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LTE Russia & CIS 2010**»

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## **REGULATORY UPDATE: FLEXIBLE USE OF SPECTRUM AND DIGITAL DIVIDEND**

## ETSI is ...



- ❑ Independent, not-for-profit organization, created in 1988
- ❑ A recognized European Standards Organization
- ❑ Setting global standards for all areas of ICT
- ❑ More than 700 members from more than 60 countries
- ❑ Offering direct participation and Membership voting
- ❑ Organisational partner of 3GPP

## ETSI Radio world



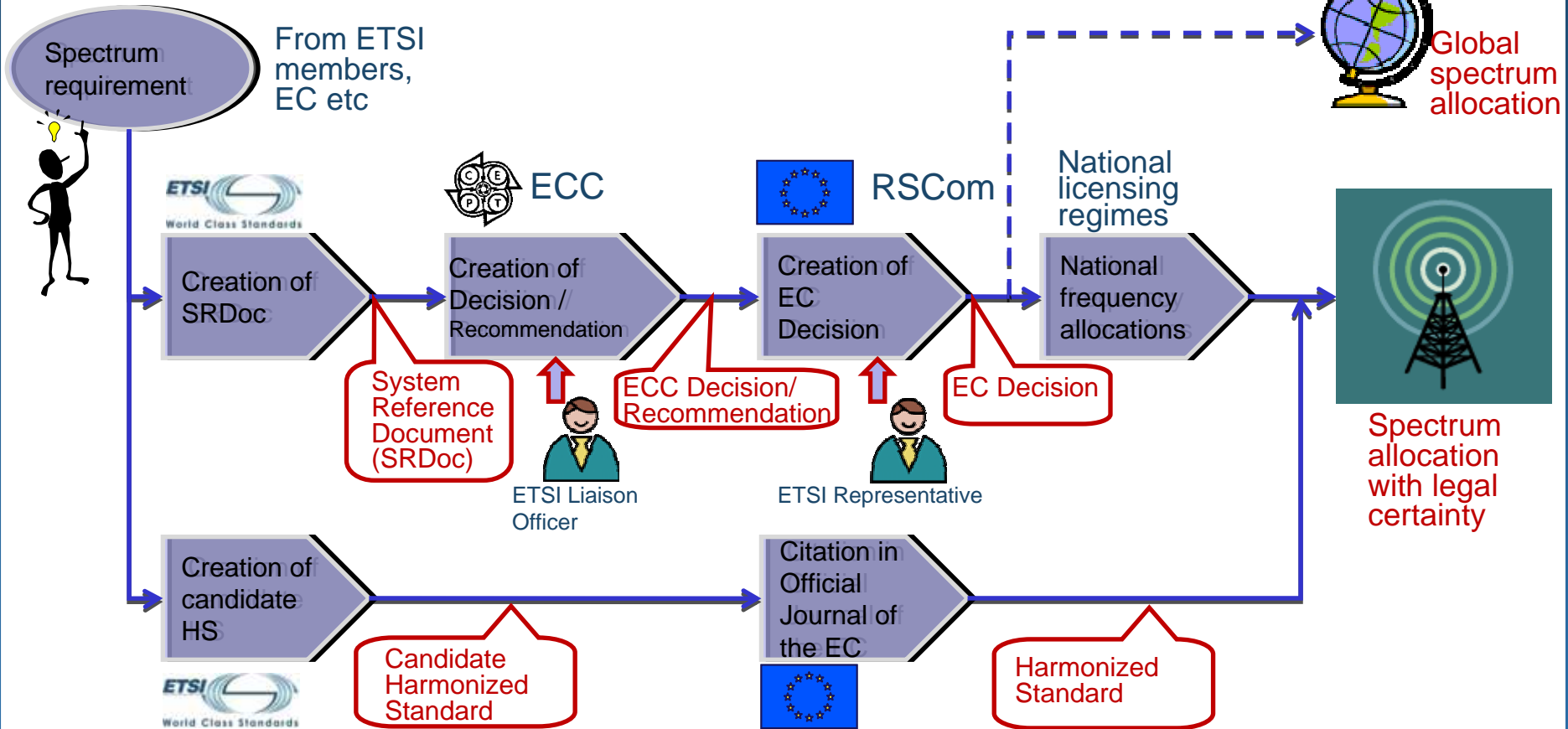
### ... and ETSI Technical committees

- EMC&Radio Spectrum Matters
- Intelligent Transport Systems
- Reconfigurable Radio Systems
- Broadband Radio Access Net.
- Sat Earth Stations & Systems
- TETRA
- DECT
- Railway telecommunications
- Access, Terminals, Transmission and Multiplexing

## Directives & regulations

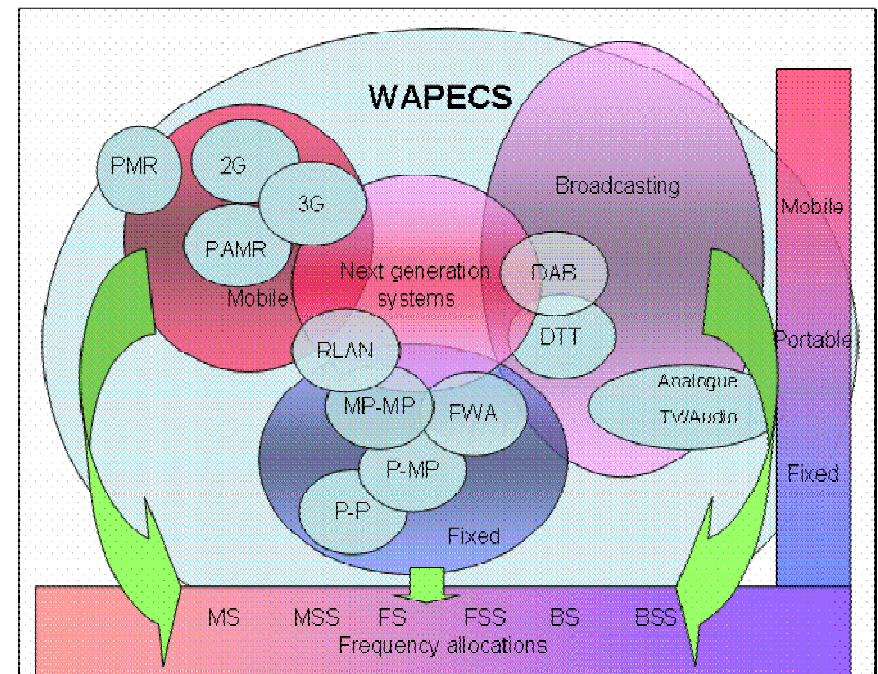
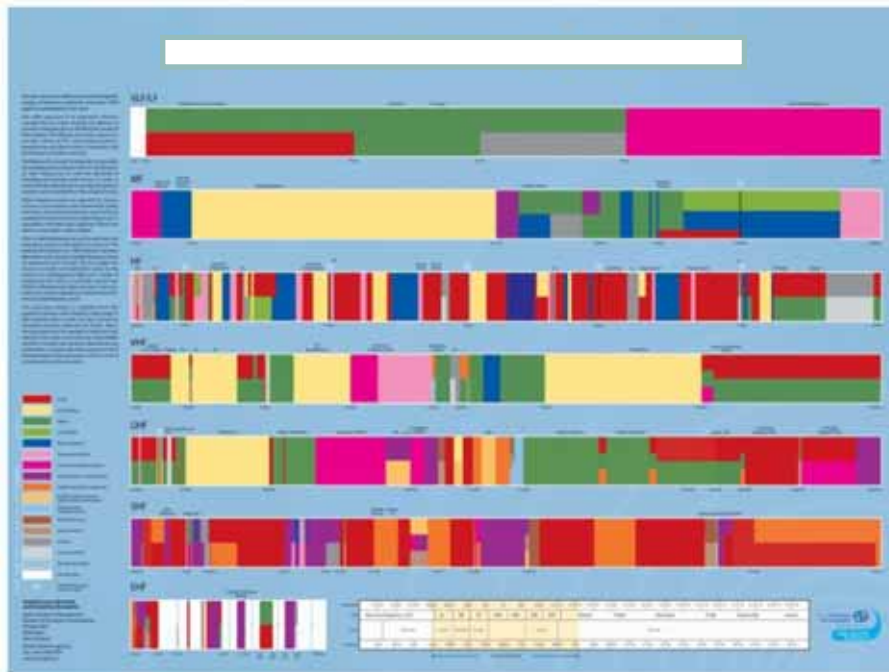
Equipment	Networks and services
<ul style="list-style-type: none"> <li>➤ Radio &amp; Telecommunications Terminal Equipment Directive (1999/5/EC)</li> <li>➤ Radio Spectrum Decision 676/2002/EC</li> <li>➤ EMC Directive 2004/108/EC (updates 89/336/EEC)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Framework Directive</li> <li>➤ Privacy Directive</li> <li>➤ Authorisation Directive</li> <li>➤ Universal Service Directive</li> <li>➤ Access Directive</li> </ul> <p style="text-align: center; font-size: small;">Directives were adopted in 2002 and amended by Directives 2009/136/EC and 2009/140/EC</p>
Safety	Sector-specific
<ul style="list-style-type: none"> <li>➤ Low Voltage Directive (2006/95/EC)</li> <li>➤ Council Recommendation on limitation of EM Field exposure of General Public (1999/519/EC)</li> <li>➤ « Physical Agents Directive » protects workers (2008/46/EC) (<i>amends 2004/40/EC</i>)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Marine Equipment Directive (96/98/EC)</li> <li>➤ Single European Sky: Interop. Reg. (552/2004)</li> <li>➤ Medical Devices</li> <li>➤ Electronic Fee Collection</li> <li>...and more</li> </ul>

## Obtaining spectrum in Europe World Radio Conference (WRC)



## Flexible use of spectrum

- ❑ Flexible use - non-restrictive approach, which allows the spectrum user to choose services and technology
- ❑ Exclusive use by a particular service, such as mobile or broadcasting, is removed (from the Framework Directive)



## Digital Dividend

- ❑ Initial set of frequency bands proposed by the EC for implementation of more flexibility included 470-862 MHz (so-called digital dividend frequency band)
- ❑ The digital dividend is a part of radio spectrum that is freed up as a result of more efficient spectrum use through the switchover from analogue to digital terrestrial TV.
- ❑ The digital dividend is a unique opportunity for Europe to meet the growing demand for radio spectrum, particularly to allow new wireless services such as the next generation of mobile broadband
- ❑ Economic Recovery Plan has set a target of 100% broadband coverage by between 2010 and 2013.

## Digital Dividend: The beginning

Timeframe for DD 2005 – 2015

- ❑ Commission policy initiative on digital dividend started **2005**
- ❑ Presented in RRC-**06** as flexible conditions of use as a spectrum policy priority
- ❑ Commission's later called for efforts to be made at WRC-**07**
- ❑ Framework Directive was amended **2009** to confirm technological neutrality and service neutrality and introduce greater flexibility in the use of spectrum



## Digital Dividend: 5 years of regulations development

Timeframe for DD 2005 – 2015

- ❑ ECC Dec (09)03 on harmonised conditions for mobile/fixed communications networks (MFCN) operating in the band 790 - 862 MHz
- ❑ **March 2010** – Spectrum Summit on multiyear Spectrum policy in Europe
- ❑ **May 2010** - EC Decision on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union

## Benefits of the Digital Dividend

Timeframe for DD 2005 – 2015

- ❑ Economical and social value of the digital dividend across the EU to be in the range **EUR 150 – 700 billion** (net present value over **15 years**)
- ❑ The identified socioeconomic benefits are based on the assumption of a Community approach that releases the 800 MHz band **by 2015** and imposes technical conditions preventing high power cross-border interference.

## Focus on ETSI

- ❑ Facilitating standardisation through at least the establishment of a **harmonised set of technical requirements** for the usage of certain frequency bands to allow the single European market to benefit from economies of scale (*RSPG Opinion*)
- ❑ Minimal technical usage conditions for the bands are to be established through technical implementation measures adopted under the Radio Spectrum Decision (676/2002/EC) and **harmonised standards adopted under the R&TTE Directive** in order to facilitate the single market, the avoidance of interference, cross-border coordination and protection of health. (*COM(2007)050*)

## NEW RADIO SERVICES IN THE 800 MHz BAND

- ❑ LTE standardisation in 800 MHz by 3GPP
- ❑ LTE Harmonised standards in 800 MHz by ETSI
- ❑ ETSI activities on the subject

## 3GPP RAN WG 4

WG4 works on the RF aspects of UTRAN/E-UTRAN. RAN4 performs simulations of diverse RF system scenarios and derives the minimum requirements for transmission and reception parameters, and for channel demodulation. Once these requirements are set, the group defines the test procedures that will be used to verify them (only for BS). Requirements for other radio elements, like Repeaters, are specified in the RAN4 as well.



# LTE parameters in 800 MHz

## 3GPP bandplan for Band Class 20

3GPP bandplan for class 20	Downlink (DL) operating band BS transmit UE receive			Uplink (UL) operating band BS receive UE transmit			Duplex Mode
	$F_{DL\_low} - F_{DL\_high}$			$F_{UL\_low} - F_{UL\_high}$			
20	791 MHz	–	821 MHz	832 MHz	–	862 MHz	FDD

3GPP bandplan for class 20	TX - RX carrier centre frequency separation
20	41 MHz

## LTE parameters in 800 MHz for UE

- ❑ 3GPP TS 36.101 v9.2.0 Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception  
<http://www.3gpp.org/ftp/Specs/html-info/36101.htm>
- ❑ ECC Dec (09)03 on harmonised conditions for mobile/fixed communications networks (MFCN) operating in the band 790 - 862 MHz
- ❑ EC Decision on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union
  - UE maximum output power 23 dBm +/-2 dB

## LTE parameters in 800 MHz for BS

- ❑ 3GPP TS 36.104 v9.2.0 Evolved Universal Terrestrial Radio Access (E-UTRA); Base Stations (BS) radio transmission and reception  
<http://www.3gpp.org/ftp/Specs/html-info/36104.htm>
  
- ❑ ECC Dec (09)03 on harmonised conditions for mobile/fixed communications networks (MFCN) operating in the band 790 - 862 MHz
  - Technical conditions for BS (EIRP limit, emissions mask) are given in the Annex 3 of the ECC Decision.



## ETSI's TC MSG ,TC ERM, TC ATTM

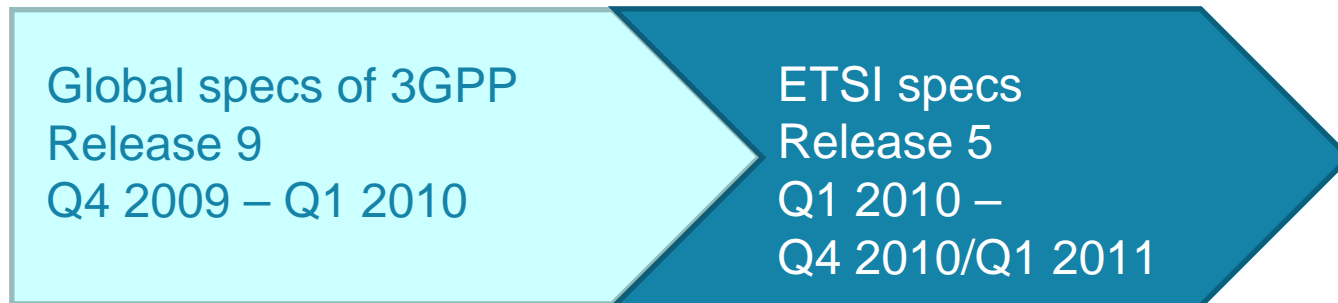
□MSG is responsible for the conversion of 3GPP™ deliverables into ETSI deliverables.

□The task force is responsible for developing European Norms (ENs) intended to become Harmonised Standards under the R&TTE Directive



## TIMESCALES

- ❑ **TS 36.104 E-UTRA BS: 3GPPRAN4-Ad Hoc #1 published Dec 2009**
  
- ❑ **TS 36.101 E-UTRA UE: 3GPPRAN4#54 22 - 26 Feb 2010 San Francisco**
  - **Publication is in Spring 2010**
  
- ❑ **ETSI begins its work on EN 301 908 series (Release 5) which includes 800 MHz LTE**

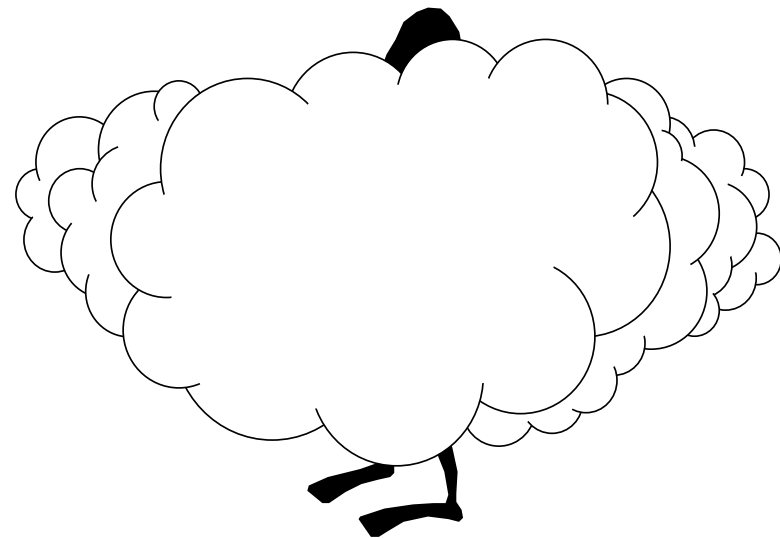


## Other side of the story

- ❑ **Radio HSs vs non-radio communications**
  - LTE/CATV in 800 MHz
  
- ❑ **Spectrum rearming: victims list is very often out of date or users list is not complete**
  - LTE vs CATV + PMSE

- TC ERM: Standards for broadcast and ancillary communications equipment (tuners, domestic aerials and amplifiers)

- TC ATTM: Standards for integrated broadband cable and television networks (cables, in-home cabling and cable network components) + relevant CENELEC TCs



## Mitigating risks

### ❑ Improvement of quality of standards

- On time
- Applicable
- Sufficient provisions to protect existing services
- Not too restrictive:
  - Avoid limiting technology choice
  - Enable market development

**A standard is only as good as those who participate in its development**

**The best way to influence standards, is to make them**

## Information sources

- ❑ [www.etsi.org](http://www.etsi.org) ; [http://portal.etsi.org/Portal\\_Common/home.asp](http://portal.etsi.org/Portal_Common/home.asp)
  
- ❑ **UMTS/LTE in 800 MHz for Europe Work Item Technical Report R4-094952**  
[http://www.3gpp.org/ftp/tsg\\_ran/WG4\\_Radio/TSGR4\\_53/Documents/R4-094952.zip](http://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_53/Documents/R4-094952.zip)
  
- ❑ **Status Report for WI UMTS/LTE 800MHz for Europe**  
[http://www.3gpp.org/ftp/tsg\\_ran/TSG\\_RAN/TSGR\\_46/Docs/RP-091034.zip](http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_46/Docs/RP-091034.zip)
  
- ❑ **ECC Decision on harmonised conditions in the band 790 - 862 MHz (ECC/DEC/(09)03)**  
<http://www.erodocdb.dk/Docs/doc98/official/Word/ECCDEC0903.DOC>
  
- ❑ **EC Decisions regarding radio spectrum can be found at:**  
[http://ec.europa.eu/information\\_society/policy/ecomm/radio\\_spectrum/documents/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/documents/index_en.htm)
  
- ❑ [http://www.analysismason.com/EC\\_digital\\_dividend\\_study](http://www.analysismason.com/EC_digital_dividend_study)

## Thank you very much

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