Importance and Advantages of Digital Migration

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Germany

ITU Regional Forum on Digital Terrestrial Television
Broadcast Services in Arab Region,
17th May 2014,
Gloria Hotel Dubai, United Arab Emirates
About LS telcom

- Based in Germany, Worldwide presence
- 20+ Years of Experience in Broadcast, Regulatory, Telecommunications', Utilities and Military Markets
- More than 250 highly specialised employees
- One-Stop-Company (Consultancy, Software & Hardware, Digital Mapping Data, System Integration, Support and After-Sales Services)
- Successfully Completed Projects (Consulting, Software Solutions and System Integration) in more than 90 Countries
- Extensive Expertise and Reliability proven in numerous Engineering and Consulting Projects
- Market Leader and Trendsetter in Broadcast Solutions
About ColibreX

- 100% subsidiary of LS telcom AG
- ColibreX offers specific services to facilitate the implementation, operation, maintenance and testing of wireless networks
- Main activities are
  - Airborne Measurement Services
  - Container Solutions & System Integration

* based on cooperation and resources within the LS telcom group of companies, especially LSofSA

- Main target sectors are
  - Broadcast Operators - MNOs
  - Regulatory bodies
  - Specific industrial sectors having RF issues to be investigated
Digital Migration Landscape

- Media regulation
- Distribution forms (sat – cable – terrestrial – IPTV)
- Digital standards
- Frequency Spectrum / International Coordination
- Analogue Switch Off (ASO)
- Digital Dividend
- Digital Switch Over

Migration Strategies

- Customer needs
- Business interests
- Political / regulatory aspects
Major DTT systems

- DVB-T (Digital Video Broadcasting – Terrestrial)
- DVB-T2 (Digital Video Broadcasting – Terrestrial, 2. Generation)
- ISDB-T (Integrated Service Digital Broadcasting)
- ISDB-Tb or SBTVD, short for Sistema Brasileiro de Televisão Digital
- ATSC (Advanced Television Standards Committee)
- DTMB (Digital Terrestrial Multimedia Broadcast)
Major Mobile TV Systems

- DVB-H (Digital Video Broadcasting – Handheld), DVB-T2
- CMMB (China Mobile Multimedia Broadcasting)
- T-DMB (Digital Multimedia Broadcasting)
- ISDB-T 1 seg (Integrated Services Digital Broadcasting-Terrestrial)
Advantages and Opportunities of Digital TV

Broadcast industries
- Broadcasters and operators can offer new services and generate new revenue
- Manufacturer benefit from increased receiver sale

Viewers
- Wider choice of TV programs
- HDTV and multi channel sound
- New ancillary services (e.g. EPG)
- Interactive standards (e.g. HbbTV)
- New reception modes (portable, handheld)

Regulators
- Digital Dividend
Key Market Drivers for Terrestrial Digital TV

- Size of the terrestrial market
  - With the potential of a large market, service provider will invest
  - Revenue by fees or advertisement

- Number and/or Quality of Program (HD, UHD, ...) services compared to analogue TV

- Timing of the digital terrestrial TV offer: Delay of DSO can lead the viewers to escape to other platforms (cable, satellite)

- Consumer habits and profile
  - FTA, PayTV

- Available spectrum / frequency capacity
  - The better spectrum efficiency of digital TV has offered the opportunities of the digital dividend
  - On the other hand a reduced spectrum availability might limit the DTT appeal
Driving Forces of the Digital Migration

- Securing the future of DTT services (for all)
- Spectrum efficiency – Digital Dividend

Key Issues

- Regulatory issues (licensing, ASO, specifications, agreements)
- Business issues (business model)
Analog Switch Off (ASO)

- The digital switch over process is underway worldwide
- A lot of countries have already completed the ASO
- The ASO should be well prepared, otherwise people lose access to television programmes
- The process of analogue switch-off will differ depending mainly from the market configuration (percentage of terrestrial reception)
- In ITU Region I, GE-06 sets the precise date of 17 June 2015 at 00.01 hr UTC as the end of the transition period.
- The date of 2020 has been set for the end of the transition period in some African and Arab countries for analogue services in Band III
Goals of Analogue Switch Off

Spectrum efficiency

- Existing protection for analogue services is no longer necessary after the transition period

12.6 The *Transition period* shall end on 17 June 2015 at 0001 hours UTC. However, for the countries listed in footnote 1 below\(^7\), for the band 174-230 MHz\(^8\), the *Transition period* shall end on 17 June 2020 at 0001 hours UTC. After the end of the applicable *Transition period*, the corresponding entries in the analogue Plan shall be cancelled by the Bureau.
## ASO – Regulatory issues

- Definition of the Analogue switch-off date

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
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<tbody>
<tr>
<td>Australia</td>
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<tr>
<td>Czech Republic</td>
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<td>Latvia</td>
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<td>Netherlands</td>
<td>2006</td>
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<tr>
<td>New Zealand</td>
<td>2013</td>
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<th>Country</th>
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<td>Poland</td>
<td>2013</td>
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<td>Russia</td>
<td>2014-2017</td>
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<td>South Africa</td>
<td>2013</td>
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<td>South Korea</td>
<td>2012</td>
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<td>Spain</td>
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<td>Sweden</td>
<td>2007</td>
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<td>Taiwan</td>
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<td>Tanzania</td>
<td>2012</td>
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<td>Uganda</td>
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<tr>
<td>United Kingdom</td>
<td>2012</td>
</tr>
<tr>
<td>United States</td>
<td>2009</td>
</tr>
</tbody>
</table>

(Source: digitag)
Key factors affecting ASO strategies

- Spectrum availability
  - The availability of spectrum determines whether a simulcast period (simultaneously offer of analogue and digital terrestrial services) is possible
  - In most countries a countrywide coverage is generally not possible without first completing ASO

**INFO**

Switzerland: Partial ASO before DTT could launched

Germany: Short simulcast period (3 - 9 months)
Key factors affecting ASO strategies

- DTT penetration and coverage
  - ASO becomes feasible if a increasing number of terrestrial dependent households convert to digital. This is directly linked to the availability of coverage, offered content, (low-cost)-receivers, general economical situation

- International obligations
  - Determine how countries use and share frequencies
  - GE06 agreement determines the date when countries are not longer obligated to protect the analogue services

Europe: European Commission has recommended that its members complete analogue switch-off by 2012.
ASO remains a challenge...

Mexico - IFT announces delays to ASO timetable

The communications regulator IFT has announced that it will delay analogue switch-off in the northern parts of the country.

Analogue switch-off had been set to take place on 29 May in the cities of Monterrey, Reynosa, Matamoros, Nuevo Laredo y Ciudad Juárez. However, switch-off has now been postponed until 26 November.

Zimbabwe - ASO deadline may not be achieved

Legislators have been warned that the country is likely to miss its analogue switch-off deadline set for June 2015.

Initially, the government had planned to complete analogue switch-off by 2012 based on the recommendation of the Southern African Development Community (SADC).

Uganda - AG critical of management of the DSO process

The Auditor General (AG) has issued an audit report of the digital switchover process which is critical of the Uganda Communications Commission (UCC).

According to the report, the UCC has not acted swiftly in the process and is unlikely to meet its target for analogue switch-off at the end of the year.

Source: Digitag
Phased approach to ASO

- ASO region by region according to a prepared roadmap and timetable detailing when analogue transmitter will shut off
- Making experience in one region to improve the process in other regions
- Released channels can be re-used in a neighbouring region in order to increase its DTT coverage
- Spreading the cost and resources makes the effort of digitalisation more manageable
- Normally the first phase defines the technology status for the entire switch over process.

In Europe for instance Austria, Germany, Sweden and Norway use this approach.
Digital switch over strategies

- Phased approach to ASO
  - Beginning in areas with high population density. Risky, because many peoples are affected. Benefit is, this option does not necessitate extensive planning to simultaneously switch several transmitters and corresponding gap-fillers in a coordinated way.
    - This was done in Germany

  - Beginning in areas with low population density. The process can be trialled several times and experience built up before affecting large population centres
    - This was done in Sweden and UK
Digital switch over strategies

- Phased approach to ASO
  - Determination of number of phases
  - Determination of regions affected in each phase
  - Determination in which order each phase will complete digital switchover

INFO

In Europe the number of phases differs from e.g. 5 phases in Sweden between 2005 and 2007 or in UK 14 phases from 2008 to 2012
Digital switch over strategies

- National approach to ASO
  - Analogue services are ended simultaneously across the whole country
  - Only possible if DTT is available for all viewers
  - All viewers are treated equally (benefit from the advantage of DTT and suffer from the need to equip for digital)
  - One single date for ASO means any delay can have negative consequences if not properly managed

This approach was adopted in Finland, the Netherlands, Andorra and Luxembourg and Denmark
Digital switch over strategies

- Other factors to consider
  - Ensure that network operators have enough time to upgrade the transmitters
  - Ensure that consumer manufacturers have enough time to make sufficient quantities of DTT receivers available
  - Ensure that viewers have enough time to purchase equipment

INFO
In Sweden, 40% of DTT receivers were purchased no more than one month prior to switch off
Other factors to consider

- For viewers, the ASO should be avoided during summer when many go on holiday.
- For viewers, the ASO should be avoided during the weekend when viewers are more likely to watch TV during the day. Also no chance for last minute purchase of DTT receiver and more difficult to source information.
- Taken into consideration the calendar for political and sporting events.
Key factors for analogue switch off success

- Active participation of all involved parties
  - National administrations need to take political decisions and ASO time tables
  - Broadcaster need to ensure that the viewers are informed and continue receiving their TV services
  - Networks operators need to make necessary upgrades to their equipment
  - Manufacturers need to supply sufficient quantities of DTT receivers
  - Set up organisation to steer the ASO

<table>
<thead>
<tr>
<th>Country</th>
<th>ASO organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonia</td>
<td>Committee for DTV Transition</td>
</tr>
<tr>
<td>France</td>
<td>France Télé Numérique</td>
</tr>
<tr>
<td>Germany</td>
<td>Ueberallfernsehen</td>
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<tr>
<td>Italy</td>
<td>Italia Digitale</td>
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<td>Netherlands</td>
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<tr>
<td>Norway</td>
<td>NTV</td>
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<tr>
<td>Sweden</td>
<td>Digital Switchover Commission</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Digital UK</td>
</tr>
</tbody>
</table>
Focusing on the needs of viewers

- Provision of information concerning the ASO to the viewers
  - Some countries have used a mascot as a guide
    - e.g. Robot Digit A1 in the UK
  - Sweden has used a eye catching pink bus that travelled around the country
Focusing on the needs of viewers

- Provision of information concerning the ASO to the viewers
  - Web sides with information in for instant UK, Finland, Sweden
  - TV advertisement to reach viewers directly e.g. UK, US
  - Direct mail sent to the households e.g. Sweden, UK, Switzerland
  - Set up of call centres in Germany, Finland, Sweden, Switzerland, UK
Focusing on the needs of viewers

- Support
  - Low income households need financial support to afford DTT equipment
  - Physical assistance to set-up new digital equipment

*Digital Switchover Help Scheme* in the UK with a budget of £600 million has been set-up to provide about 7 million households with support

In France, financial support based on age and income level

In Germany (Berlin) 6000 set-top boxes were distributed to low-income families

The US assigned $990 Mio. in form of two coupons ($40 worth) per household to purchase a digital set-top box
DSO – Regulatory issues

- International Agreements
  - Radio Regulations (WRC, Digital Dividend)
  - Geneva 2006 Agreement (GE06D plan, ASO dates)

- Regional Agreements
  - e.g. ASEAN (Asia), EU (Europe), SADC (South Africa), UEMOA (Western Africa)
  - Recommendations and obligations regarding
    - DTT standard
    - ASO
    - Technical condition for the use of certain frequency bands (DD)
    - DSO help schemes
DSO – Regulatory issues

- National Regulations
  - Developing a national spectrum plan (Simulcast, Digital only)
  - Selection of DTT standard (Europe (DVB), South America (DVB/ISDB-T))
  - Specification of receiver
    - Video/Audio compression
    - Interactive standards
    - Conditional access (CA) systems
  - Allocation procedures
    - Beauty contest (Applications for License are judged based on technical and economical criteria)
    - Spectrum Auction (Bidders are selected on price)
**DSO – Regulatory issues**

- **Licensing types**
  - **Frequency licence**
    - Multiplex operator (gatekeeper) will manage the DTT MUX and defines the services
    - Used in e.g. UK, Norway, Italy, Portugal
    - Regulator determines the type of the service and the limit for non-BC data
  - **DTT broadcast service licence** (content license)
    - Licence to the broadcaster
    - Used in e.g. Germany, Sweden, Finland, France
    - Regulator decide which BC service from which MUX
      - To ensure the objectives of public interest
      - To guarantee pluralism an diversity of content
## DSO – Regulatory issues

- **Policies to mandate digital tuners**

<table>
<thead>
<tr>
<th>Country</th>
<th>Policy</th>
</tr>
</thead>
</table>
| France     | • Since March 2008, all television sets must include DVB-T  
            | • Since Dec 2008, all HD-ready iDTVs must include MPEG-4 AVC  
            | • Since Dec 2009, all television sets sized 26 inches and above must include MPEG-4 AVC  
            | • Since Dec 2012, all television sets must include MPEG-4 AVC |
| Italy      | • Since April 2009, all television sets must include DVB-T  
            | • By 2015, all receivers must include DVB-T2 |
| Spain      | • Since April 2010, all television sets sized 21 inches and above must include MPEG-4 AVC |
| United States | • Since 2007, all television sets must include a digital tuner  
             | • Since 2006, all television sets sized 25 inches and larger must include a digital tuner  
             | • Since 2005, all television sets sized 36 inches and larger must include a digital tuner |

(Source: digitag)
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www.colibrex.com
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