>THIS IS **THE WAY**

Wireless Access Standards and Spectrum

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ISART — The Future of Multimedia Communications
7 - 9 March 2006

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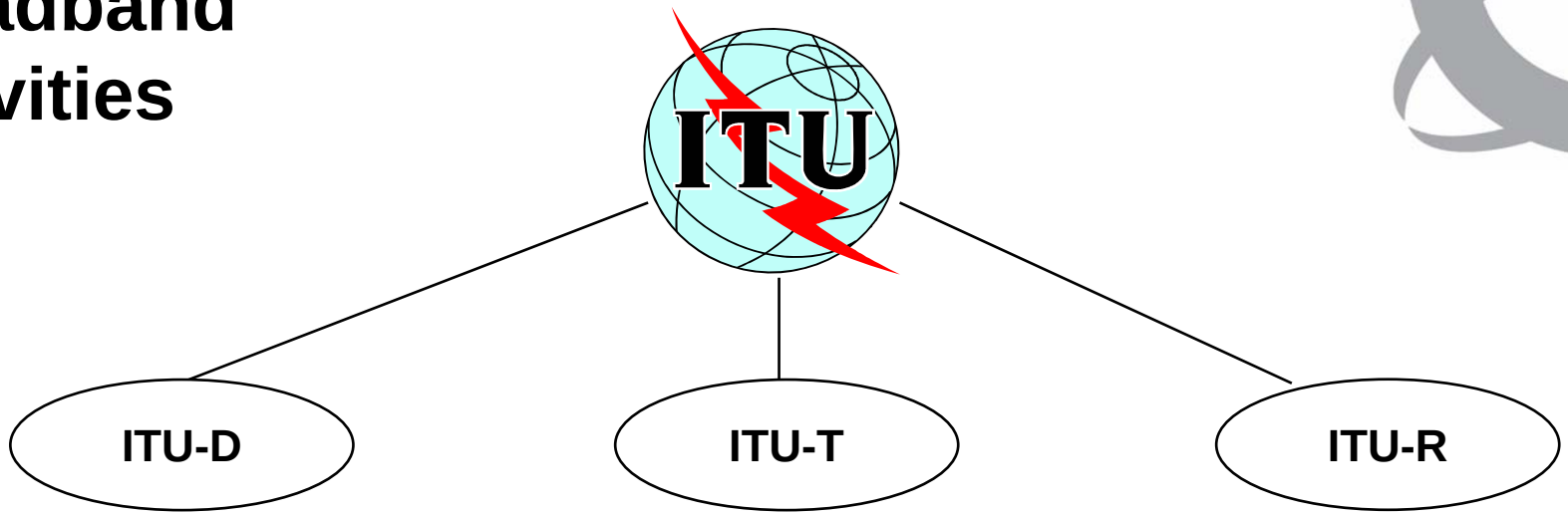
Outline

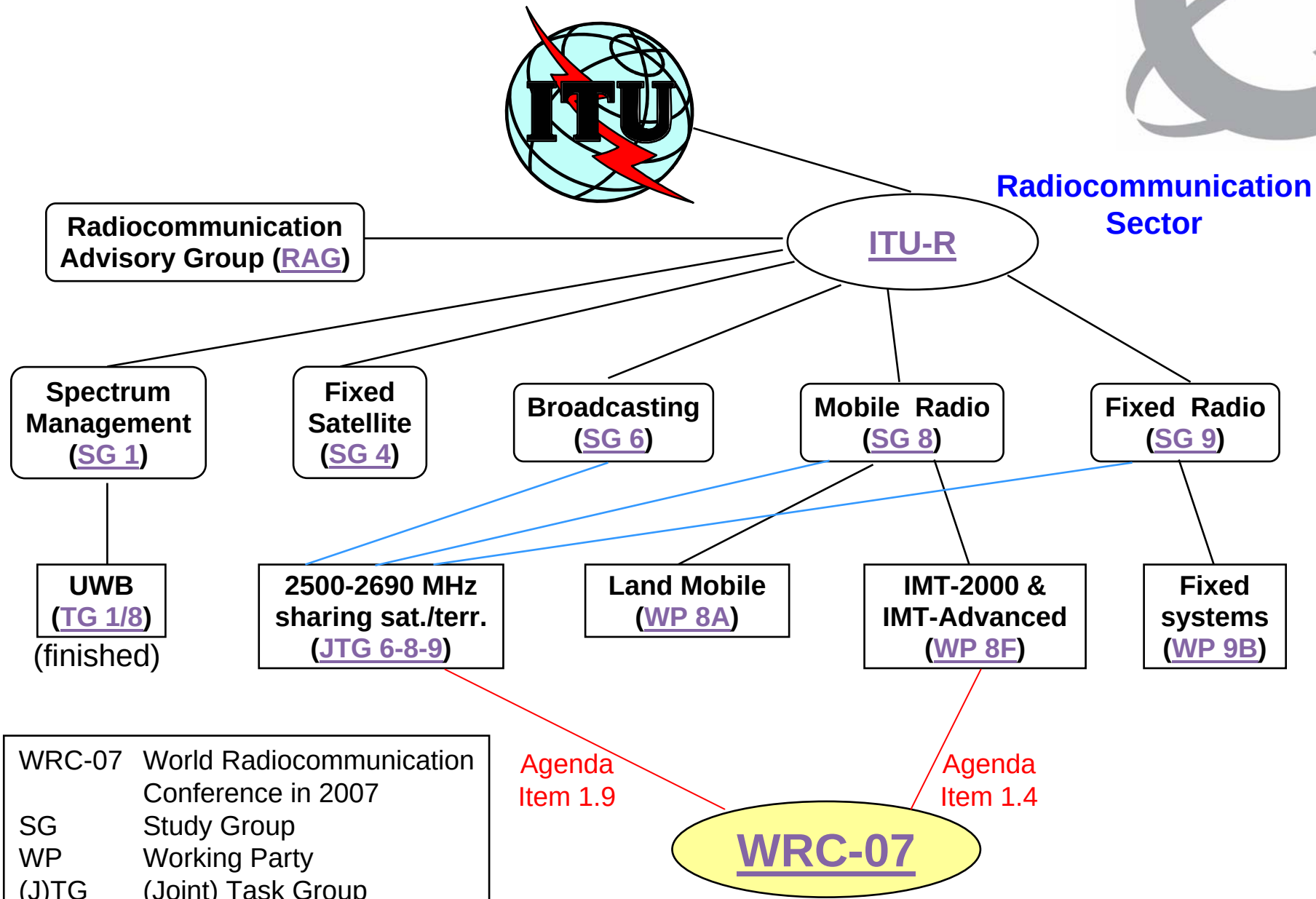
- Broadband Wireless Access (BWA) activities in ITU
- Wireless Metropolitan Area Networks (WMAN)
- Broadband Radio Local Area Networks (RLAN)
- International Mobile Telecommunications - 2000 (IMT-2000) and systems beyond IMT-2000 (IMT-Advanced)
- Summary

International Telecommunications Union Broadband Activities

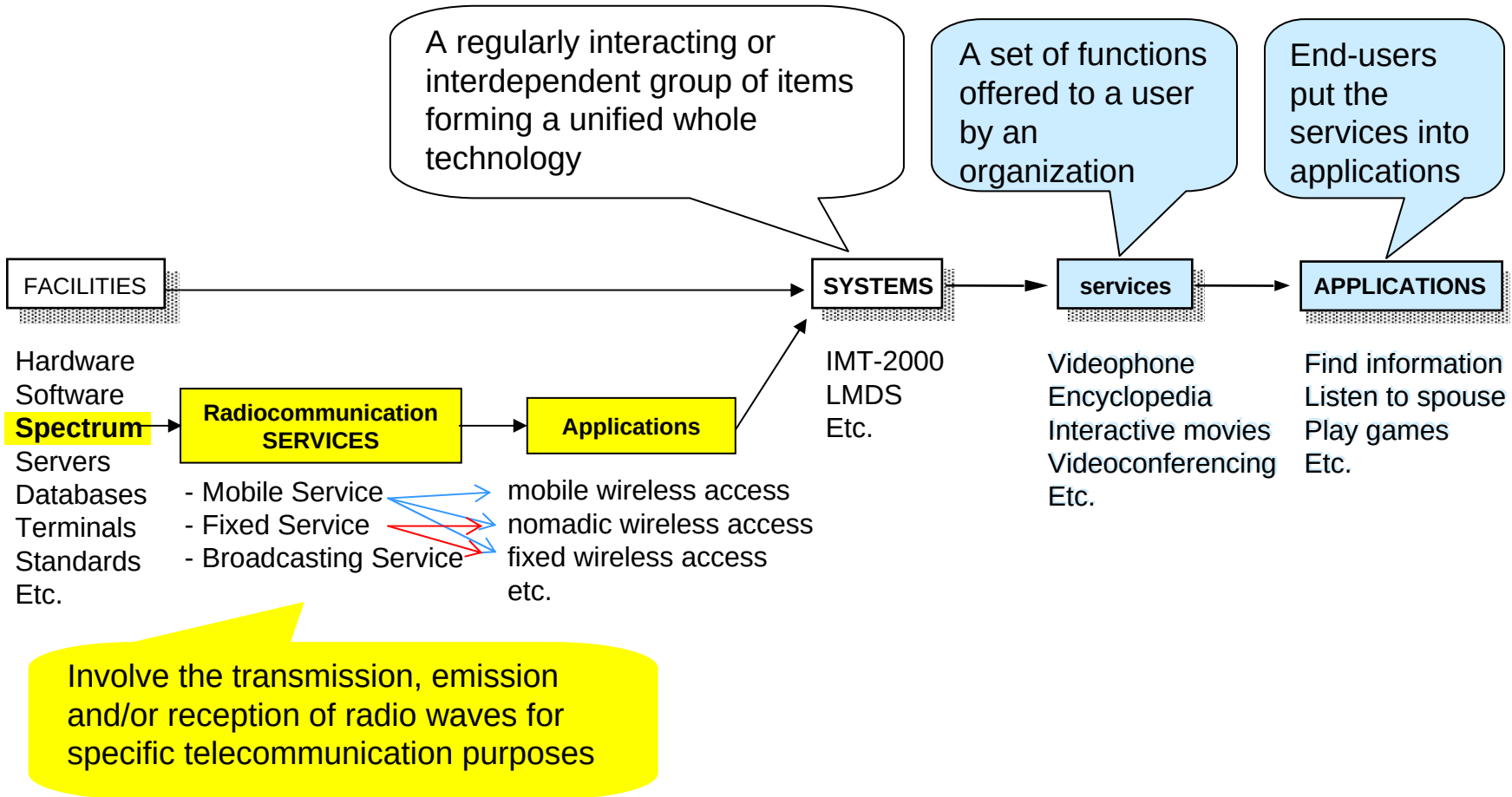


Development Sector	Telecommunication Standardization Sector	Radiocommunication Sector
• Assisting developing countries	• NGNs • Mobile telecomm networks • Broadband cable networks	• WMANs • RLANs • IMT-2000 and beyond
Study Group 2	Study Groups 9, 13 and 19	Study Groups 8 and 9

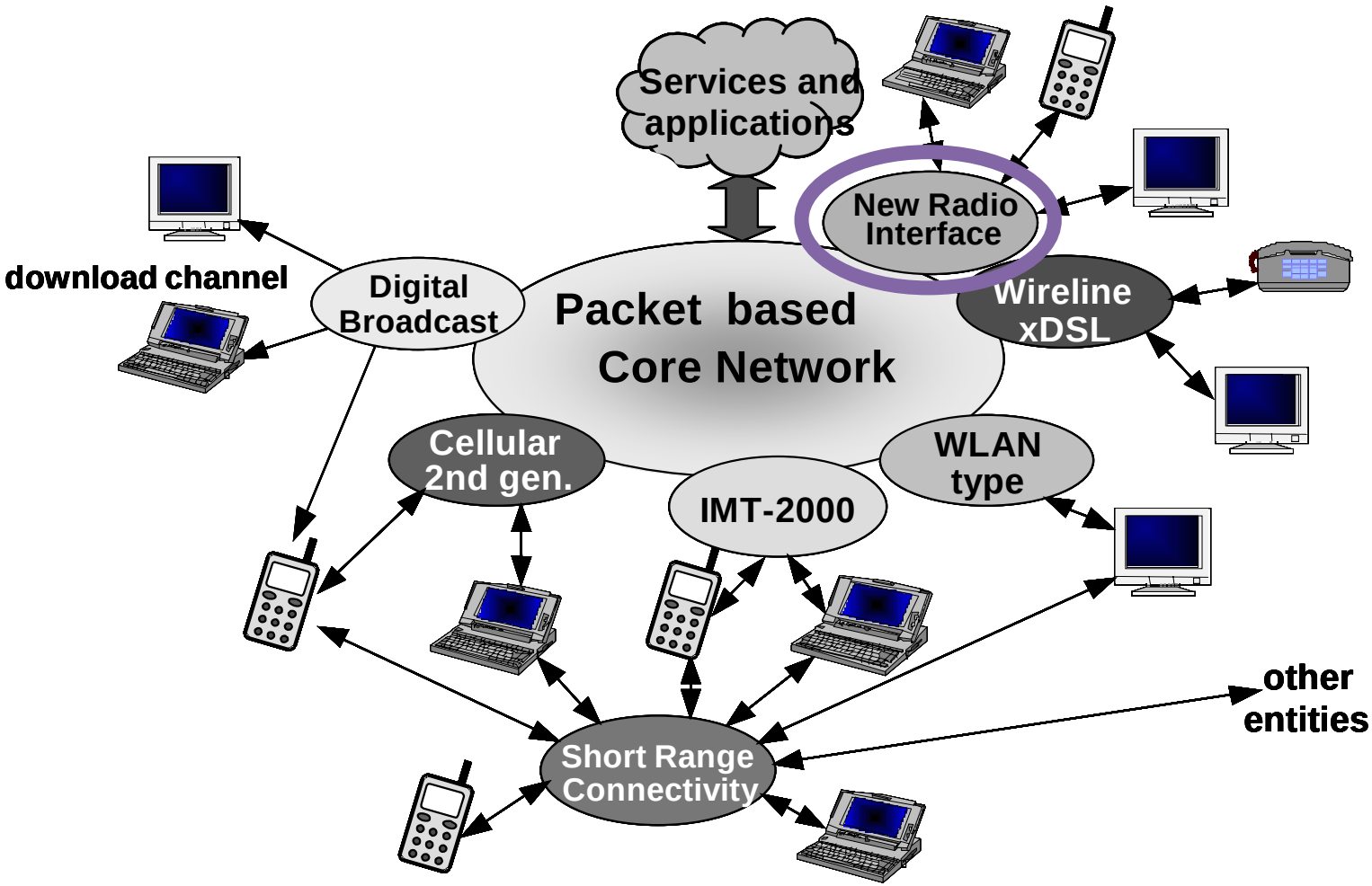
Significant activities in ITU-R



The need for spectrum: Radiocommunication Services enable wireless telecommunication services

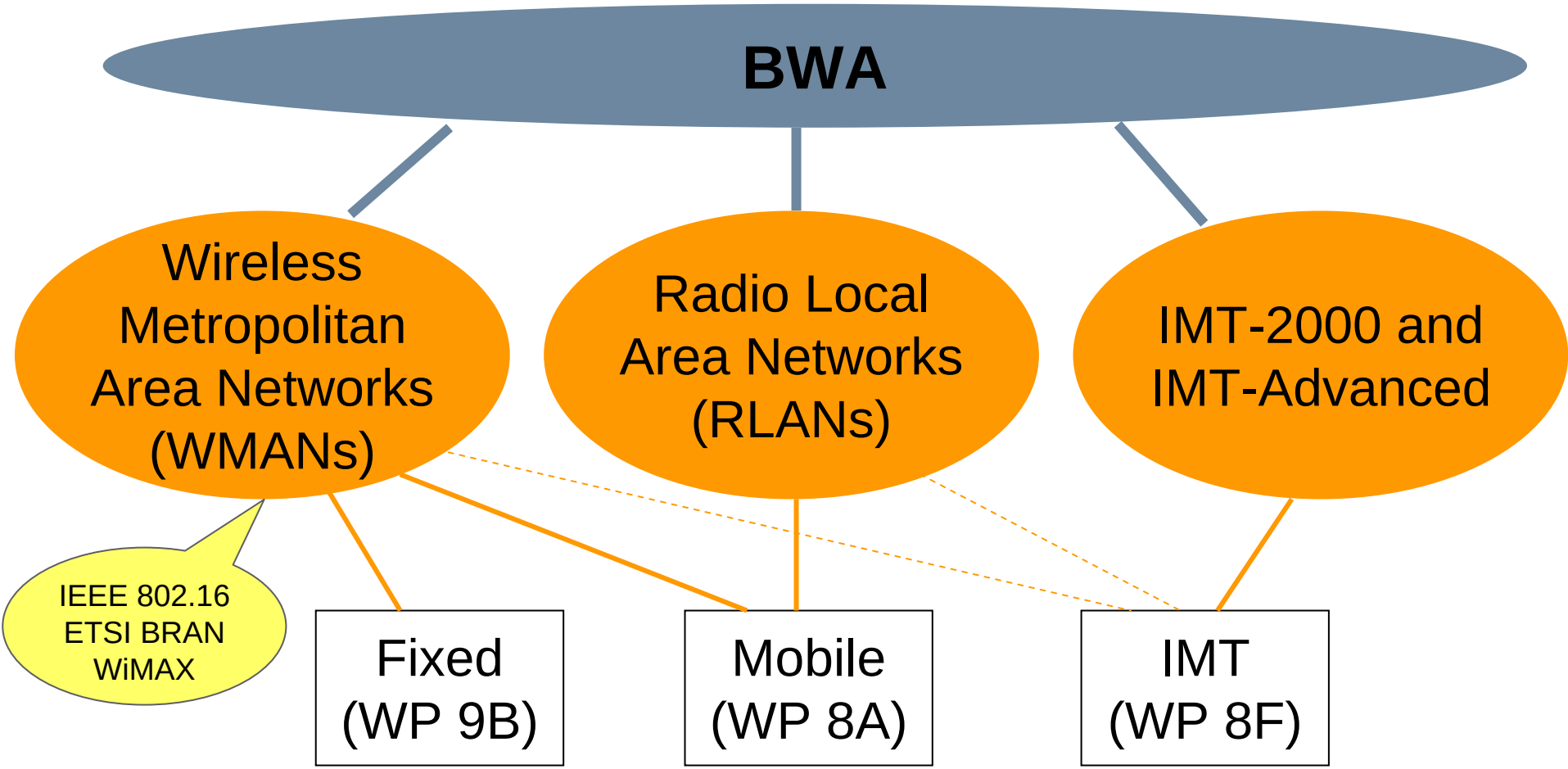


Future network of systems with a variety of access systems



Reference: Recommendation ITU-R M.1645

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



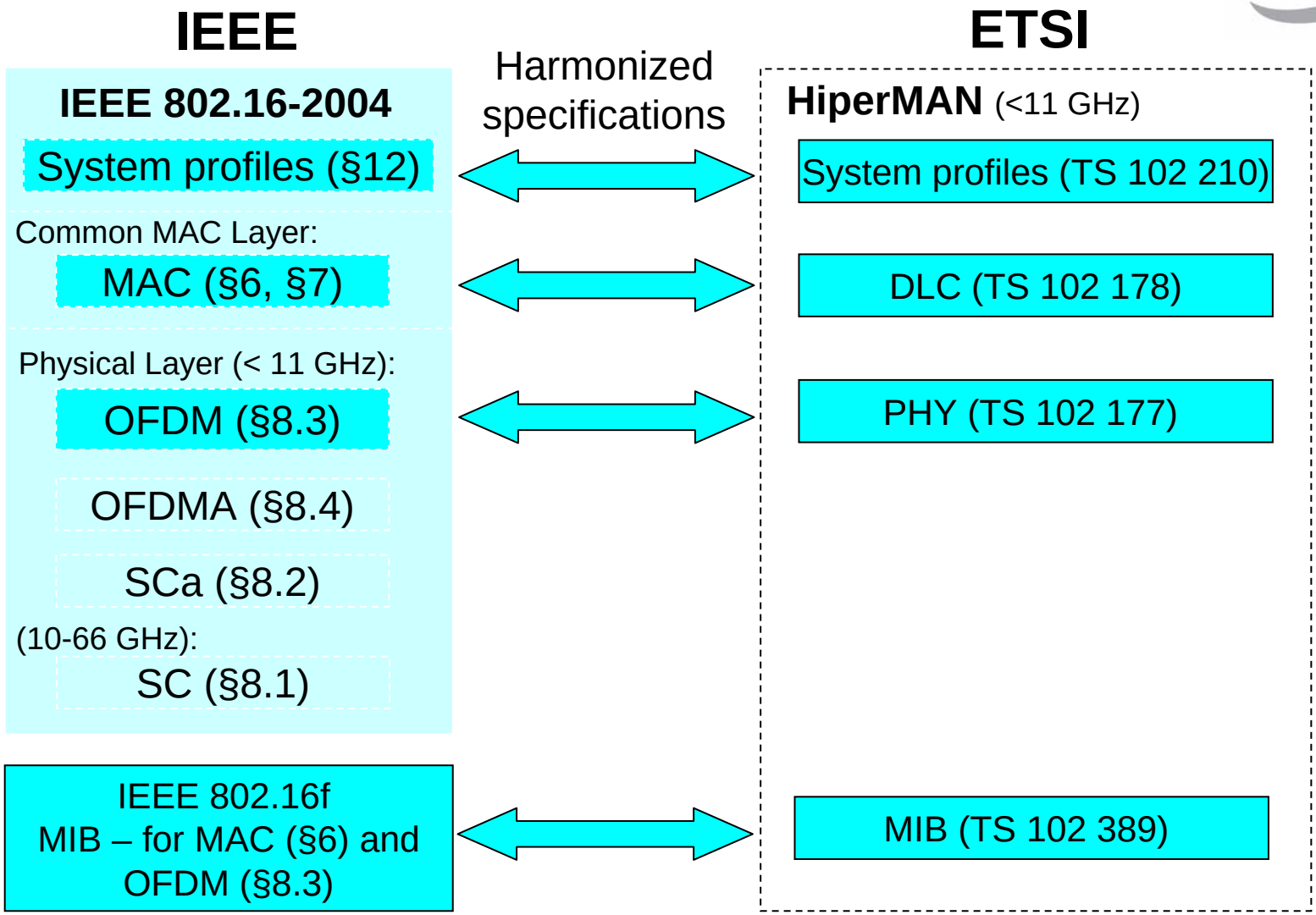
Wireless Metropolitan Area Networks (WMAN)

- 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.

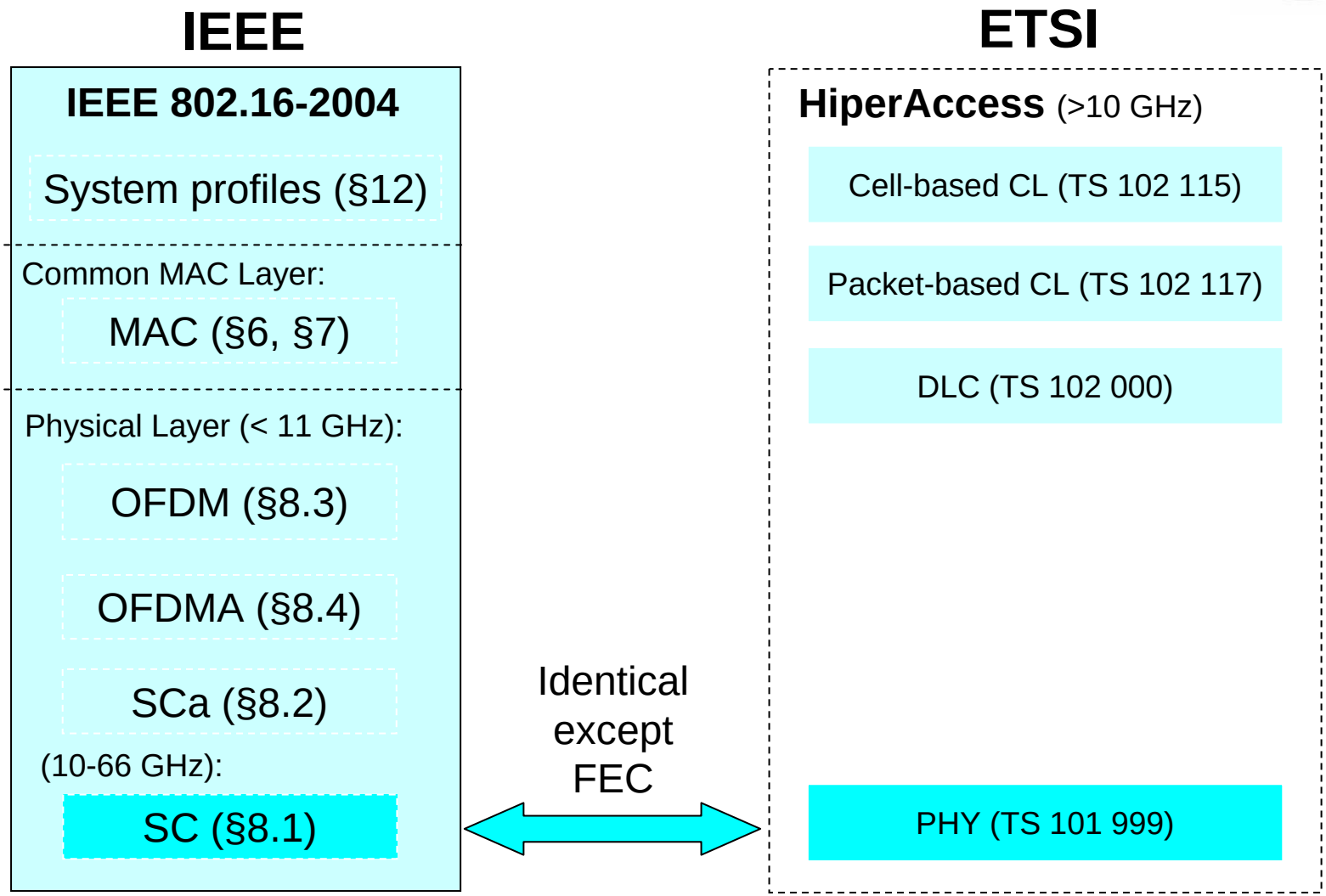
ITU-R WP 9B (Fixed Service)

- 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



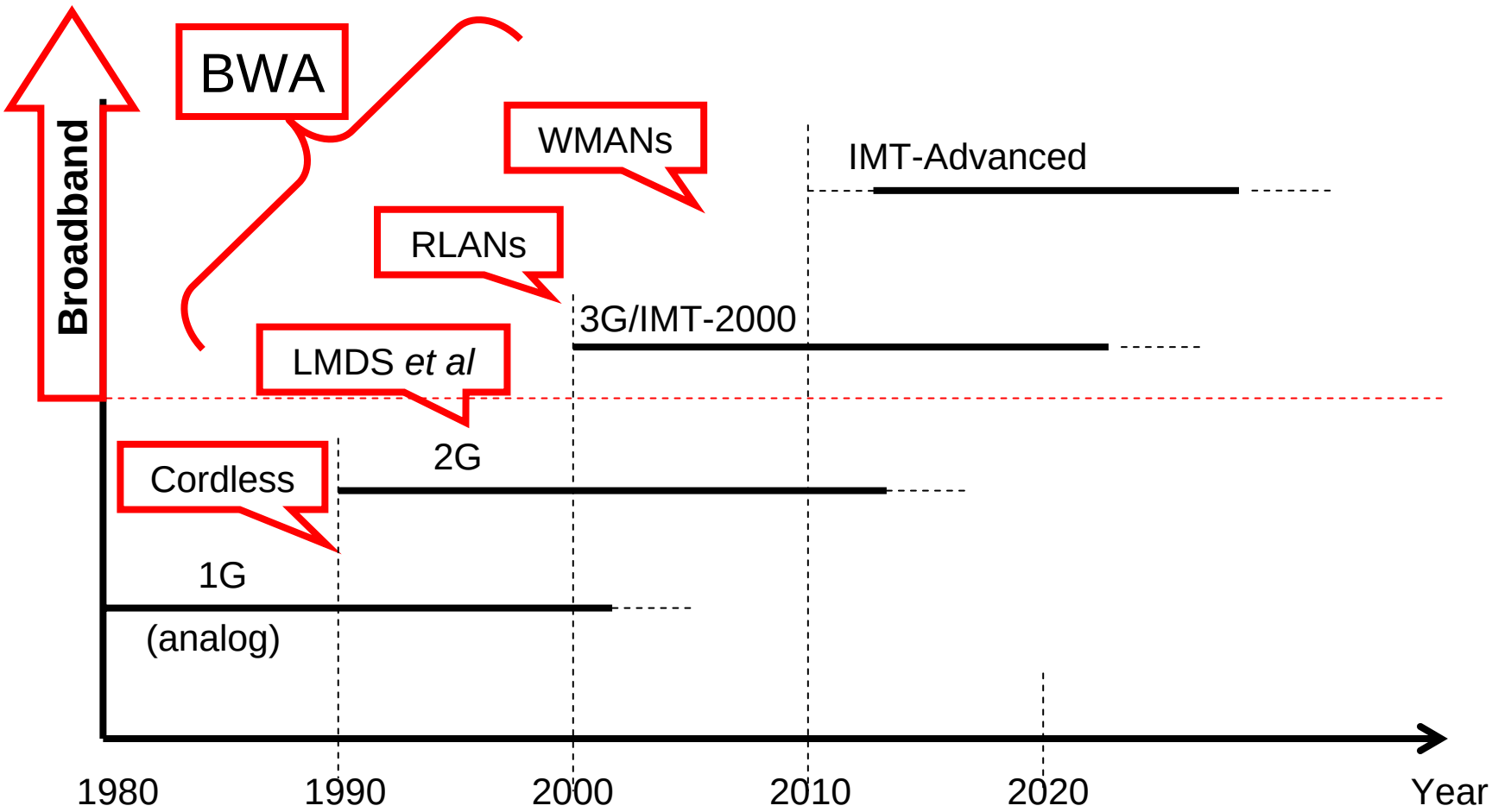
Standards for above 10 GHz



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.

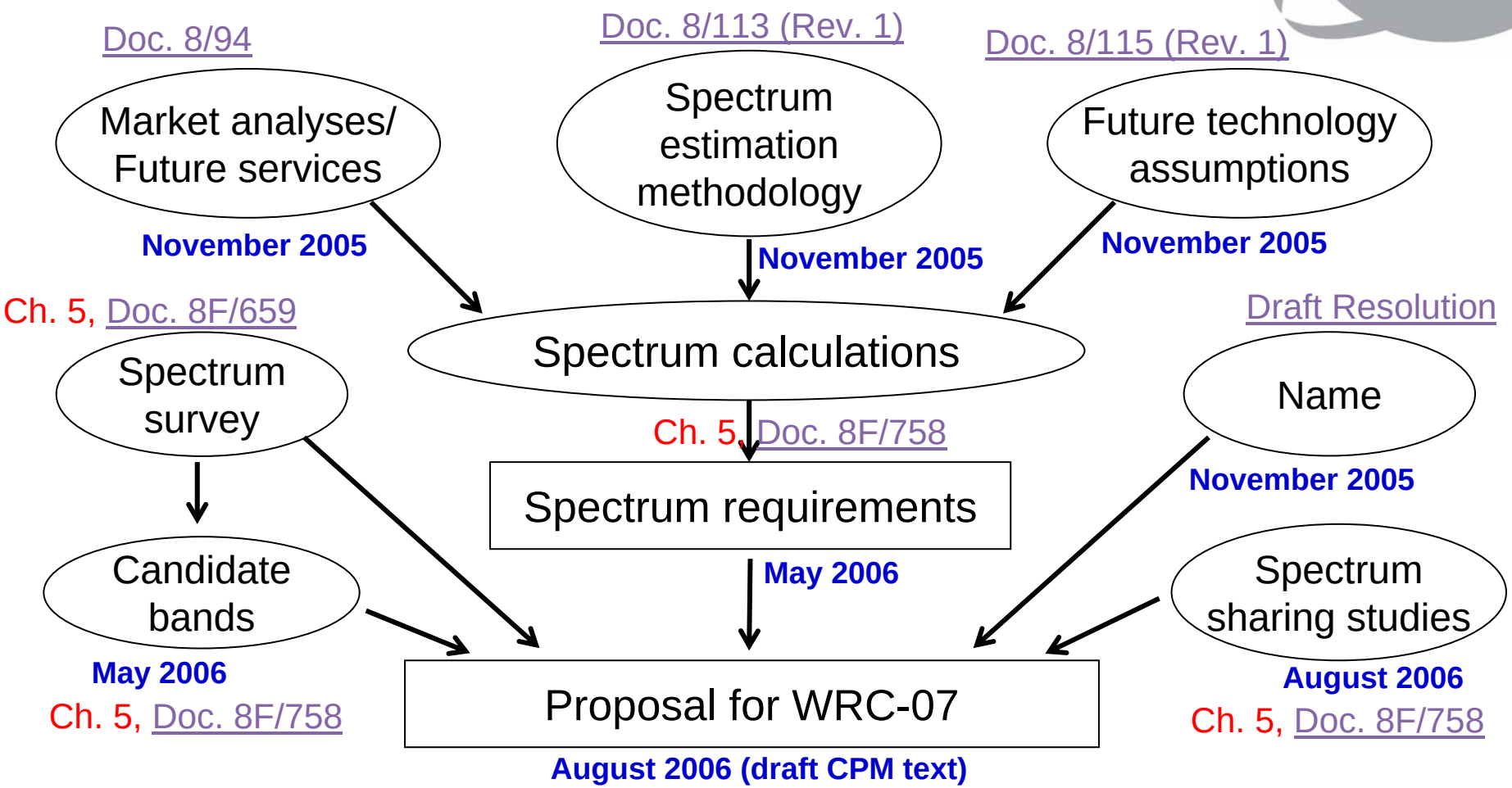
> Spectrum may need to be shared with other Services and applications, and might not all be available everywhere.

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

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- ITU Handbook on “Deployment of IMT-2000 Systems”, 2003.
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