



EUTELSAT PERSPECTIVE POSSIBLE ROLE OF THE SATELLITE IN THE 5G ENVIRONMENT

18 May 2017

/// Eutelsat: a key player in the space business

/// Spectrum in the context of WRC-19

/// Possible role of satellite in the 5G world

/// Possible dialogue and collaboration between industries

A KEY PLAYER IN THE SPACE BUSINESS

EUTELSAT,
AT THE HEART OF
A DIGITAL WORLD

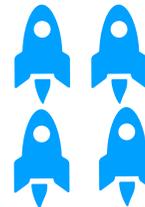


Pioneer in space

over **30** years of
experience

39

Satellites
for global coverage



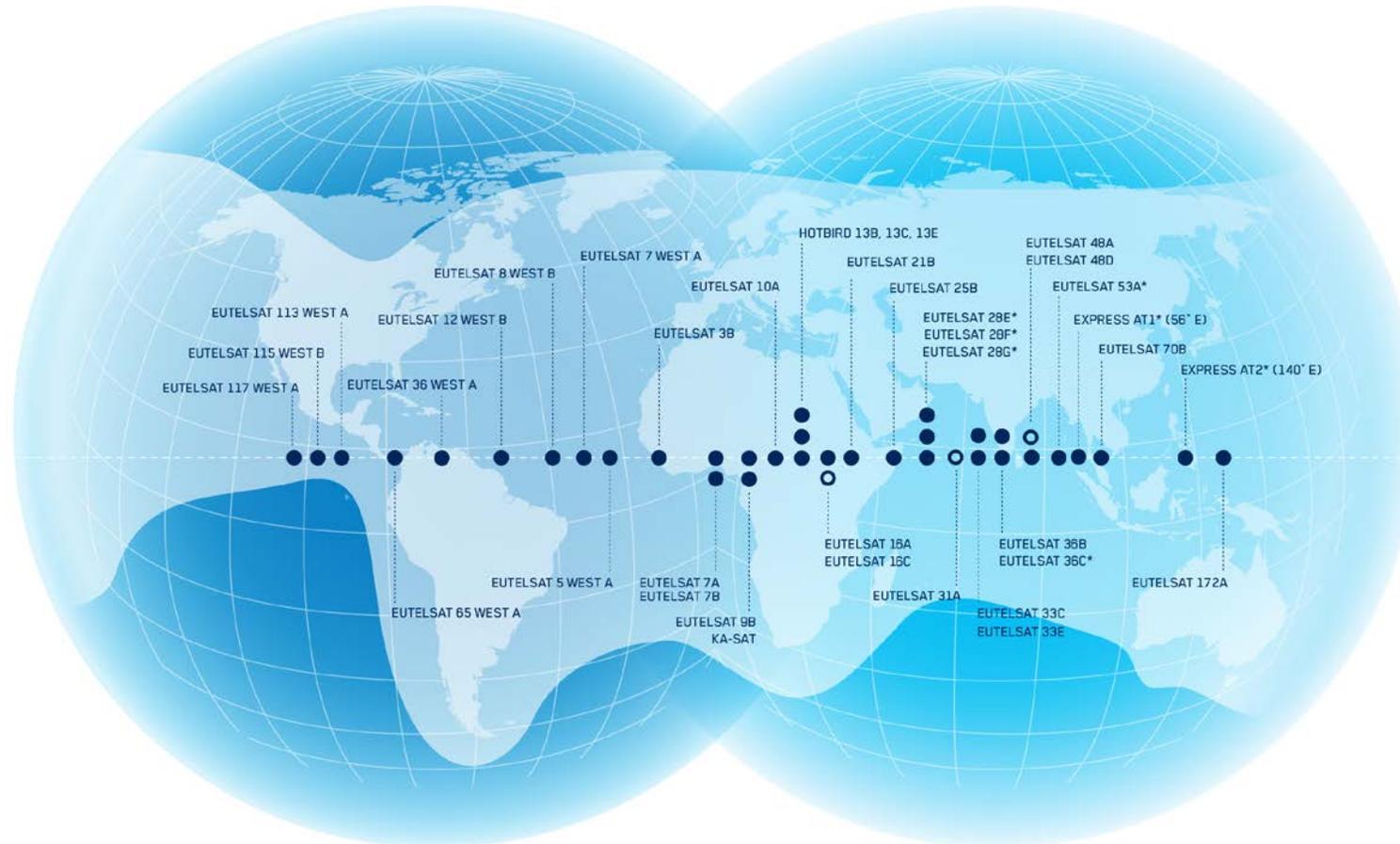
Solid investment programme

4 satellites
to launch

SPECTRUM RESOURCE FOR FLEXIBLE AND GLOBAL DEPLOYMENT

Diversified resources in orbital positions and spectrum resources

- C, Ku and Ka bands
- Q/V band tested @ 65° W



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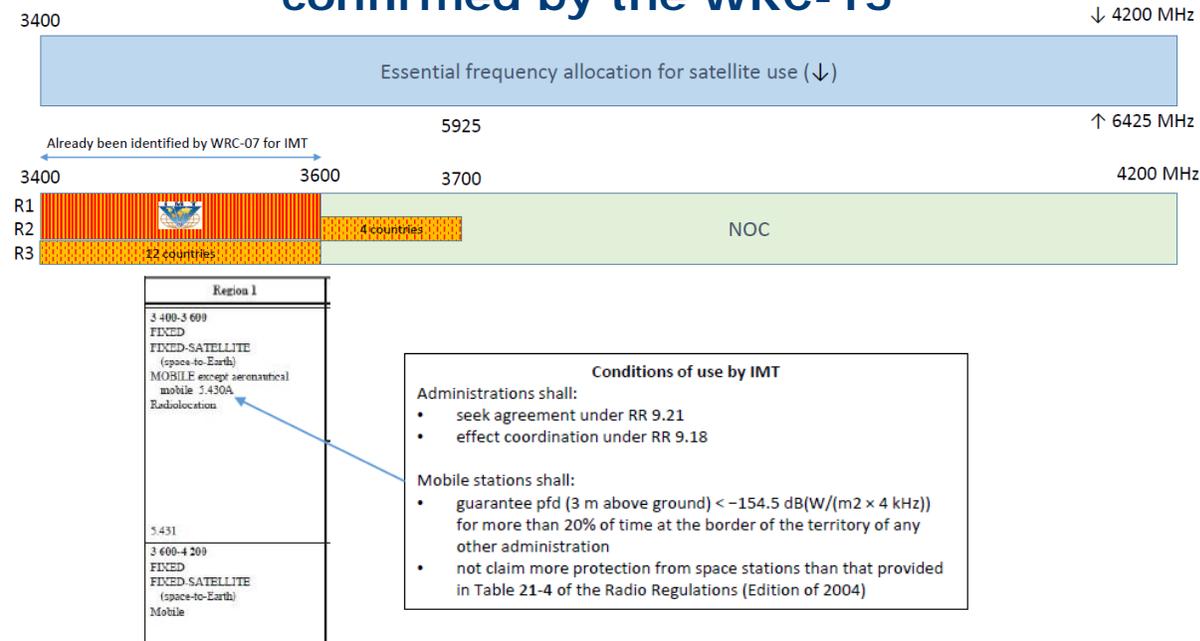
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SPECTRUM IN THE CONTEXT OF WRC-19

WRC-15

- rejected proposals to consider globally harmonized 5G spectrum in C-, Ku- or Ka-bands
- agreed to evaluate frequency bands above 24 GHz for 5G mobile services

Regulatory Framework for the C-band confirmed by the WRC-15



All C Band FSS earth stations are likely to migrate to the 3800-4200 MHz band which usage will increase

Exclusion of Ka-band from 5G, HAPS & NGSO



HAPS



NGSO



Bands for consideration by WRC-19:

IMT: 24.25-27.5 GHz, 37-40.5 GHz, 42.5-43.5 GHz, 45.5-47 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz, and 31.8-33.4 GHz, 40.5-42.5 GHz and 47-47.2 GHz

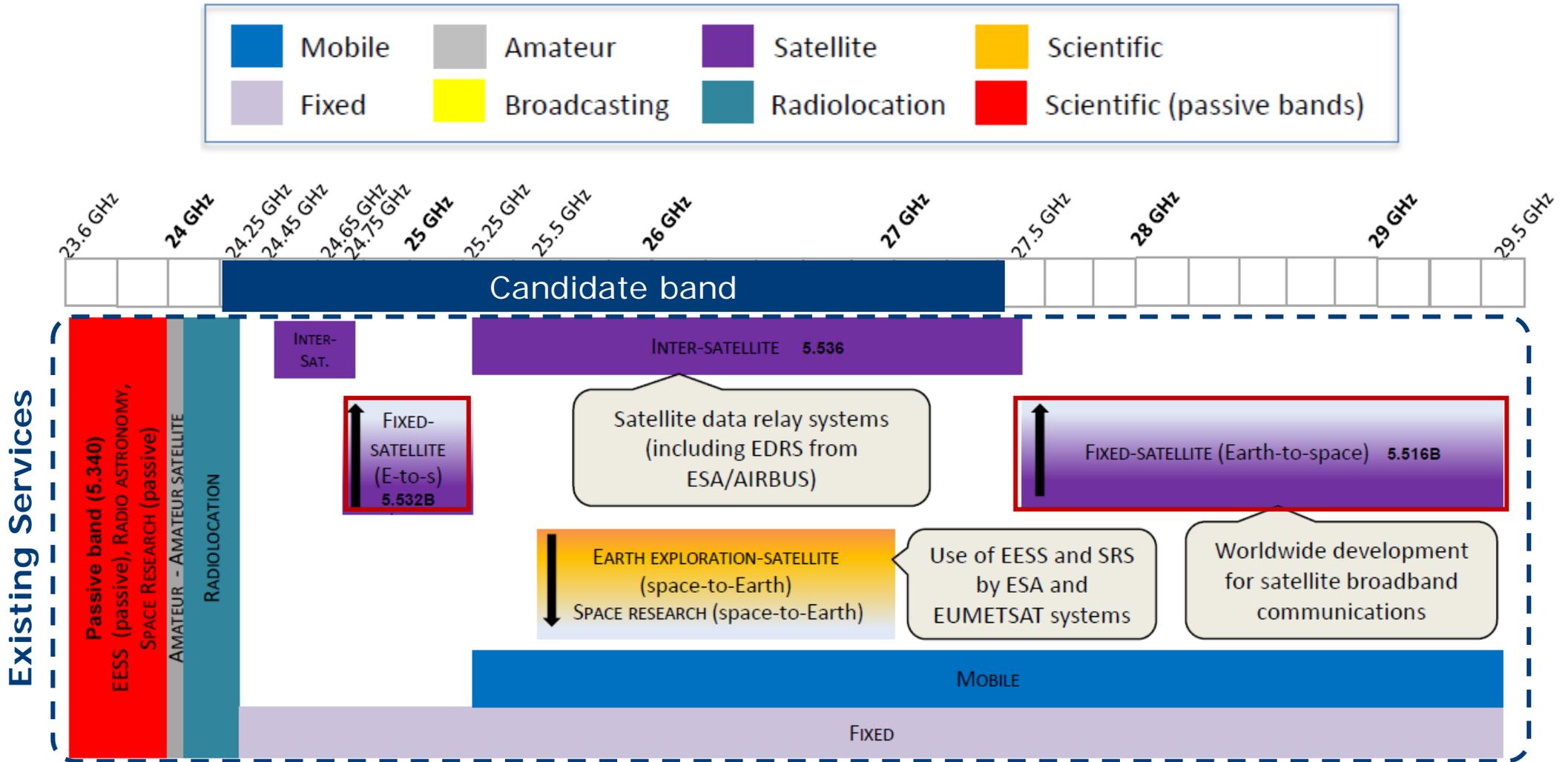
HAPS: 38-39.5 GHz, and 21.4-22 GHz and 24.25-27.5 GHz (R2)

NGSO: 37.5-39.5 GHz↓, 39.5-42.5 GHz↓, 47.2-50.2 GHz↑ and 50.4-51.4 GHz↑

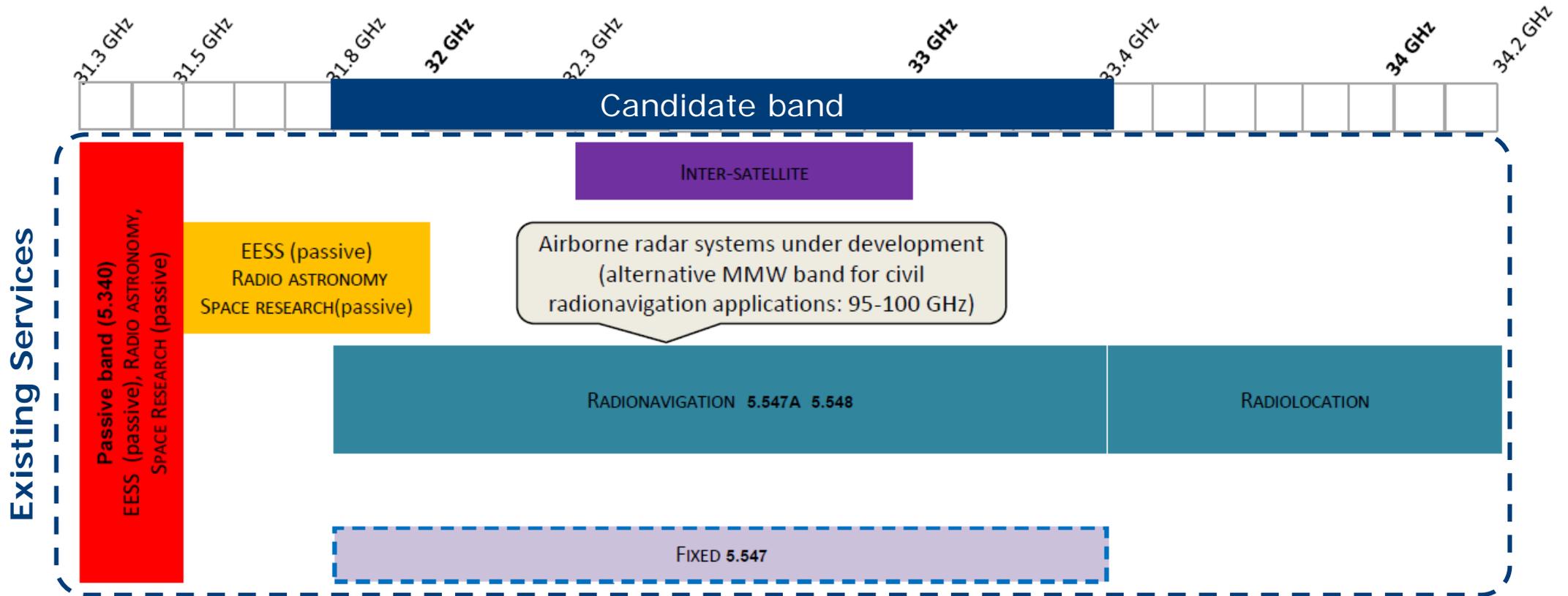
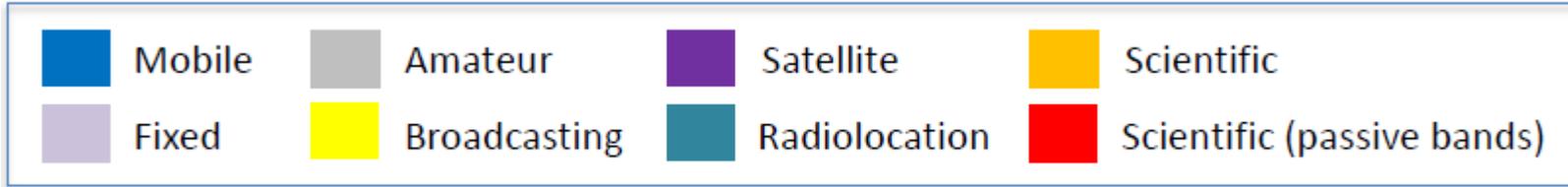
27.5 to 29.5 GHz not included

Q/V bands: to be used for next generation FSS networks!

CANDIDATE BAND 24.25-27.5 GHz



CANDIDATE BAND 31.8-33.4 GHZ



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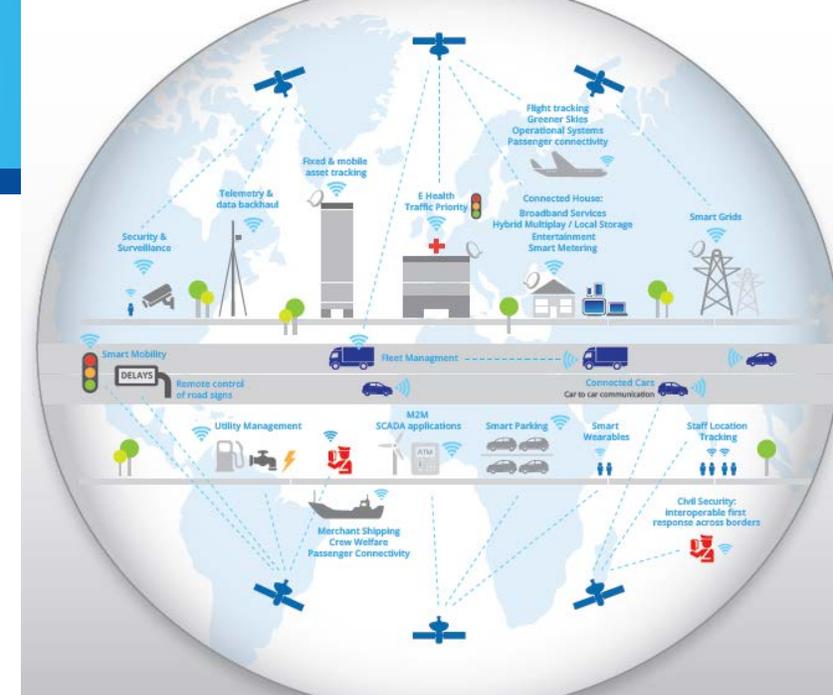
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WHAT SHOULD BE 5G?

Satellite system as a key element to allow seamless extension of 5G services anywhere, anytime



Source: ESOA

Universal
Connectivity

5G
Goals

Massive
Connection

Enhanced
Broadband

Industrial
Revolution

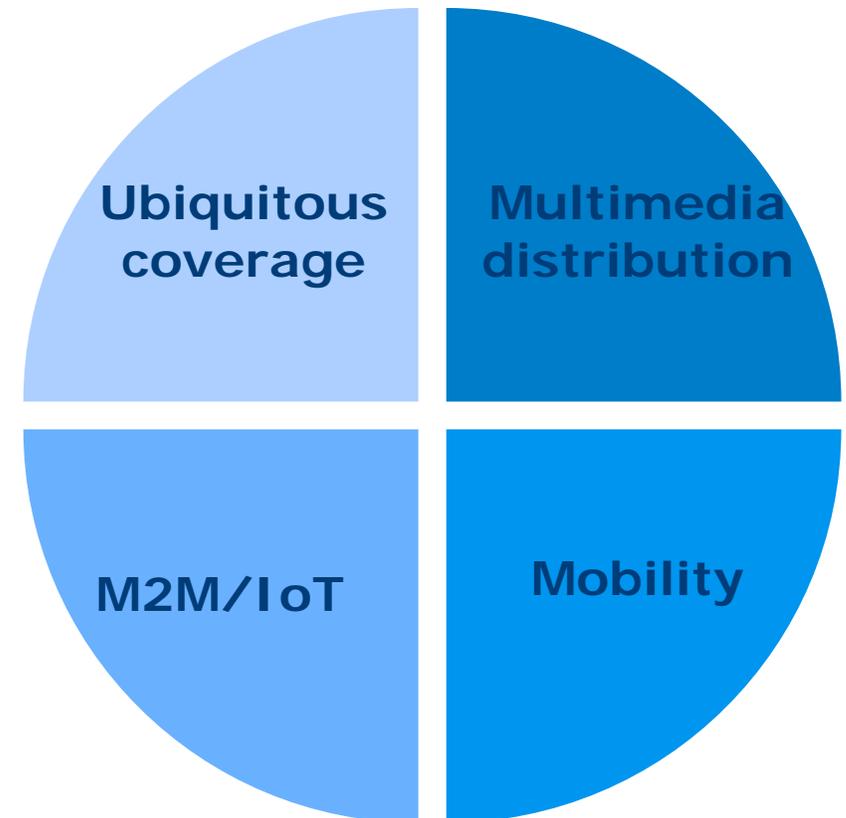
Critical
Communications

- /// Not a simple evolution of mobile broadband networks
- /// Convergence of fixed, mobile, and broadcast services
- /// Real integration of different communication systems

COMPLEMENTARY APPROACH

Complementary approach between Satellite, Mobile & Fixed infrastructures is absolutely needed to adequately respond to demands

- **Significant risk to increase digital divide accross regions with 5G**
 - ➔ Connectivity of non-urban environments
 - ➔ Challenge with some proposed frequency ranges
- **Ensure that satellite systems are integrated as part of the 5G ecosystem**
 - ➔ Need to optimize costs of deployment
 - ➔ Need to optimize time-to-market
 - ➔ Need to ensure continuity of service everywhere, including in areas not accessible to mobile networks



ROLE OF SATELLITE IN 5G



Feeding terrestrial towers



Extending mobile networks



Ubiquitous broadband access



IoT and Mobility in wide coverage and remote areas

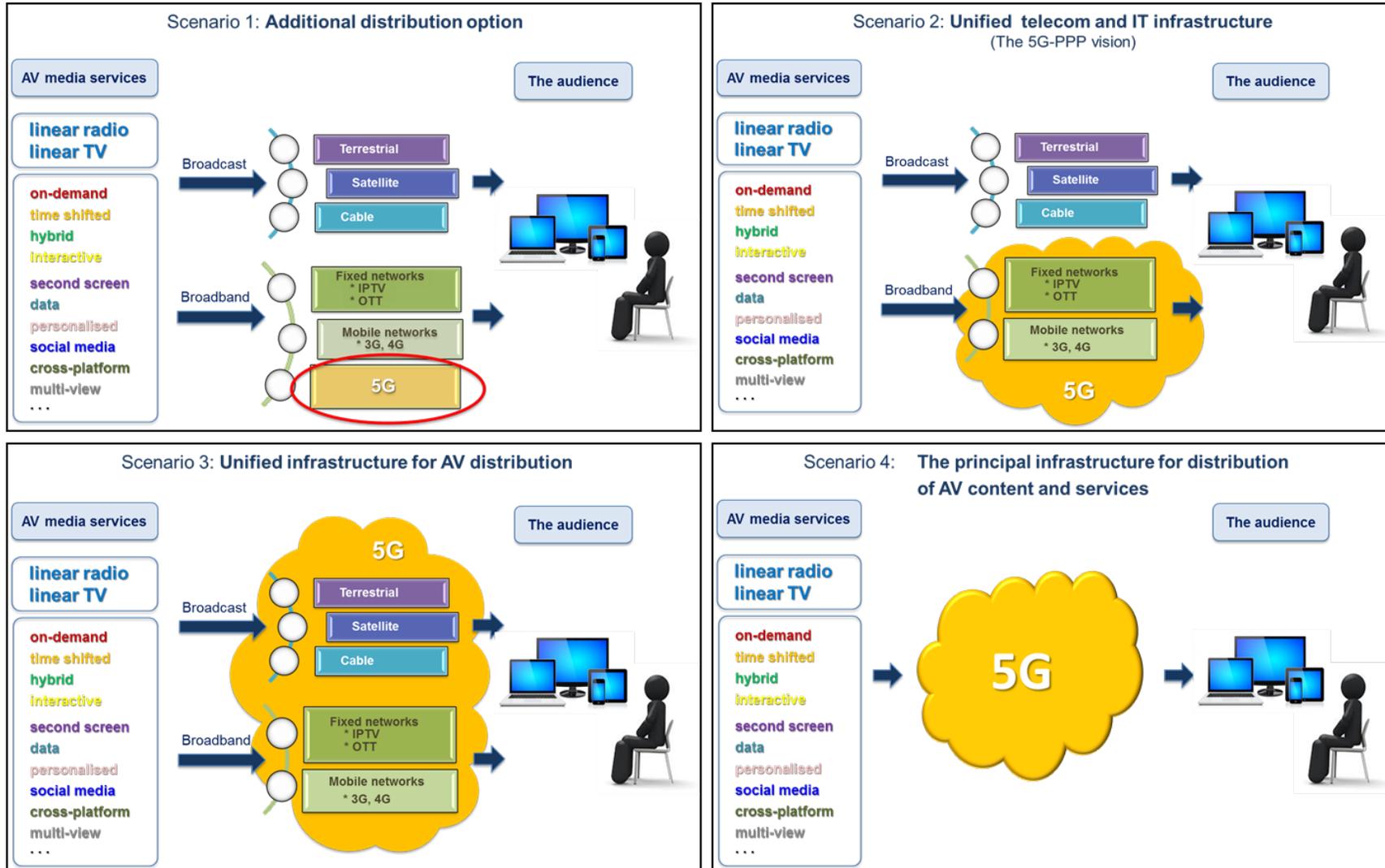
Tower Feed

- Connectivity to individual towers, with the ability to multicast the same content (e.g. video, HD / UHD TV, as well as other non-video data) across a large coverage (e.g. for local storage)
 - Content caching near the edge, bringing content closer to the user
 - Covering with low number of intermediary autonomous systems based on satellite network
 - Providing near instant access to multimedia rich content with caching

Connectivity of non-urban environments

- Truly ubiquitous coverage
 - essential enabler for many of the other capabilities.
 - Need to implement valuable solution to reduce the digital divide. Satellite solution can play a central role
- Sustainable Capex spending
 - satellite for universal coverage and to connect community is an efficient and cost effective platform
- Hybrid platforms
 - hybrid architectures to combine existing and future solutions

ILLUSTRATION - VIDEO DISTRIBUTION



Source: EBU

SATELLITE SOLUTION FOR VIDEO DISTRIBUTION

Interoperability will be important

- 'agree on technology, compete on services'
- Integrate satellite communication capabilities and requirements into standard
 - Guarantee seamless compatibility of satellite technologies with the deployment of 5G networks
 - Develop protocols integrating natively the satellite capabilities, without delaying or degrading other 5G key issues/use cases.
- Solutions need to be long-term and sustainable

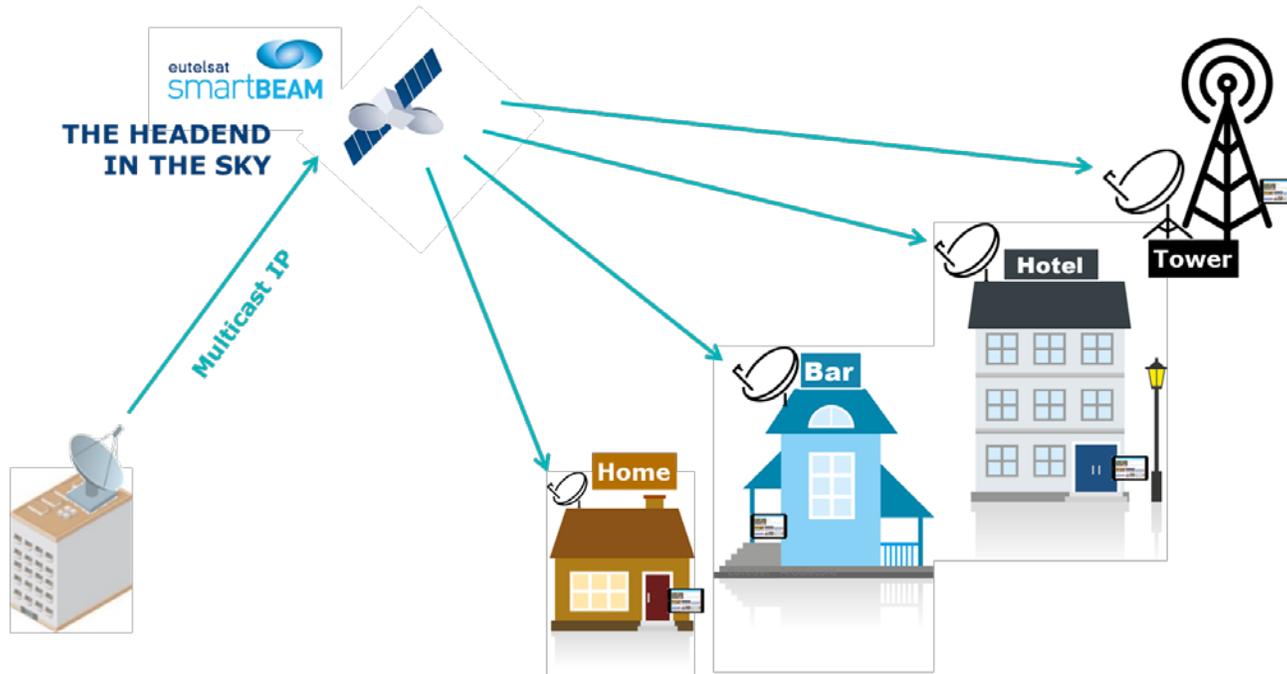
Quick deployment & Cost-efficiency will be key

- smartphones and tablets offer new opportunities for engaging with the audience
- Linear content delivery will still need to be available for a long period of time
- 5G will have a certain impact on distribution of broadcast content
- major investment will be necessary to provide ubiquitous coverage for the delivery of video content

Satellite solutions will remain an important component to adequately respond to the video distribution needs in the 5G context

SMARTBEAM: ANYWHERE!

A common feed following Users wherever they are



KEY FEATURES

- Satellite multiscreen video delivery to smartphones and tablets
- Linear TV and on-demand
- Free-to-air and premium content
- Seamless integration with existing OTT services and mobile applications
- Ubiquitous coverage with guaranteed quality of service irrespective of local internet connections
- Suitable for public venues and at home

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HOW TO INTEGRATE SATELLITE SOLUTIONS IN 5G?

Offer an appropriate policy framework to support investments in the different connectivity platforms (Fixed, Mobile & Satellite)

/ Be correctly reflected in the way to manage spectrum

- Efficiently use of existing allocation
- Respond to the market demands in term of connectivity
- Offer certainties and incentives for current and future investments

/ Leverage on satellite uniqueness and capabilities

- To deliver broadband Everywhere
 - Offer ubiquitous coverage and Pan-European connectivity
 - Expand the benefit of broadband connectivity out of hyper-connected urban environments
 - Reduce the digital divide
- To develop solution on planes, faster trains and cars
- To enable an ultrareliable network for mission critical applications
- To deliver a meaningful and efficient Broadcast service

DIALOGUE AND COLLABORATION BETWEEN INDUSTRIES

- ✓ Satellite will continue to be an integral part of the telecommunications ecosystem including in the future high speed, 5G world**
 - High Throughput Satellites (HTS) are and will continue to be a key contributor to connecting the world's citizens
 - HTS satellites require user terminals operating in the Ka band and in the Q/V bands
 - Satellite Ka band is particularly relevant for ubiquitous broadband connectivity
- ✓ The telecommunications industry – mobile, fixed and satellite – must collaborate to develop solutions that ensure and promote global connectivity**
 - Mobile & Satellite operators are complementary answers to global connectivity and should take part in WRC-19 preparation in a constructive spirit
 - Supporting the ITU consensus of WRC on IMT frequency bands is key for the mutual development of terrestrial and satellite industries

ANY
QUESTIONS
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