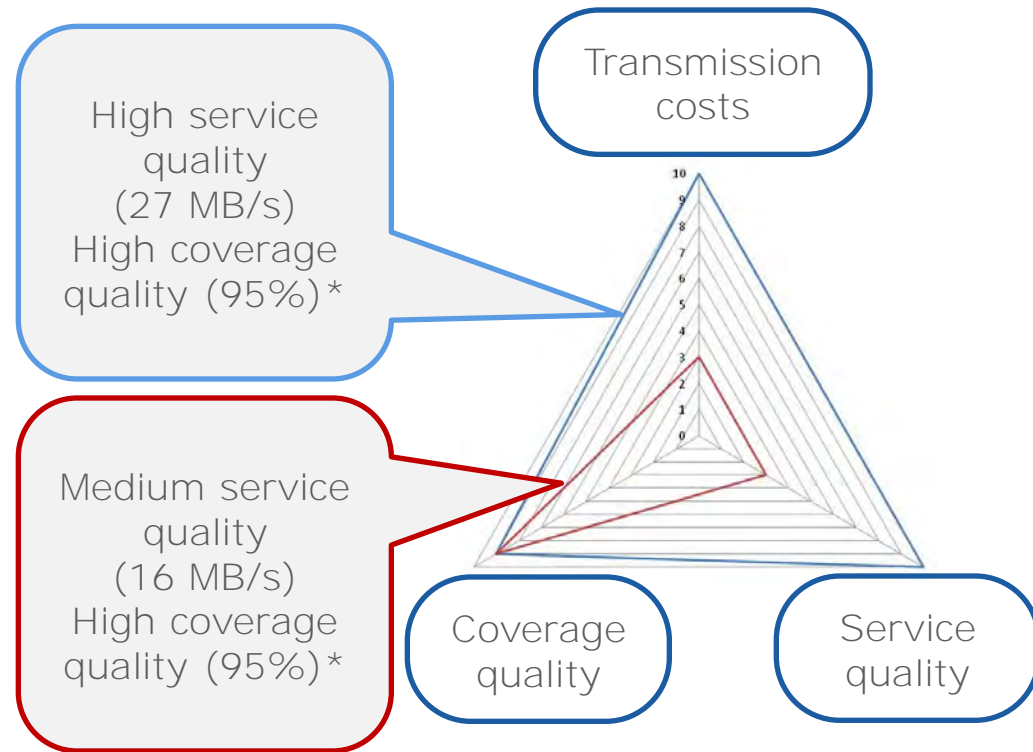| DTTB	4.1. Technology & Standards Application	4.2. Design Principles & Network Architecture	4.4. System Parameters	4.6. Network Interfacing	4.8 Transmitting equipment Availability	4.9 Network Rollout Planning
	4.3/5.3. Network Planning	4.5/5.5 Radiation Characteristics	4.7/5.7 Shared & Common Design Principles			
MTV	5.1. Technology & Standards Application	5.2. Design Principles & Network Architecture	5.4.System parameters	5.6. Network Interfacing & studio facilities	5.8 Transmitting equipment Availability	5.9 Network Rollout Planning

Layer D

DTTB & MTV networks

- 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

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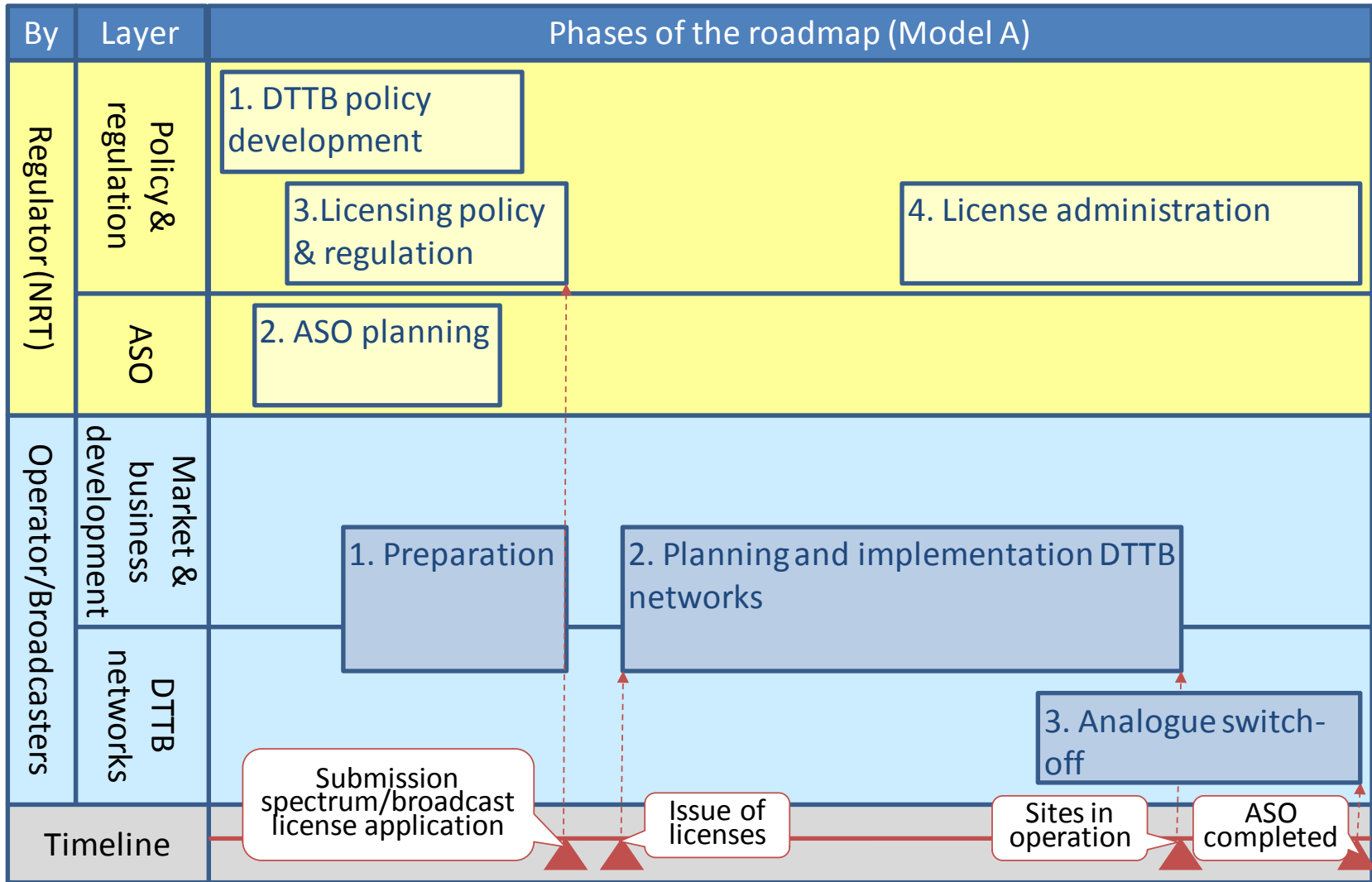- If more power needed than allowed or possible: Power distribution by SFNs

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

Medium service quality
(16 MB/s)
High coverage quality (95%)*

Transmission costs

Coverage quality

Service quality

3. Roadmap development

By	Layer	Phases of the roadmap (Model A)
Regulator (NRT)	Policy & regulation	1. DTTB policy development 3. Licensing policy & regulation 4. License administration
	ASO	2. ASO planning
Operator/Broadcasters	Market & business development	1. Preparation 2. Planning and implementation DTTB networks
	DTTB networks	3. Analogue switch-off
Timeline		Submission spectrum/broadcast license application — Issue of licenses — Sites in operation — ASO completed

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By	Layer	Phases of the roadmap
Regulator (NRT)	Policy & regulation	1. DTTB policy development
		3. Licensing policy & regulation 5. License administration
	ASO	2. ASO planning
Common mux operator	Market & business development	Split-off & establish NewCo 4. Planning and implementation DTTB network
		Preparation
	DTTB network	Analogue switch-off
Timeline		Call for bids for multiplex operator partner license Issue of license Sites in operation ASO completed

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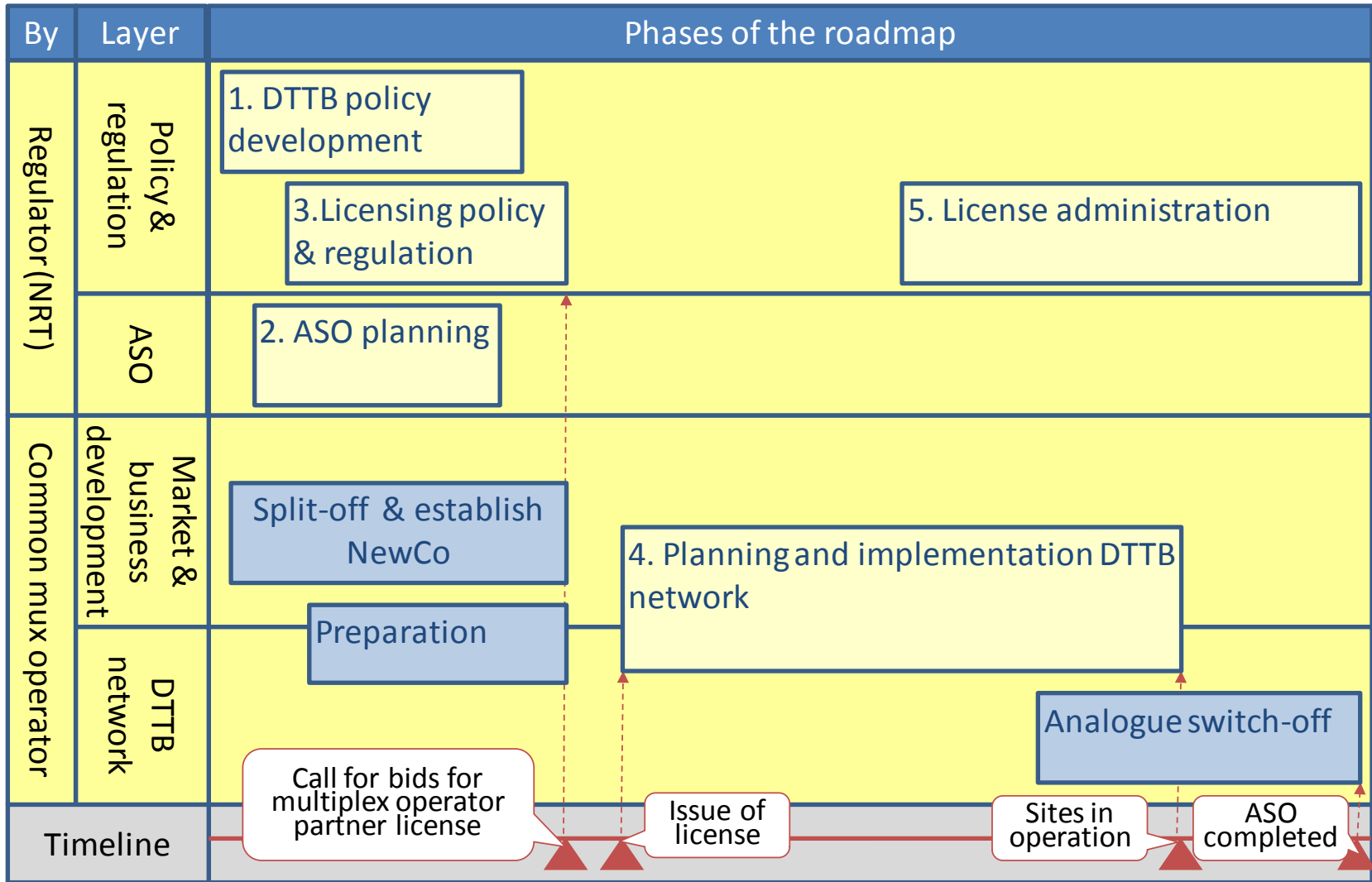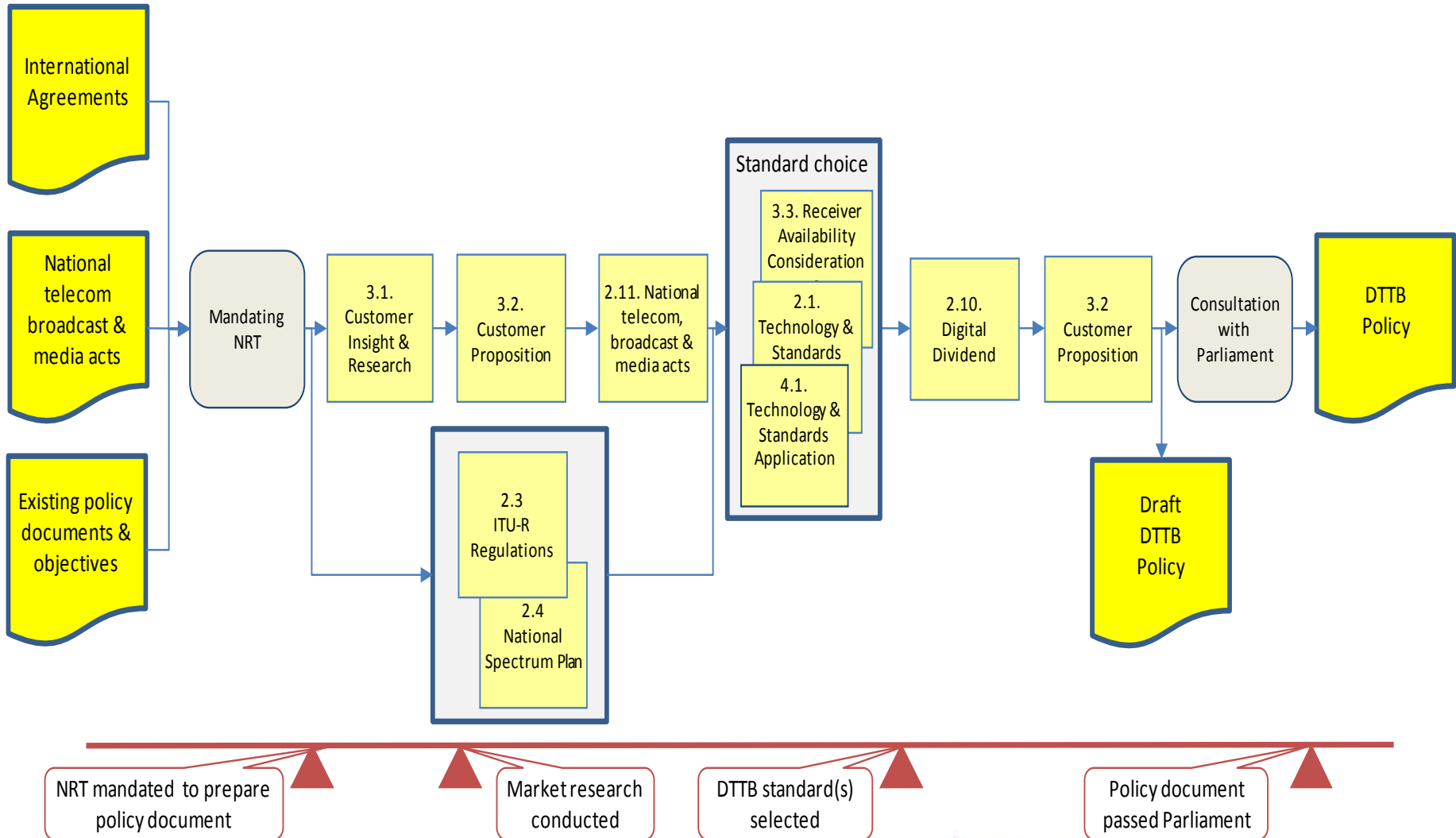
3. Roadmap Development - *Transition Periods*

Selected European Countries

Chart data labels:
- Latvia: 2010
- Norway: 2009
- Ireland: 2010
- Netherlands: 2006
- Estonia: 2010
- Poland: 2012
- Finland: 2007
- Germany: 2008
- France: 2011
- Spain: 2010
- UK: 2012, 2013

Legend: ASO completion date ■ Yrs between DTTB launch and first ASO
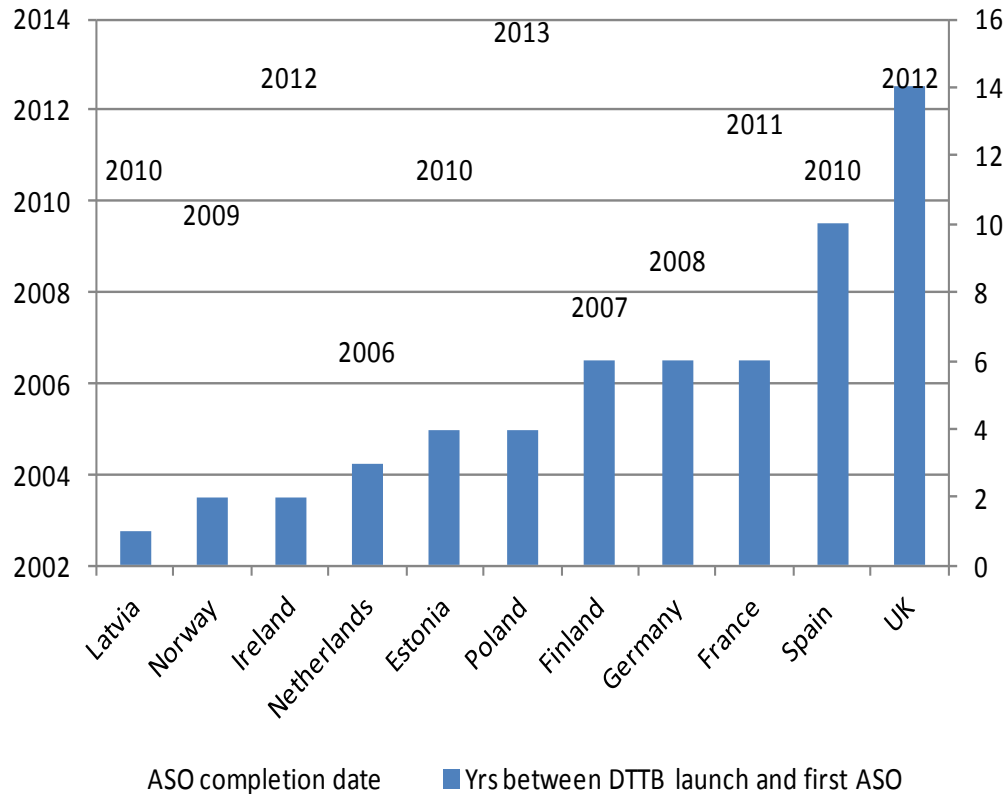
Selected AP countries

Country	ASO completion date
Australia	2013
New Zealand	2013
South Korea	2012
Japan	2012
Taiwan	2012

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4. Conclusions

4. Conclusions

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

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

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