



>THIS IS **THE WAY**

Wireless Access Standards and Spectrum

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ISART — The Future of Multimedia Communications

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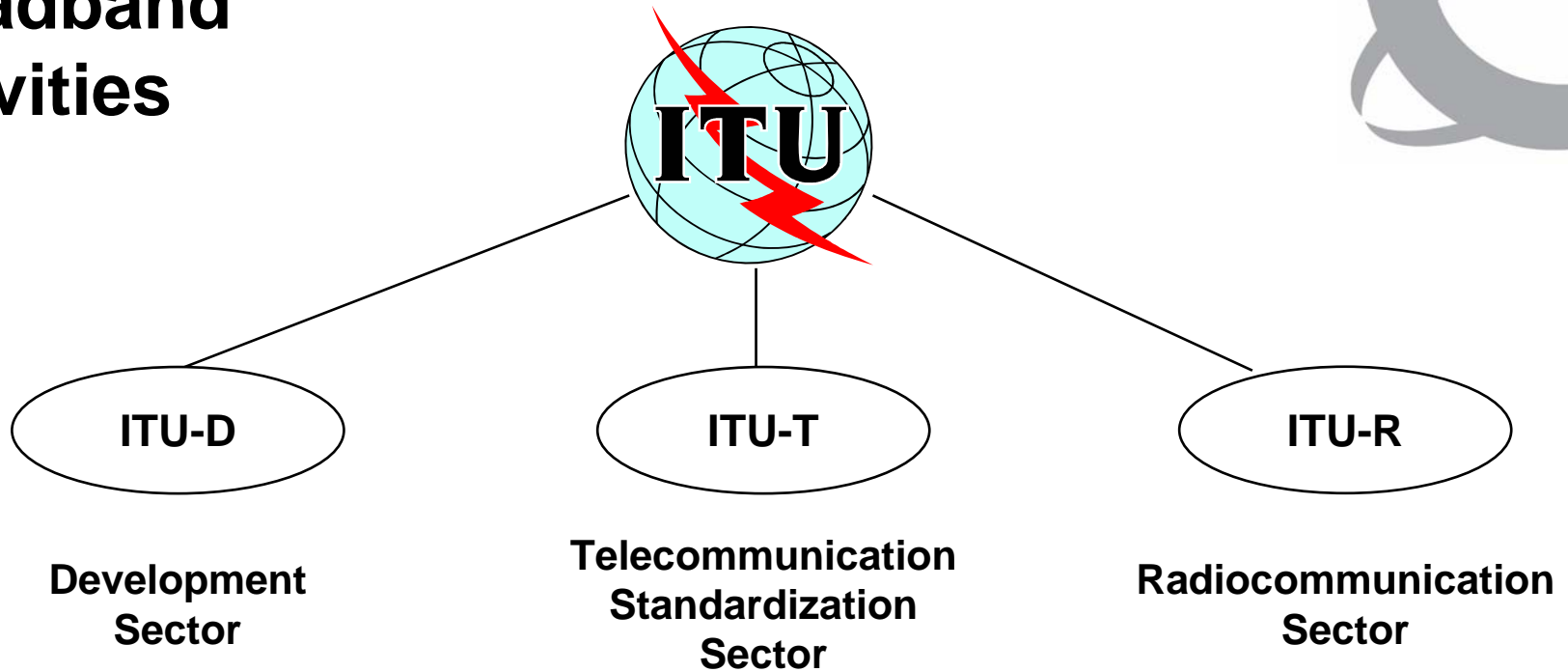
>THIS IS **NORTEL**

Outline



- > Broadband Wireless Access (BWA) activities in ITU
- > Wireless Metropolitan Area Networks (WMAN)
- > Broadband Radio Local Area Networks (RLAN)
- > International Mobile Telecommunications - 2000 (IMT-2000) and systems beyond IMT-2000 (IMT-Advanced)
- > Summary

International Telecommunications Union Broadband Activities



- Assisting developing countries

Study Group [2](#)

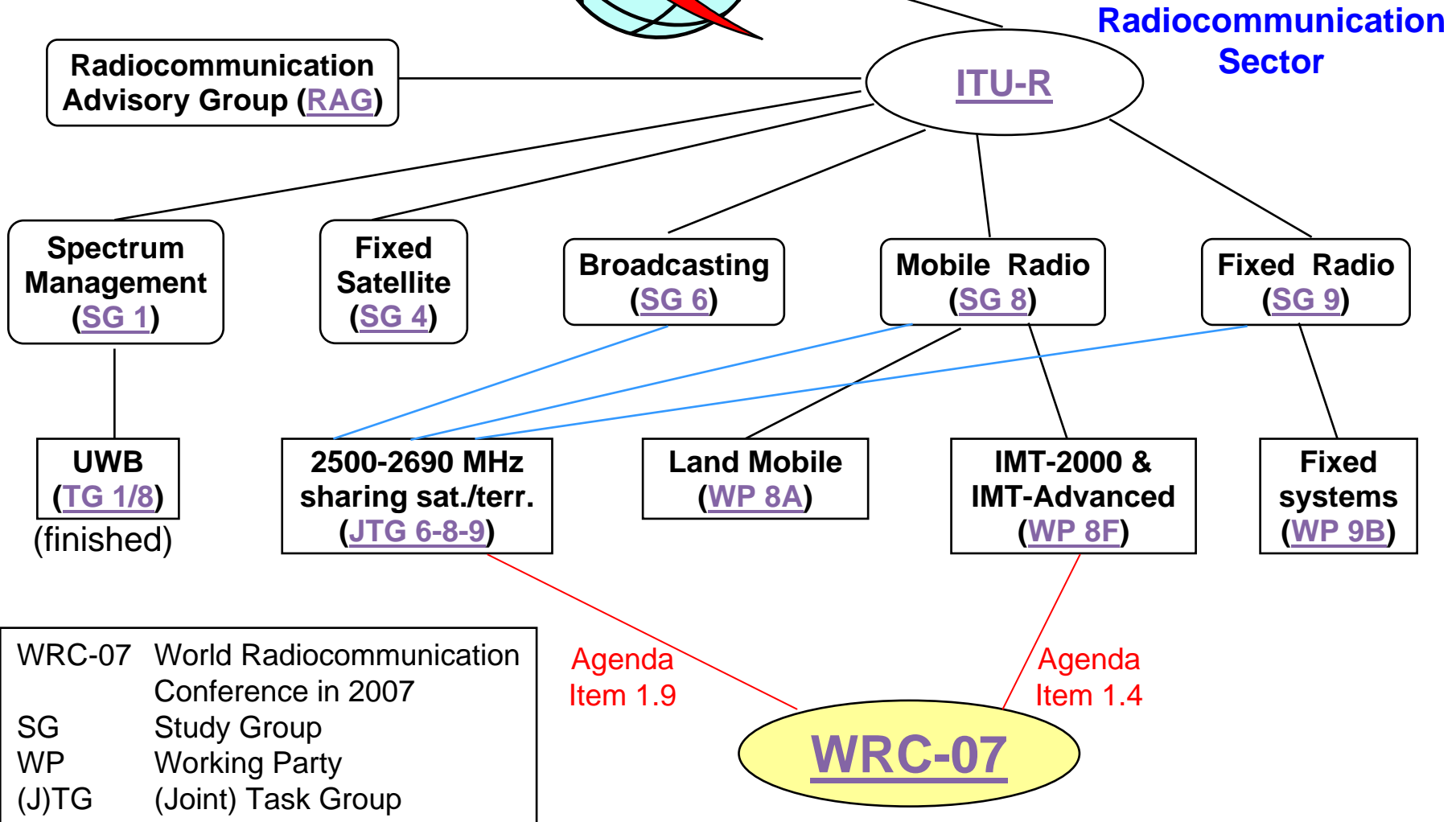
- NGNs
- Mobile telecomm networks
- Broadband cable networks

Study Groups [9](#), [13](#) and [19](#)

- WMANs
- RLANs
- IMT-2000 and beyond

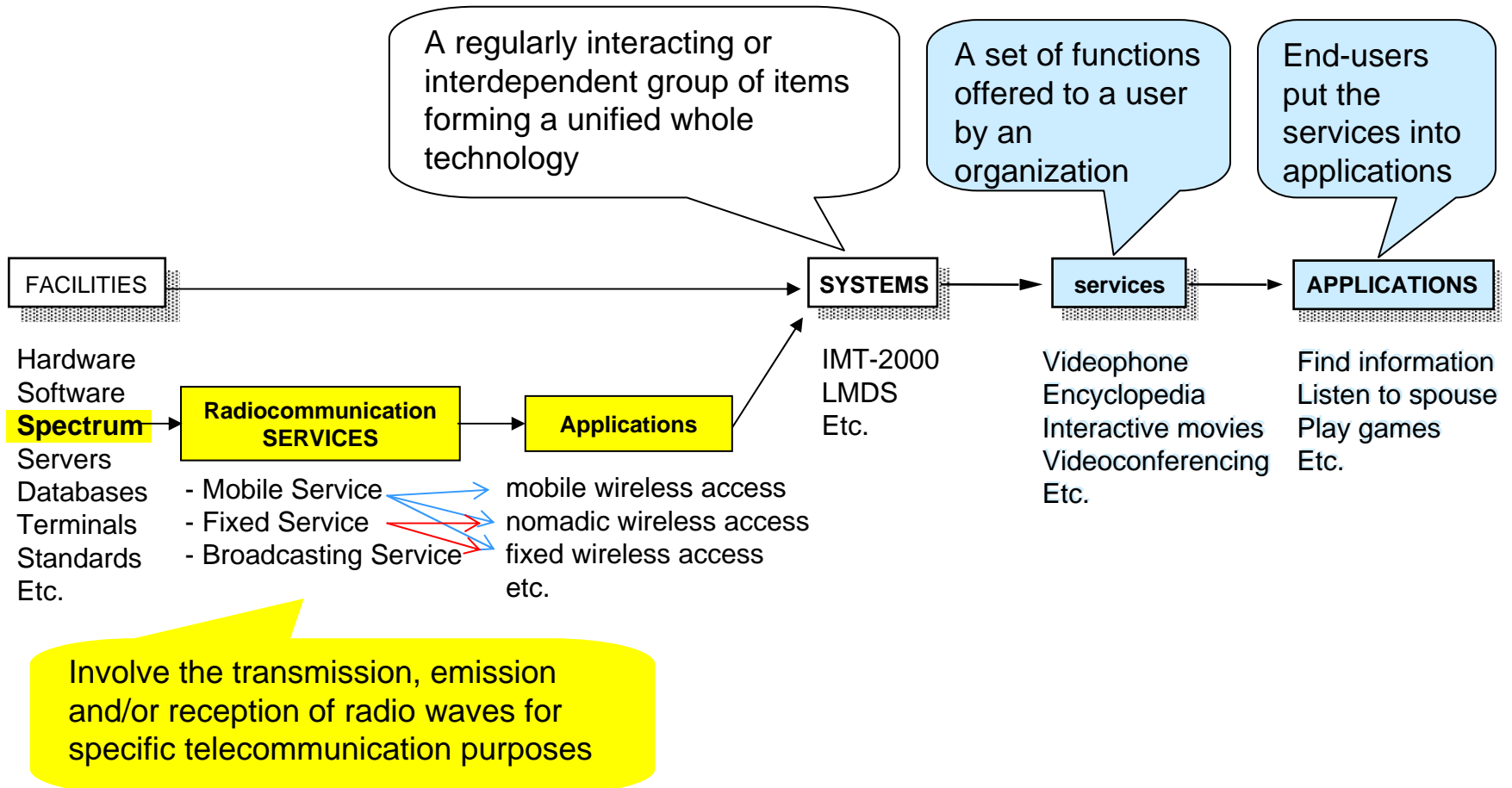
Study Groups [8](#) and [9](#)

Significant activities in ITU-R

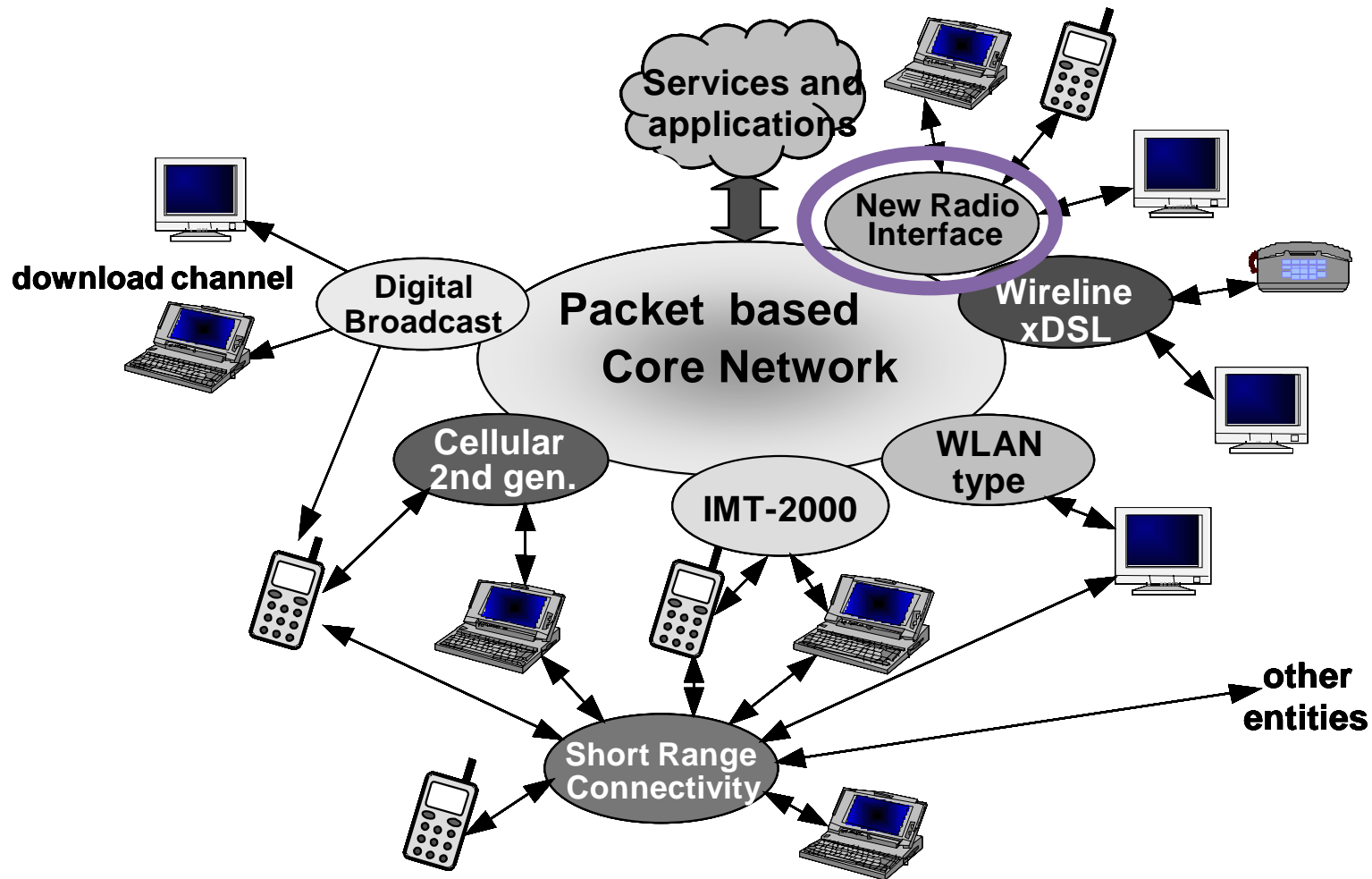


The need for spectrum:

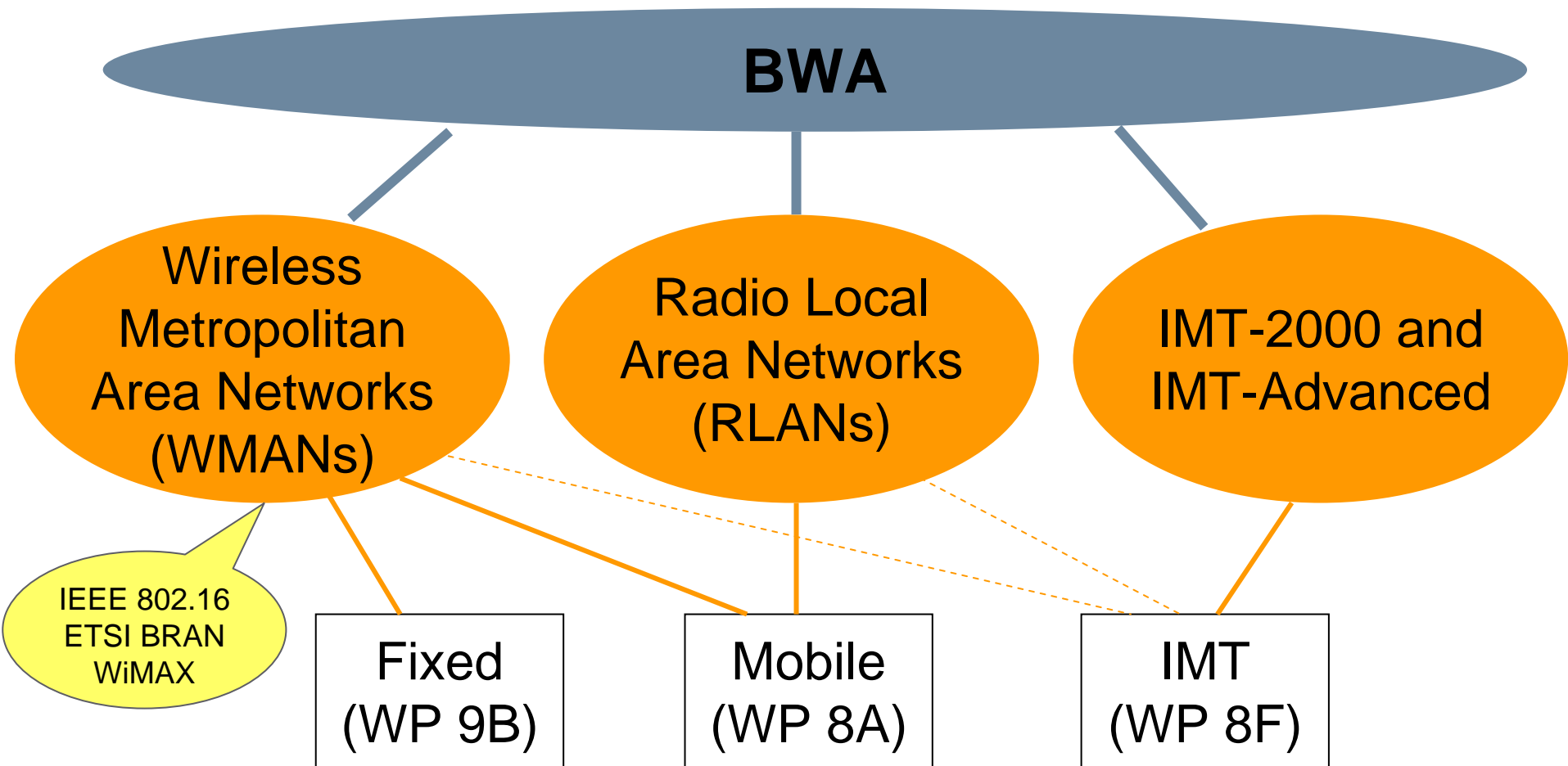
Radiocommunication Services enable wireless telecommunication services



Future network of systems with a variety of access systems



Broadband Wireless Access (BWA) Systems and Standards in ITU-R



Wireless Metropolitan Area Networks (WMAN)



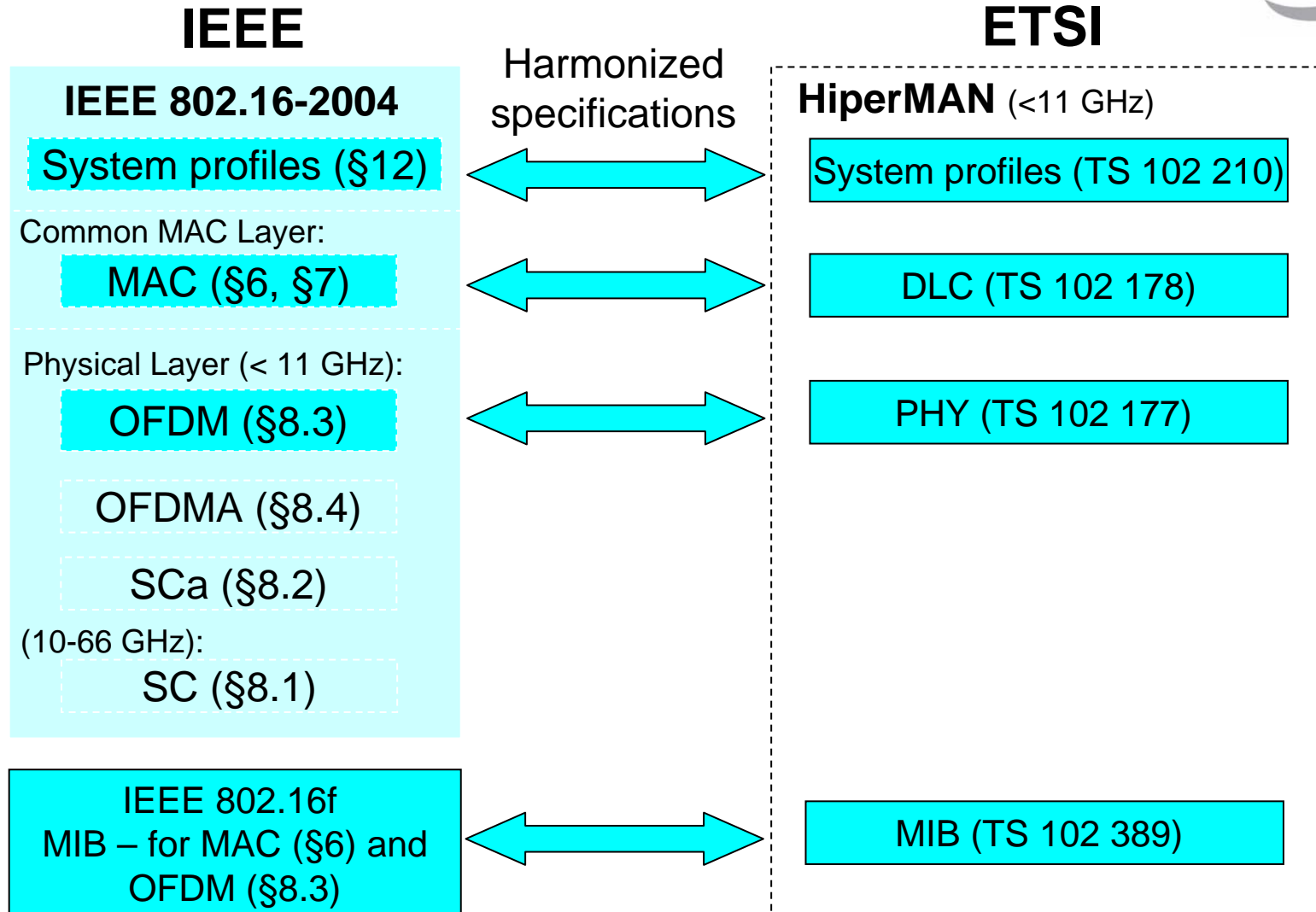
- > Ongoing relationship between ITU, IEEE and ETSI to incorporate the IEEE 802.16 and ETSI BRAN BWA standards in ITU Recommendations.
 - ITU-D requested assistance from the ITU-R Joint Rapporteur Group 8A-9B on access technologies for broadband communications.
 - Draft new Recommendation(s) for WMANs originally developed in the Joint Rapporteur Group 8A-9B and now being continued in ITU-R Working Party 9B for the Fixed Service and ITU-R Working Party 8A for the Mobile Service.



ITU-R WP 9B (Fixed Service)

- > Draft New Recommendation ITU-R F.[9B/BWA] ([Doc. F.9BL19](#)):
 - “Radio interface standards for broadband wireless access systems in the fixed service operating below 66 GHz”
 - Includes the harmonized IEEE WirelessMAN standards (IEEE 802.16) and ETSI HiperMAN standards (ETSI BRAN).
 - The draft new recommendation was adopted by SG 9 in Dec 2005.
- > In addition, a working document on technical and operational requirements is under development ([Annex 9](#) to [Doc. 9B/167](#)).
- > Next meeting of WP 9B: 27 June – 5 July 2006, Japan.

Harmonized standards for below 11 GHz

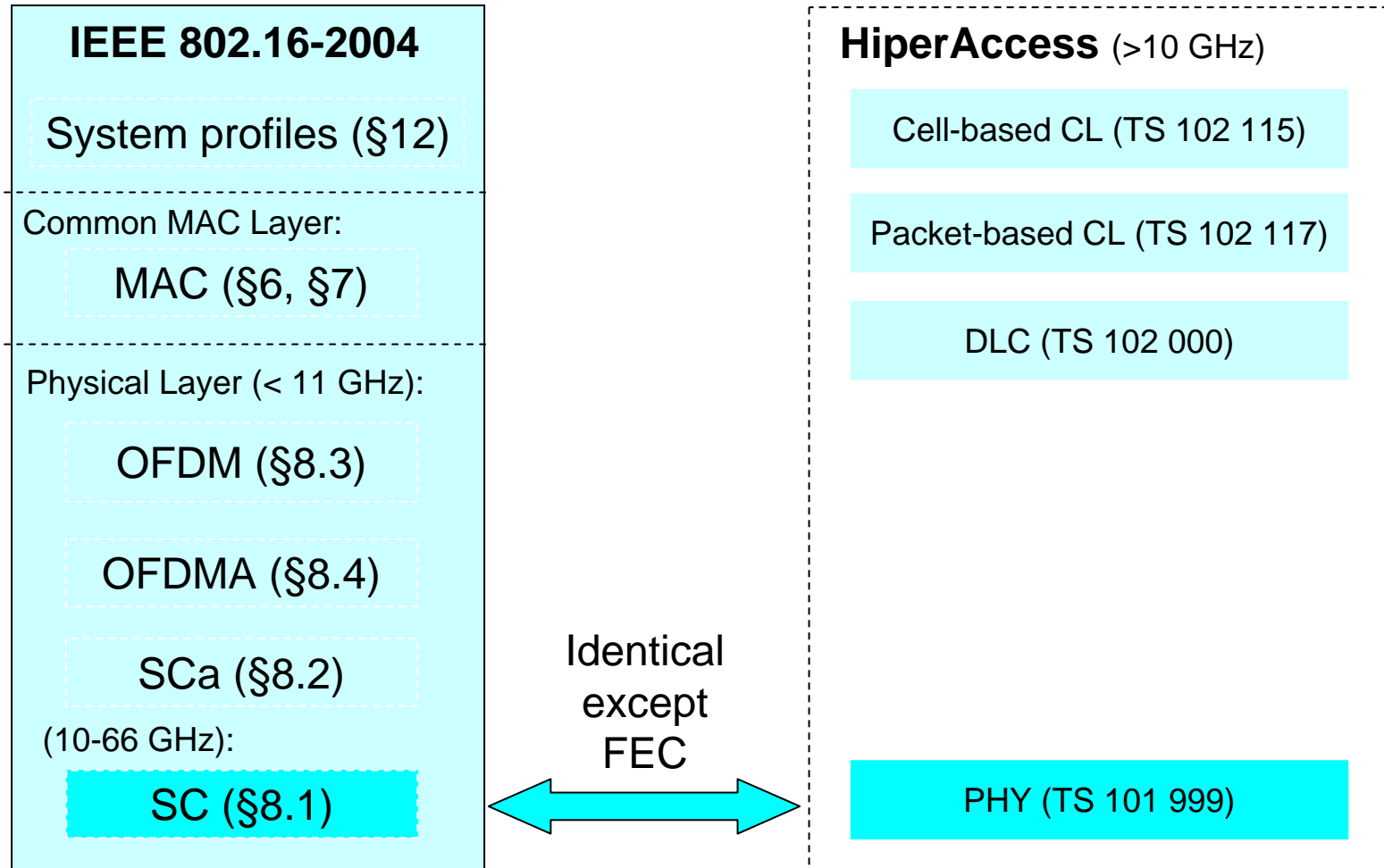


Standards for above 10 GHz



IEEE

ETSI

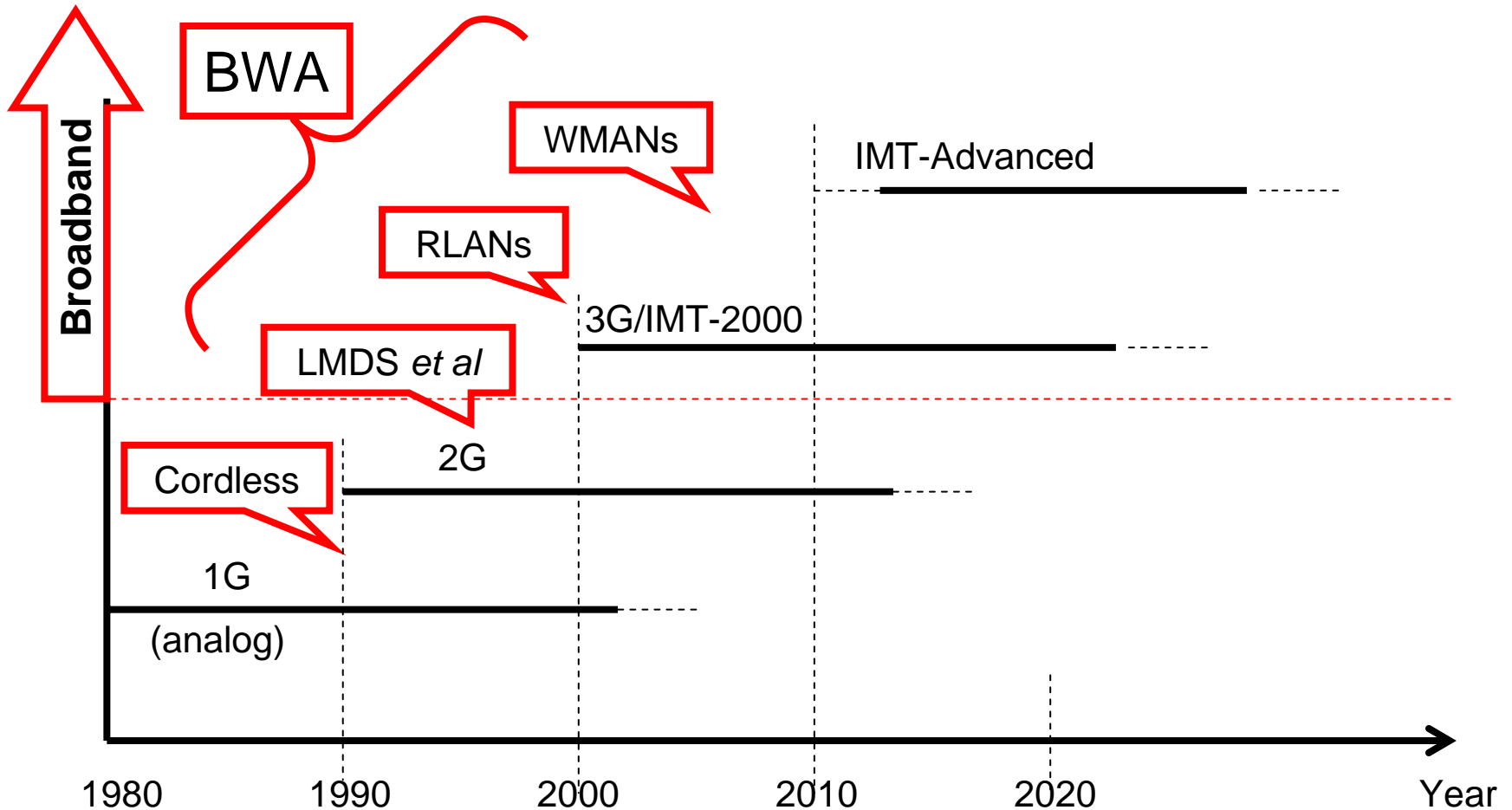




ITU-R WP 8A (Land Mobile Service)

- > Broadband Radio Local Area Networks (RLANs)
 - Standards: [Recommendation ITU-R M.1450](#) ([further information](#))
 - Spectrum: 83.5 MHz at 2.4 GHz and 455 MHz at 5 GHz
- > Proposed draft Recommendation on “**A broadband wireless metropolitan area network radio interface standard[s] for nomadic access systems in the mobile service operating below 6 GHz**” ([Annex 12](#) to [Doc. 8A/277](#))
- > Proposed draft Recommendation on “**Radio interface standards for broadband wireless access systems in the mobile service operating below 6 GHz**” ([Annex 13](#) to [Doc. 8A/277](#))
- > Next meeting of WP 8A: 21-30 March 2006, Geneva

Generations of mobile wireless systems plus other radio systems



Evolving Capabilities of IMT-2000 and Systems Beyond



- > Goal: anytime, anywhere, anyone – the deployment of IMT-2000 systems started in the year 2000
- > IMT-2000 original minimum requirements for radio technology evaluation:
 - 144 kbit/s (for vehicular high speed),
 - 384 kbit/s (for medium speed), and
 - 2048 kbit/s (for indoor, low speed)
- > Currently the standard supports up to 10 Mbit/s, further enhancements are being developed.
- > Research targets for systems beyond IMT-2000 include: 100 Mbit/s for high mobility and 1 Gbit/s for low mobility, for deployment after 2010.

IMT-2000 frequency spectrum requirements



- > For IMT-2000, 749 MHz of spectrum have been identified:
 - 806 - 960 MHz
 - 1 710 - 2 025 MHz
 - 2 110 - 2 200 MHz
 - 2 500 - 2 690 MHz
- > More spectrum may be needed for systems beyond IMT-2000 from the year 2010 onwards; this will be addressed at WRC-07 and preparations are underway in ITU-R WP 8F.
- > Spectrum may need to be shared with other Services and applications, and might not all be available everywhere.

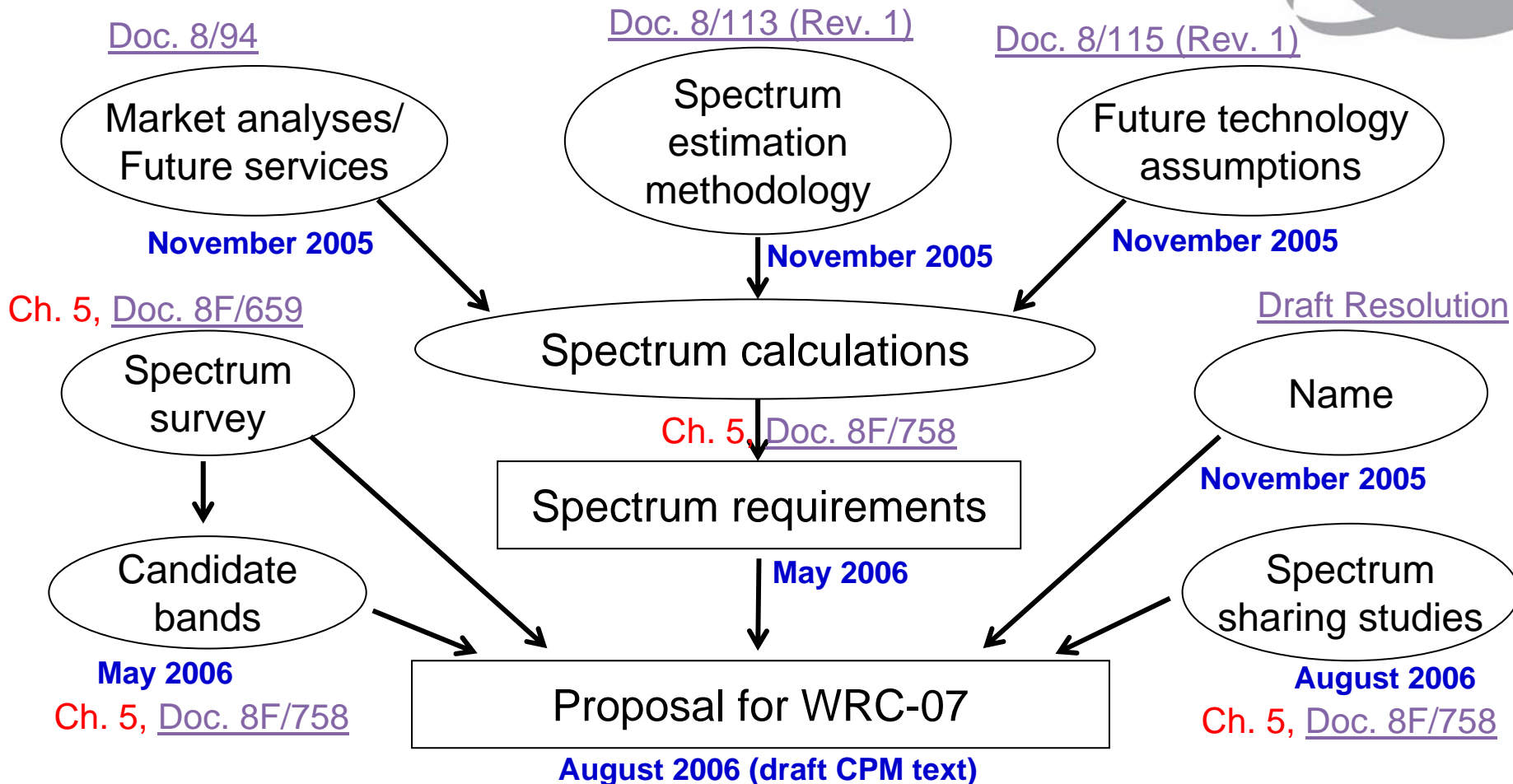


Potential candidate bands in WP 8F

- > The additional potential candidate bands identified in WP 8F include:
 - 410 – 430 MHz
 - 450 – 470 MHz
 - 470 – 806/862 MHz
 - 2 300 – 2 400 MHz
 - 3 400 – 3 600 MHz
 - 3 600 – 4 200 MHz
 - 4 400 – 5 000 MHz

- > Next meeting of WP 8F: 3-10 May 2006, Biarritz, France

ITU-R WP 8F Work Plan



2007-2010: Development of standards for IMT-Advanced

In conclusion...



- > Broadband wireless metropolitan area networks, such as those based on IEEE and ETSI standards, together with the ongoing developments on RLANs, IMT-2000 and systems beyond IMT-2000, will lead to **ubiquitous** broadband wireless access.
- > ITU global spectrum allocations and Recommended standards will enable integrated **global** systems for fixed, mobile, and nomadic broadband applications.

Summary



- > Have shown the organization of ITU-R with emphasis on the most significant groups in support of wireless standards and spectrum.
- > Have described the spectrum activities in ITU-R, in particular the regulatory aspects of the use of the spectrum and the ongoing work to assess the spectrum requirements for IMT-2000 and IMT-Advanced.
- > Have described the standardization activities in ITU-R, in particular those leading to wireless metropolitan area networks and the ongoing development of IMT-2000 and IMT-Advanced.

References



- > ITU Radio Regulations, 2004.
<http://www.itu.int/publications/folderdetails.aspx?lang=e&folder=R-REG-RR-2004&menu=categories>
- > ITU Internet Reports 2003: Birth of Broadband
<http://www.itu.int/osg/spu/publications/sales/birthofbroadband/>
- > ITU-R Wireless Access Systems Portal
<http://www.itu.int/ITU-R/study-groups/was/index.html>
- > ITU-R Handbook on “Fixed Wireless Access”, 2001
<http://www.itu.int/publications/productslist.aspx?lang=e&CategoryID=R-HDB&product=R-HDB-25>
- > Recommendation ITU-R M.1457, “Detailed specifications of the radio interfaces of IMT-2000”, 2003.
<http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1457>
- > Recommendation ITU-R M.1645, “Framework and overall objectives of the future development of IMT-2000 and systems beyond IMT-2000”, 2003.
<http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=R-REC-M.1645>
- > ITU Handbook on “Deployment of IMT-2000 Systems”, 2003.
<http://www.itu.int/itudoc/gs/imt2000/84207.html>

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