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Session 1:

Current Worldwide Status of Digital Terrestrial Television Broadcasting

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Incheon, 23 May 2016

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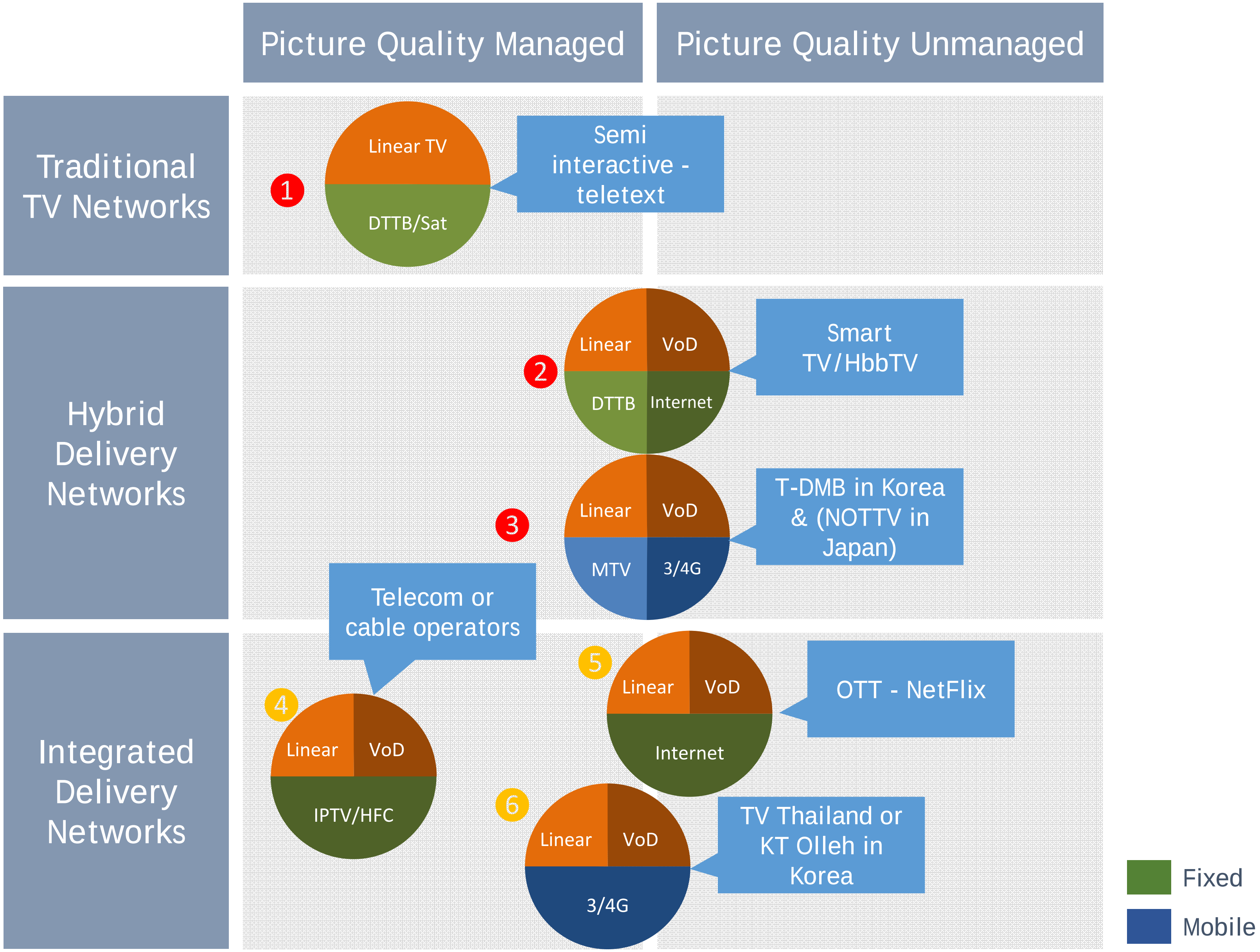
Presentation Overview

- Defining services
- Video challenge
- Need for DTTB
- Spectrum needs

1. Defining services



Picture Quality Managed

Picture Quality Unmanaged

Traditional TV Networks

1 Linear TV / DTTB/Sat

Semi interactive - teletext

Hybrid Delivery Networks

2 Linear / VoD / DTTB / Internet

Smart TV/HbbTV

3 Linear / VoD / MTV / 3/4G

T-DMB in Korea & (NOTTV in Japan)

Integrated Delivery Networks

Telecom or cable operators

4 Linear / VoD / IPTV/HFC

5 Linear / VoD / Internet

OTT - NetFlix

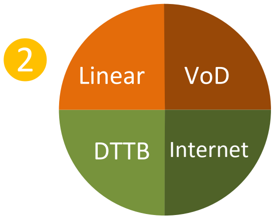
6 Linear / VoD / 3/4G

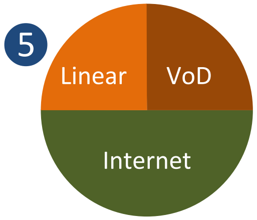
TV Thailand or KT Olleh in Korea

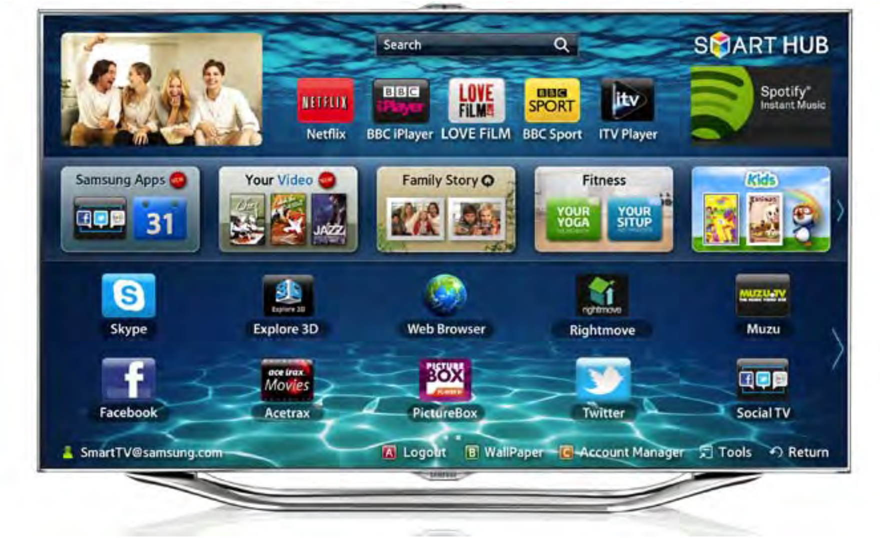
🟩 Fixed

🟦 Mobile

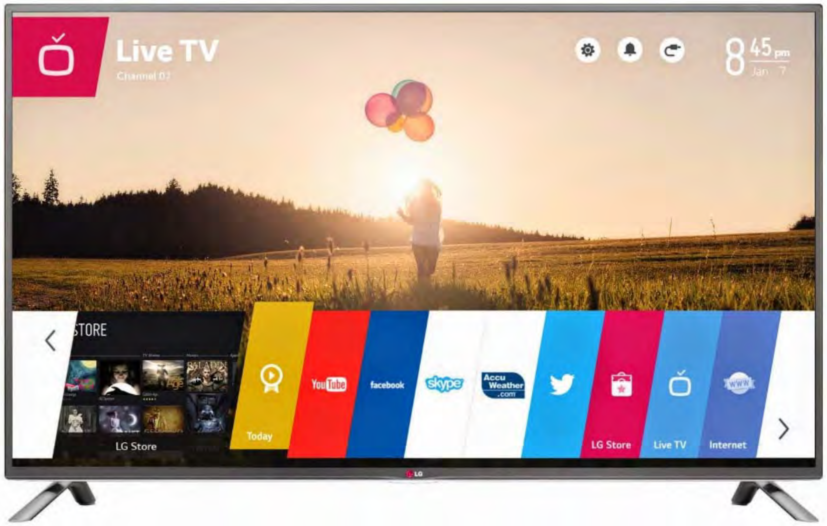
1. Defining services


2
Linear
VoD
DTTB
Internet


5
Linear
VoD
Internet

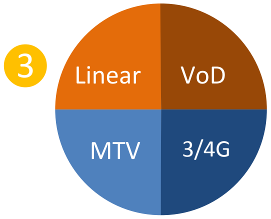

SMART HUB
Search
Netflix
BBC iPlayer
LOVE FiLM
BBC Sport
ITV Player
Spotify Instant Music
Samsung Apps
Your Video
Family Story
Fitness
Kids
Skype
Explore 3D
Web Browser
Rightmove
Muzu
Facebook
Acetrax
PictureBox
Twitter
Social TV
SmartTV@samsung.com
Logout
WallPaper
Account Manager
Tools
Return

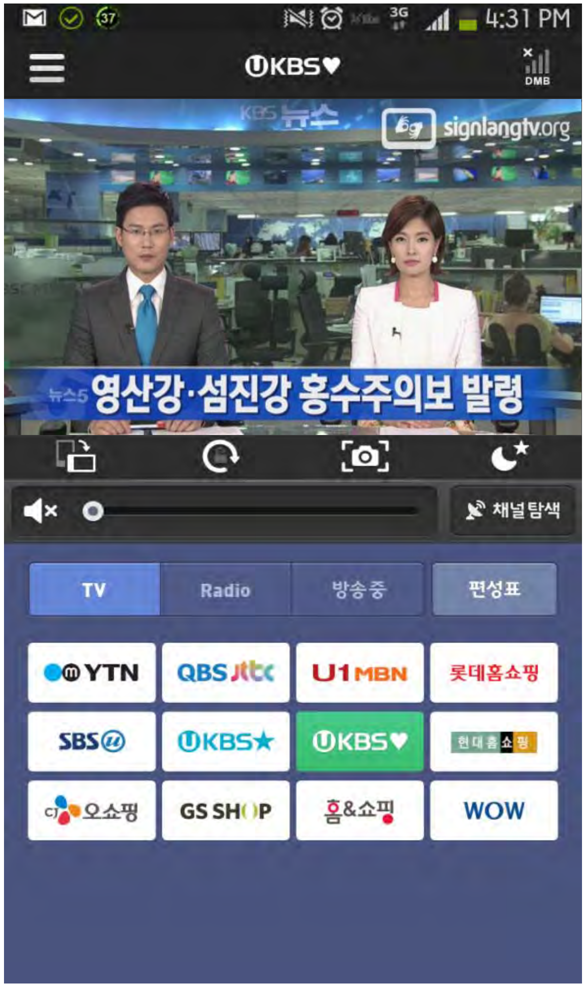
Source: Samsung


Live TV
8 45 pm
STORE
LG Store
Today
YouTube
facebook
skype
AccuWeather.com
LG Store
Live TV
Internet

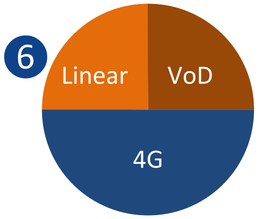
Source: LG

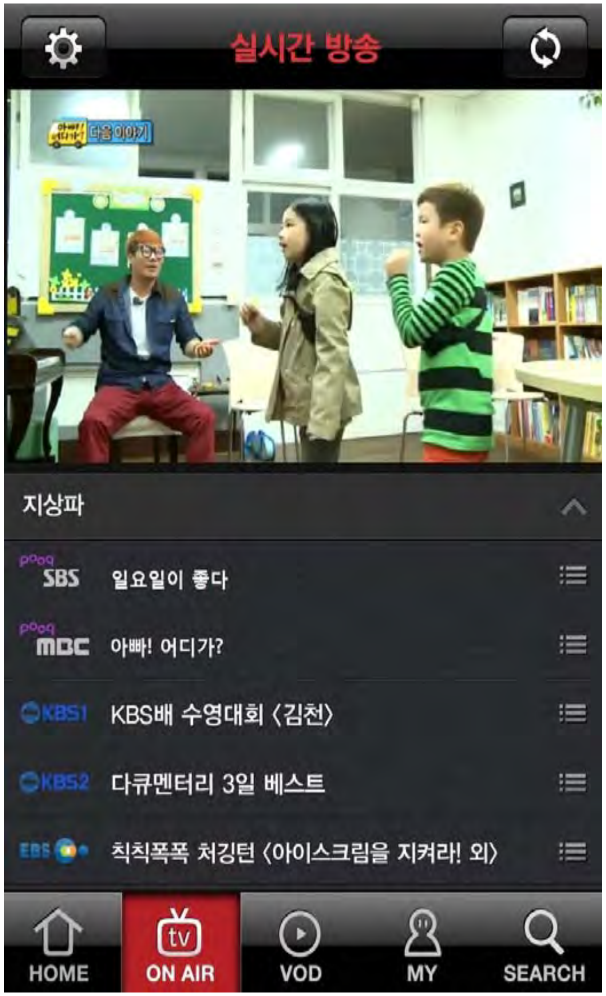
1. Defining services


3
Linear
VoD
MTV
3/4G


4:31 PM
KBS♥
DMB
KBS 뉴스
signlangtv.org
뉴스5 영산강·섬진강 홍수주의보 발령
채널탐색
TV
Radio
방송중
편성표
YTN
QBS jtbc
U1 MBN
롯데홈쇼핑
SBS
KBS★
KBS♥
현대홈쇼핑
CJ오쇼핑
GS SHOP
홈&쇼핑
WOW

Source: KBS


6
Linear
VoD
4G


실시간 방송
지상파
SBS 일요일이 좋다
MBC 아빠! 어디가?
KBS1 KBS배 수영대회 〈김천〉
KBS2 다큐멘터리 3일 베스트
EBS 칙칙폭폭 처깅턴 〈아이스크림을 지켜라! 외〉
HOME
ON AIR
VOD
MY
SEARCH

Source: KT

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- Need for DTTB
- Spectrum needs

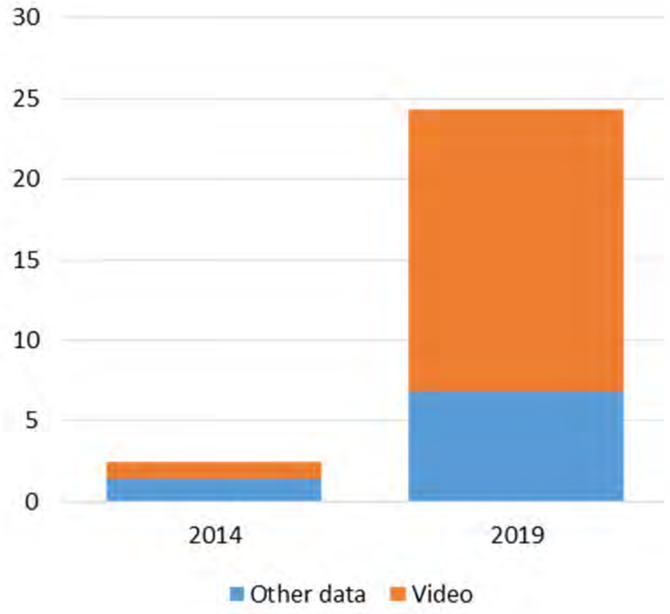
2. Video challenge

Hockey sticks everywhere..

2. Video challenge

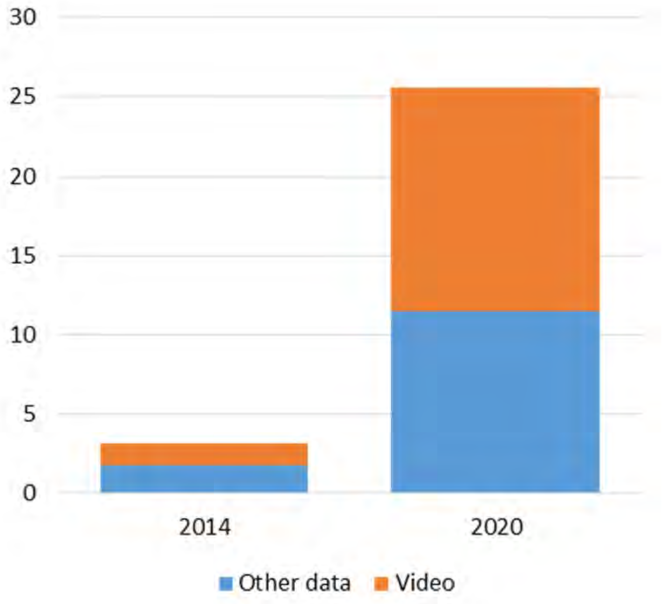
Global IP traffic (in EB/month)

Cisco



Source: Cisco VNI Index

Ericsson

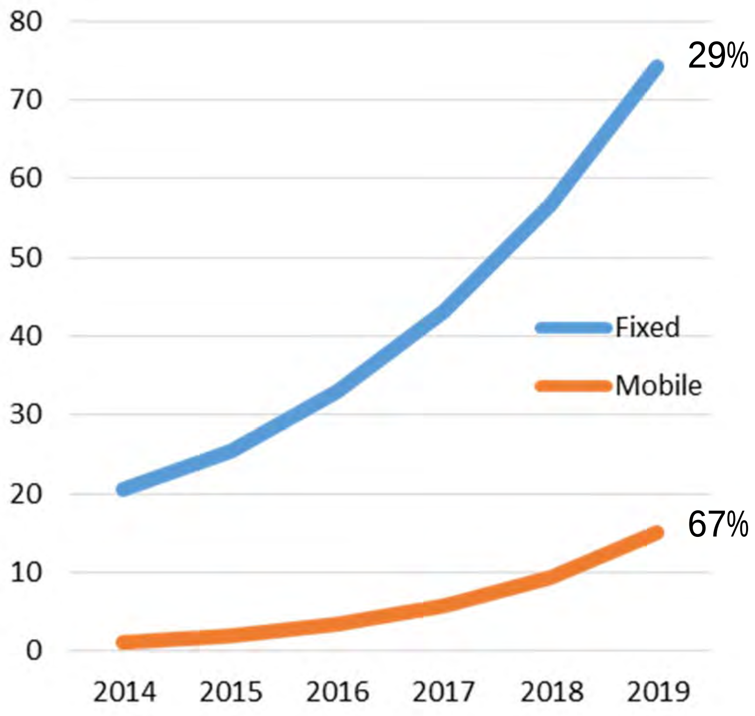


Source: Ericsson Mobility Report

- Video = VOD + linear TV services, fixed and mobile
- Most growth from consumers

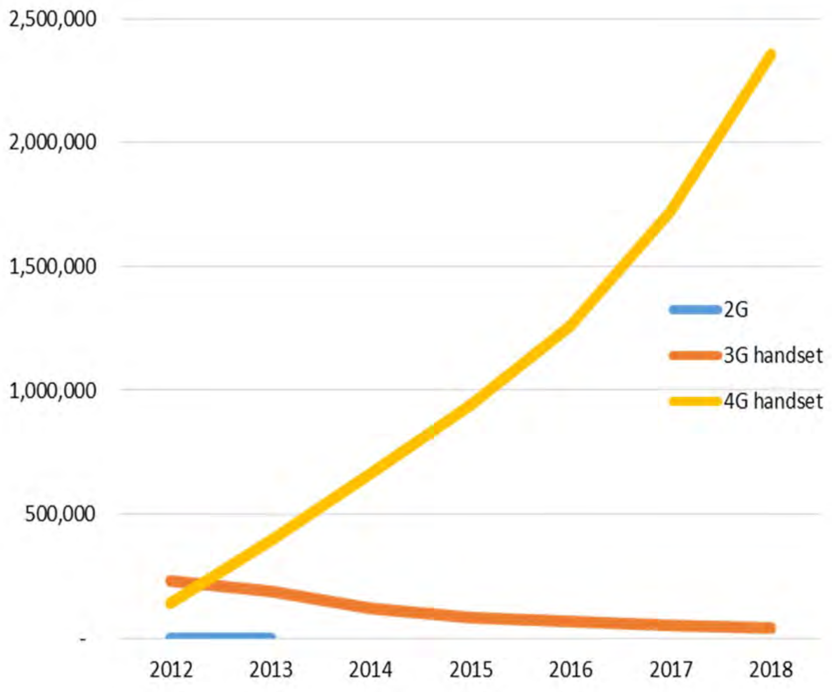
2. Video challenge

Global Consumer IP Video (PB/month)



Source: Cisco VNI Index

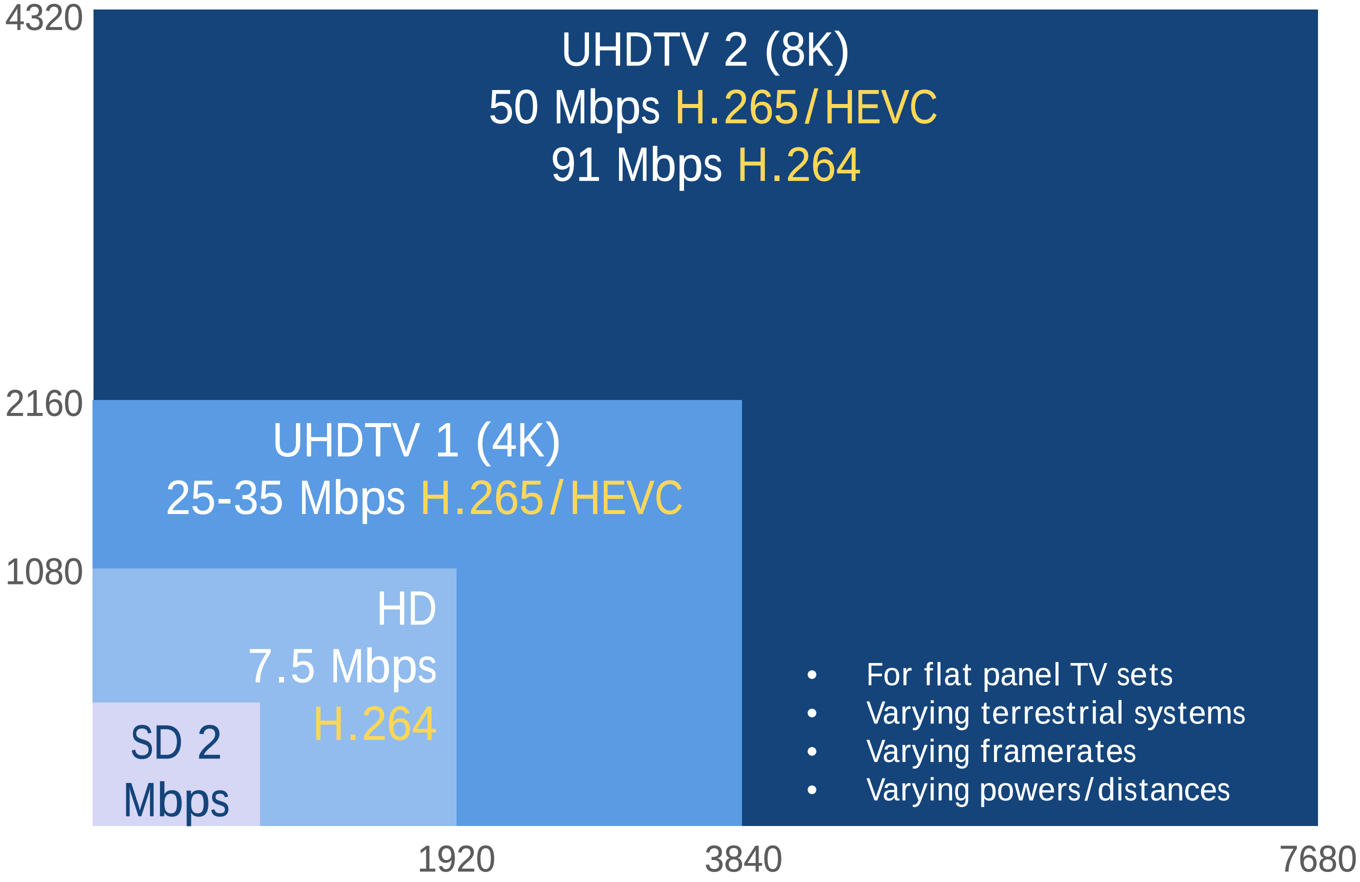
Traffic per Handset Type in Korea (TB/year)



Source: Analysis Mason

2. Video challenge

Increasing Video Definition

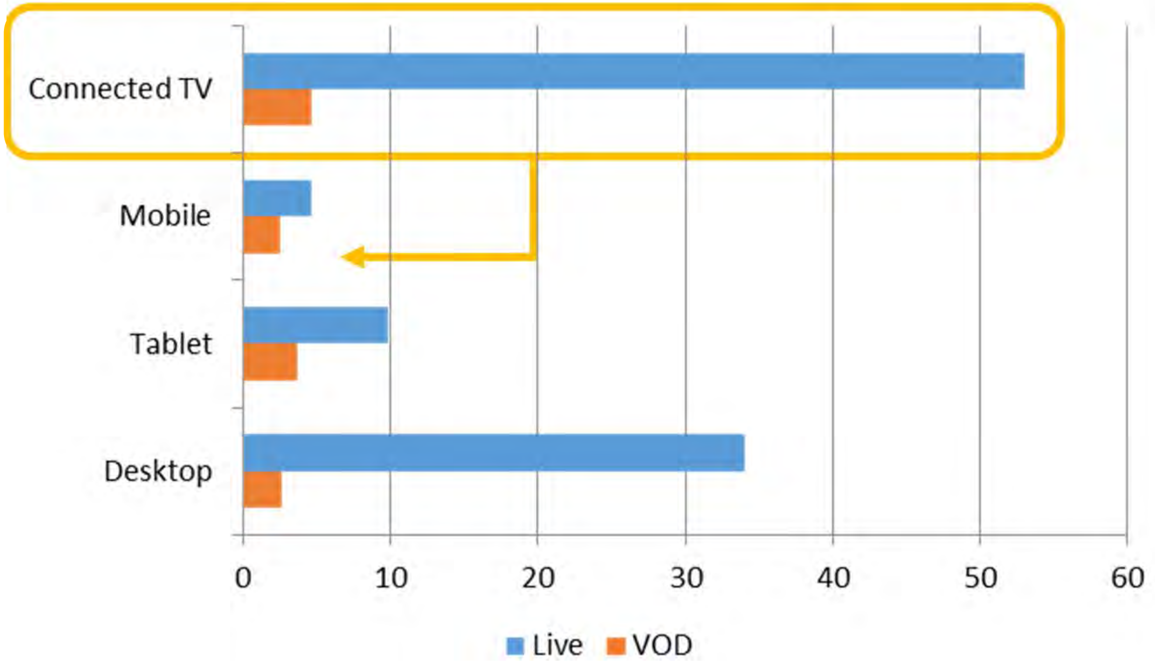


- For flat panel TV sets
- Varying terrestrial systems
- Varying framerates
- Varying powers/distances

- HD/UHDTV are flexible notions
- H.264/H.265 performance are system & content dependent
- H.264/H.265 performance to improve over time

2. Video challenge

Minutes per session per device



Source: OOYALA

- Globally busy hour will be 3.3 x higher than average hour by 2018
- Live not restricted at home and mobile to follow
- Live on mobile is likely to be premium content
- Video (= Live + VOD) on mobile will be very spiky
- How to allocate spectrum efficiently?

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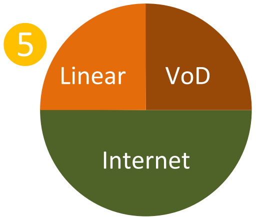
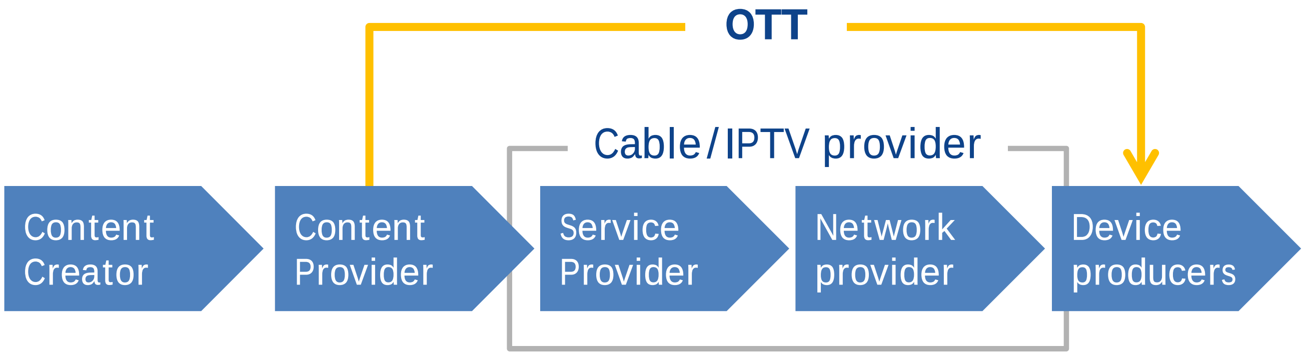
3. Need for DTTB





OTT

Cable/IPTV provider

Content Creator

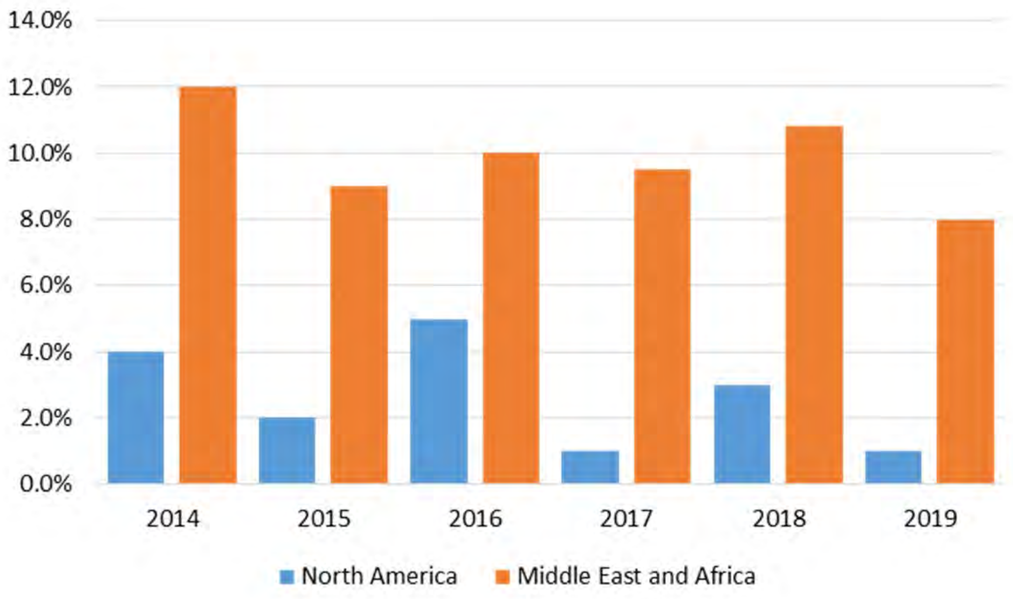
Content Provider

Service Provider

Network provider

Device producers

TV ADEX Annual Growth Rates (%)

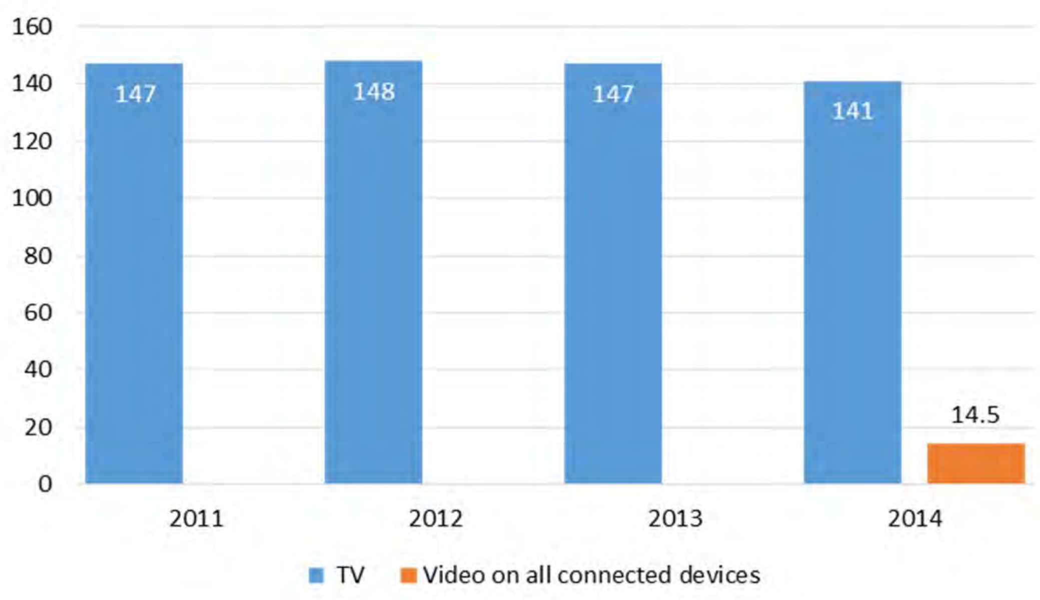


Source: PwC Global Media Outlook

- TV still going strong? It depends..
  - OTT claims mainly ADEX shares in ‘wired’ countries
  - OTT needs good broadband, especially for (U)HDTV

3. Need for DTTB

Monthly viewing time – US (hours/month)



Source: Nielsen US

- ‘OTT homeland’ US shows slow viewership impact

- From 2013 to 2014:

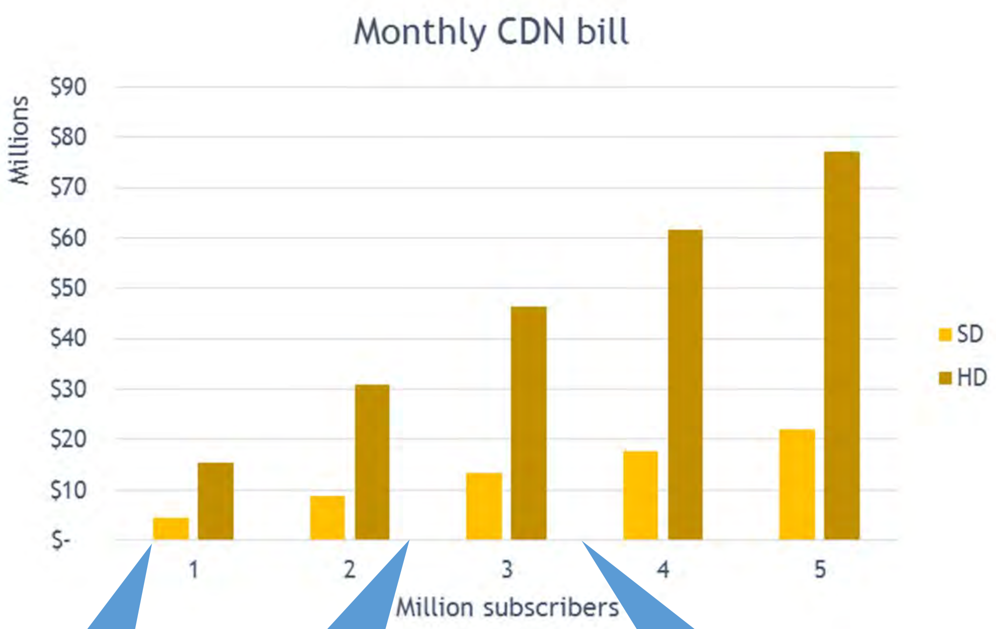
  - OTT subscribers from 35% to 40% of TVHH
  - Time shifting from 13hr12 to 14hr20 per month

- Most of VOD is ‘catch-up-TV’ of mainstream TV services

3. Need for DTTB

- Non-wired countries: provides access for mass audiences against lowest costs (Universal Access)
- Wired countries: (peak traffic) video off-loading needed

If there was only OTT..



Netflix subs in NL

Netflix subs in BRA

Netflix subs in CAN & UK

Key assumptions:

- 140 TV hrs/month/HH
- 2 Mbps for SD
- 7 Mbps for HD
- CDN pricing of $35/TB

Source: Nielsen, CDN77

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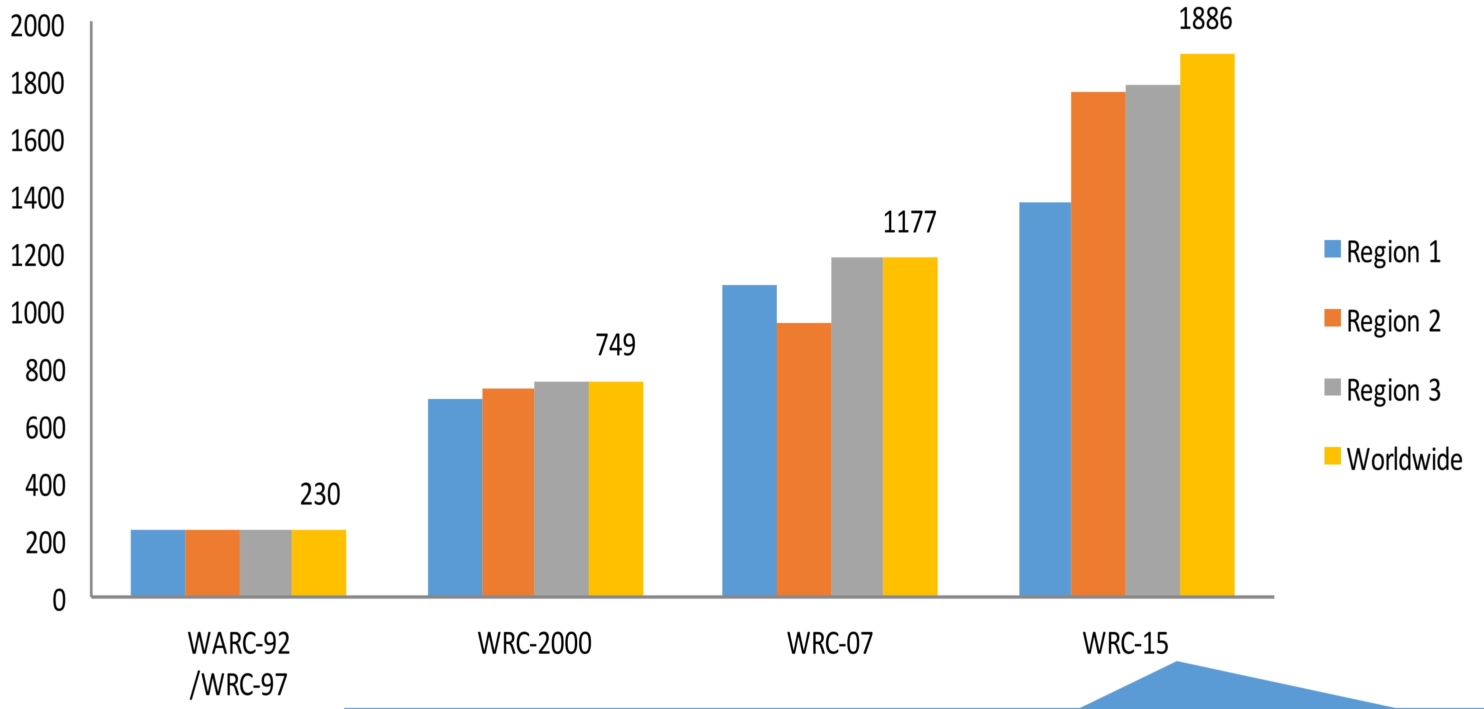
4. Spectrum needs

Total amount of Spectrum Identified for IMT (MHz)



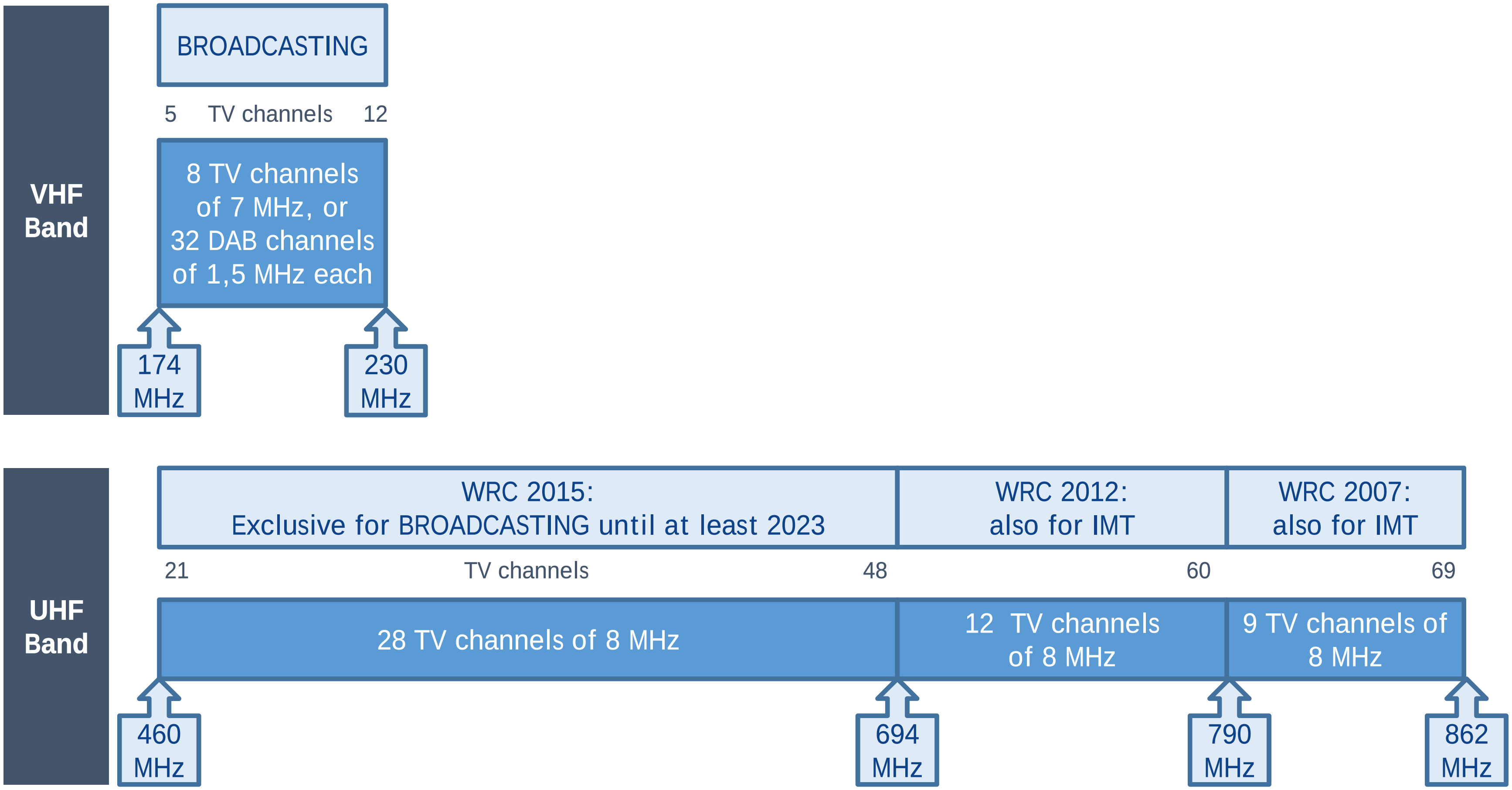
Source: ITU

Allocations to mobile service and/or identifications for IMT in:

- 470-694/698 MHz, 694–790 MHz (Region 1) = digital dividend
- 1427-1518 MHz,
- 3300-3400 MHz, 3400-3700 MHz, 4800 – 4990 MHz

4. Spectrum needs

WRC's impact on BROADCASTING Bands (Region 1 example)



VHF Band

BROADCASTING

5 TV channels 12

8 TV channels of 7 MHz, or 32 DAB channels of 1,5 MHz each

174 MHz

230 MHz

UHF Band

WRC 2015: Exclusive for BROADCASTING until at least 2023

WRC 2012: also for IMT

WRC 2007: also for IMT

21 TV channels 48 60 69

28 TV channels of 8 MHz

12 TV channels of 8 MHz

9 TV channels of 8 MHz

460 MHz

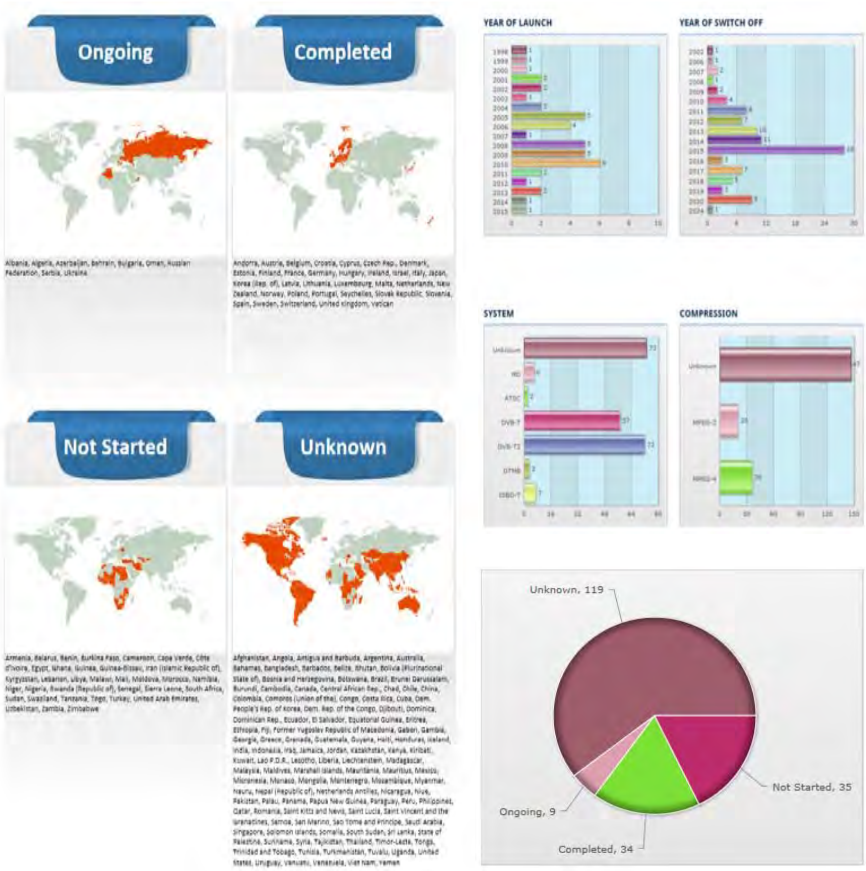
694 MHz

790 MHz

862 MHz

4. Spectrum needs

ITU Website on DSO/ASO status



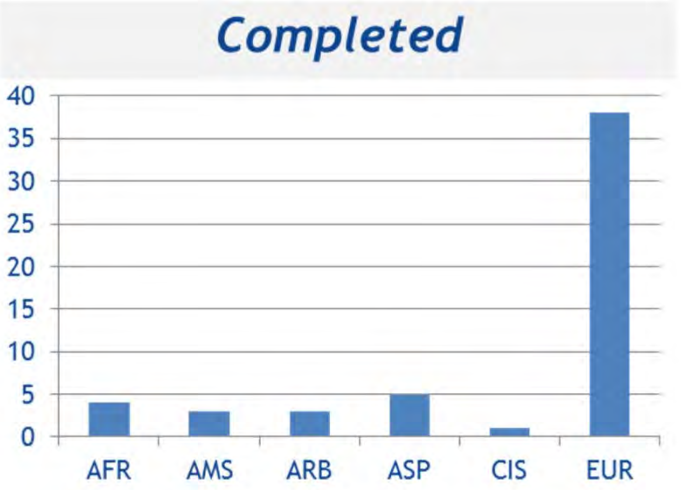
Albania, Algeria, Azerbaijan, Bahrain, Bulgaria, Oman, Russian Federation, Serbia, Ukraine

Andorra, Austria, Belgium, Croatia, Cyprus, Czech Rep., Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Japan, Korea (Rep. of), Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Seychelles, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Vatican

Armenia, Belarus, Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Egypt, Ghana, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Kyrgyzstan, Lebanon, Libya, Malawi, Mali, Moldova, Morocco, Namibia, Niger, Nigeria, Rwanda (Republic of), Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Turkey, United Arab Emirates, Uzbekistan, Zambia, Zimbabwe

Afghanistan, Angola, Antigua and Barbuda, Argentina, Australia, Bahamas, Bangladesh, Barbados, Belize, Bhutan, Bolivia (Plurinational State of), Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Burundi, Cambodia, Canada, Central African Rep., Chad, Chile, China, Colombia, Comoros (Union of the), Congo, Costa Rica, Cuba, Dem. People's Rep. of Korea, Dem. Rep. of the Congo, Djibouti, Dominica, Dominican Rep., Ecuador, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Former Yugoslav Republic of Macedonia, Gabon, Gambia, Georgia, Greece, Grenada, Guatemala, Guyana, Haiti, Honduras, Iceland, India, Indonesia, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Lao P.D.R., Lesotho, Liberia, Liechtenstein, Madagascar, Malaysia, Maldives, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Mozambique, Myanmar, Nauru, Nepal (Republic of), Netherlands Antilles, Nicaragua, Niue, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Romania, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Singapore, Solomon Islands, Somalia, South Sudan, Sri Lanka, State of Palestine, Suriname, Syria, Tajikistan, Thailand, Timor-Leste, Tonga, Trinidad and Tobago, Tunisia, Turkmenistan, Tuvalu, Uganda, United States, Uruguay, Vanuatu, Venezuela, Viet Nam, Yemen

http://www.itu.int/en/ITU-D/Spectrum-Broadcasting/Pages/DSO/Default.aspx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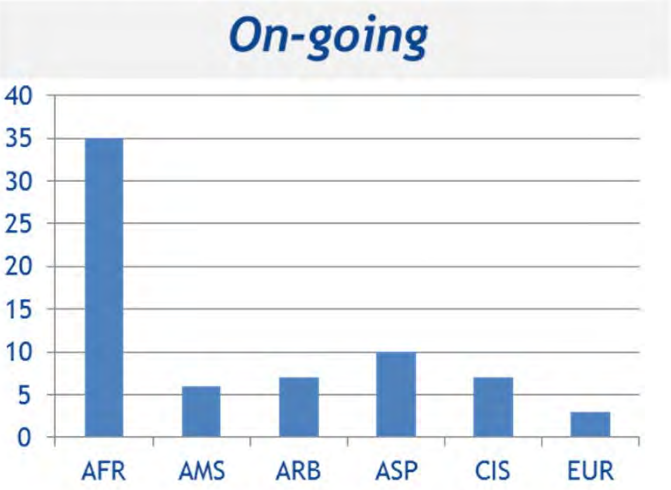
On-going

Thank you !

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