



Spectrum regulations and the new environment

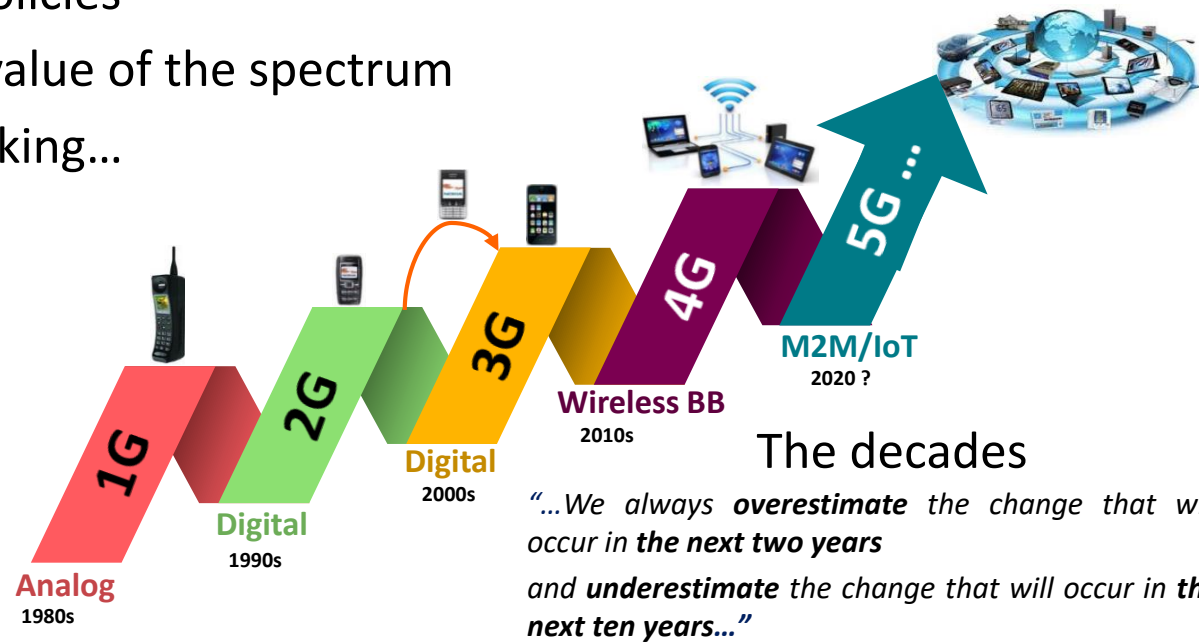
P2 - Panel on Smart Spectrum

Jaime Afonso

Spectrum: at the center of the debate

Key for:

- ▮ Sectorial policies
- ▮ Economic value of the spectrum
- ▮ Mobility is king...



Bill Gates

▮ But... spectrum is not all about mobile networks!

▮ A Smart Society: “vision to achieve an advanced information society”; e.g. smart car, smart transportation, smart city;

Spectrum: problem statement

■ “Queen”: “*I want it all and I want it now*”!

■ Spectrum is not enough for everyone!



■ Sharing is required: *intelligent use of spectrum*

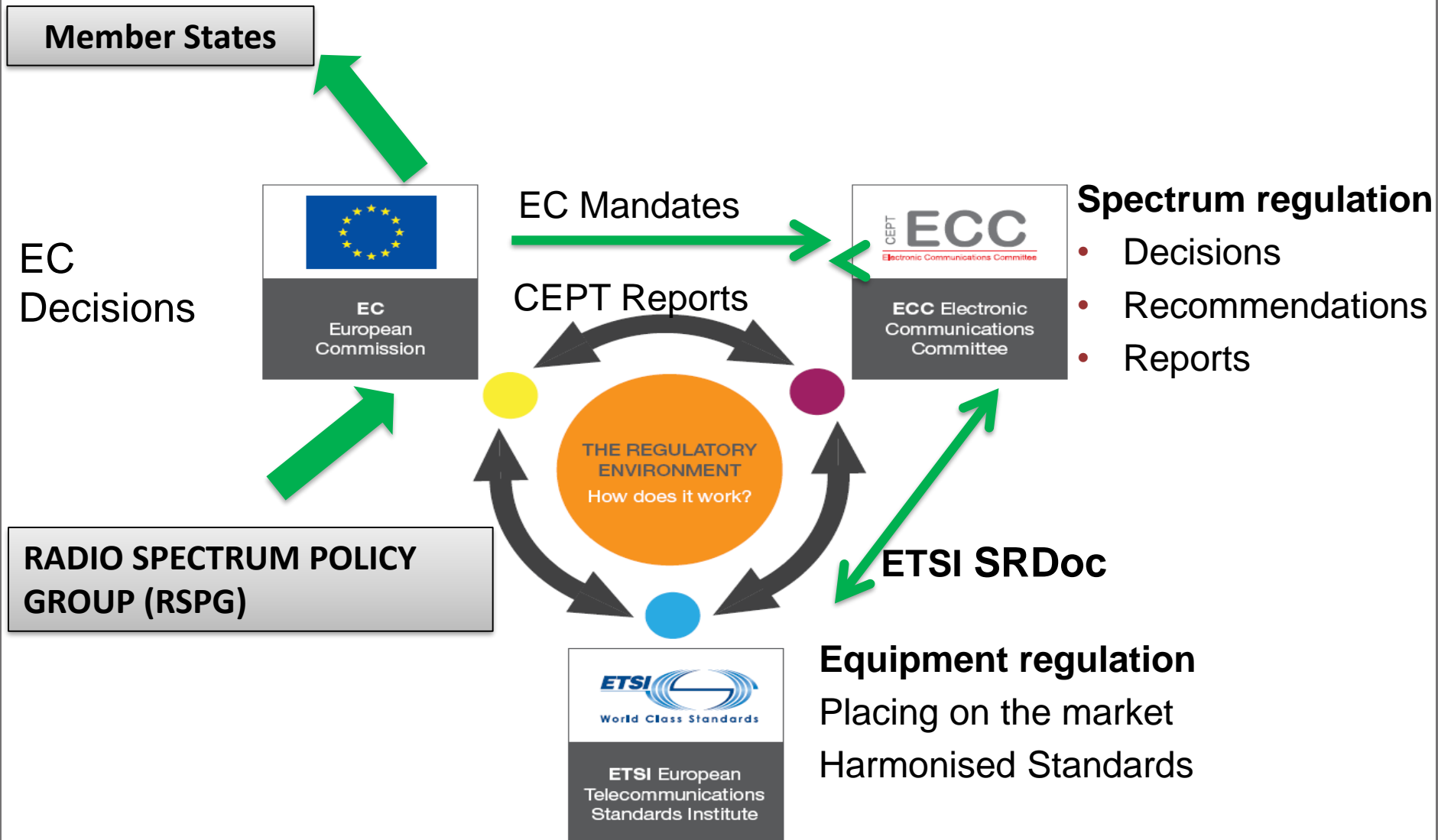
■ Its management relies on rules to:

- ▶ Access the spectrum
- ▶ Use the Spectrum

■ Solving the “capacity crunch” :

- ▶ Efficient technologies
- ▶ Network densification
- ▶ Architecture evolution
- ▶ And.... **more spectrum**

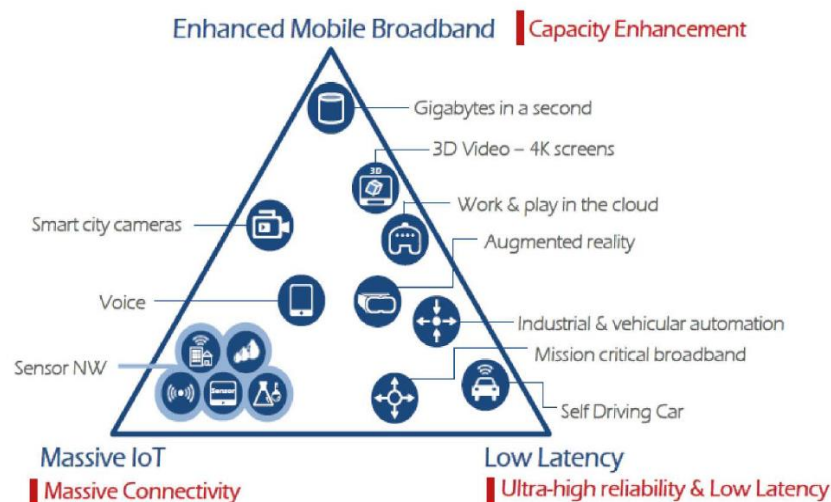
The institutional framework



5G: spectrum requirements

The ITU “IMT-2020” vision

- Key enabler for different applications, “use cases”



Source: ETRI

Spectrum policy has a profound socio-economic impact:

Verticals Benefits	Automotive (€ mn)	Healthcare (€ mn)	Transport (€ mn)	Utilities (€ mn)	Total (€ mn)
Strategic	13,800	1,100	5,100	775	19,770
Operational	1,800	4,150	3,200	2,700	11,850
Consumer	13,900	207	-	3,000	17,110
Third Party	13,700	72	-	-	13,770
Total	42,200	5,530	8,300	6,470	62,500

Source: “Identification and quantification of key socio-economic data to support strategic planning for the introduction of 5G in Europe”

■ **The “gigabit connectivity” package:** uninterrupted 5G coverage for all urban areas and major terrestrial transport paths by 2025. Target dates for spectrum availability is 2020!

■ **European Commission Mandate to CEPT on 5G**

- 3.4-3.8 GHz: review to assess its suitability to 5G;
- 24.25-27.5 GHz :channeling arrangements/technical conditions for 5G
- review the 900 MHz, 1800 MHz, 2 GHz, and 2.6 GHz

■ **Other systems/bands**

- review the 900 MHz and 1800 MHz to allow IoT deployment
- Intelligent Transport Systems (ITS) safety-related band at 5.9 GHz
- Radio Local Area Networks in the 5925-6425 MHz band
- Future railway mobile radio communications system (FRMCS)
- Ultra-Wideband (UWB) technology in the European Union
- Short Range Devices

- 5G spectrum: spectrum above 6 GHz and ...below
- Harmonized, contiguous and large bandwidths needed
- Machine-to-Machine spectrum requirements
- Facilitating the spectrum access (e.g. unlicensed and shared solutions)
- Cognitive technology and new sharing techniques
- Spectrum is required for other evolving type of usages, e.g. Galileo, GMES, PPDR, RFID, PMSE

THANK YOU!

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