A Factual History of the IEEE – ITU-R Relationship

José Costa
IEEE 802.16 ITU-R Liaison Official

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Timeline – 20th century

Year	IEEE	ITU-R
1997	IEEE Std 802.11-1997	JRG 8A-9B was created to address wireless access standards and spectrum; Principal Rapporteurs: José Costa (WP 8A – Mobile) and Akira Hashimoto (WP 9B – Fixed)
1998		George Fishel (P802.11 Secretary at the time), in his role as Task 4 Rapporteur in JRG 8A-9B, proposed the initial draft for a Recommendation on RLANs, including 802.11 (a and b) (Docs. 8A-9B/47 and 8A-9B/61)
1999	Session #1 of P802.16 WG Appointed an ITU-R Liaison Official. All .16 PARs (§17) show ITU as the body for internationalization of the standards	Proposal to the RAG (RA2000-1/3) to create a series of ITU-R administrative recommendations (A-series) similar to those in ITU-T (no decision).
2000	IEEE became recognized by ITU-T as a qualified SDO in Recommendation A.5	- Rec. ITU-R M.1450-0 (RLANs), app. - Proposed to RA-2000 a draft Decision (Doc. RA2000/PLEN/45) on IEEE collaboration (no decision).

Timeline – 21st century

Year	IEEE	ITU-R
2001 2002	Industry-driven USA contribution to update Recommendation ITU-R M.1450 (8A-9B/49)	- Rec. ITU-R M.1450-1 approved - WRC-03 preparations on 5 GHz for RLANs (Summary of results, see: RLAN: ITU-R Developments)
2003	- IEEE becomes Sector Member of ITU-R (details on next chart) - First contribution to ITU-R (to JRG 8A-9B and WP 8A, 8A/45, on protection criteria for RLANs), now completed by WP 8A and submitted to SG 8 (8/72)	- Rec. ITU-R M.1450-2 approved - ITU-D request (8A-9B/184) on BWA: ITU-R and IEEE initiate collaboration (IEEE L802.16-03/11, IEEE L802.16-03/16) - JRG 8A-9B disbanded (work continuing in WP 8A and WP 9B)
2004	- IEEE Std 802.16-2004 - Contributions to ITU-R: 4A/58, 6-8-9/21, 8A/112, and 9B/57.	- WP 9B requested further work from IEEE and ETSI to show the harmonized standards.
2005	Contributions to ITU-R: 8A/178, 8F/356, 8F/501 (P1900), 9B/100, and 6-8-9/41.	- Draft Rec. ITU-R F.[BWA] completed by WP 9B and submitted to SG 9 (9/51).

IEEE membership in ITU-R

October 2003 – the ITU Finance Committee approved IEEE's request for Sector Membership in ITU-Radiocommunications with waiver of fees.

- Classification: REGINTORG (Regional or International Organization) - *same as ISO*!
- The ITU Finance Committee noted that *"The IEEE is one of the most prestigious worldwide standardization organizations and its contributions to ITU-R through our membership have been quite significant."*
- Allows IEEE to interact with ITU independent of any country
- Terry deCourcelle is the Administrative point of contact
- Technical point of contact:
  - Carl Stevenson (2003-2004)
  - Mike Lynch (2005-).

IEEE and ITU



- Preliminary study shows over 150 ITU-T Recommendations that have referenced IEEE standards, papers, transactions.
- IEEE acquired a site license in 2004 for the ITU Electronic Library
- ITU has similar privileges with the IEL on site in Geneva

Summary of IEEE 802 Participation in ITU-R

- **WP 8A (Land Mobile except IMT-2000)**
  - Presented contributions (8A/45, 8A/112) towards an ITU-R Recommendation on the appropriate protection criteria for RLAN systems (e.g. IEEE 802.11a) operating in the 5 GHz band. WP 8A completed the draft Recommendation at its April 2005 meeting and submitted the draft Recommendation to SG 8 (8/72). The IEEE contributions were well-received - expect the Draft New Recommendation to be adopted by SG 8 at its November 2005 meeting.
  - Presented contributions (8A/178, 8A/223 , at sequential meetings) proposing an ITU-R Recommendation pointing to IEEE P802.16e – aimed at international acceptance of IEEE 802.16. Work is in progress.
- **WP 8F (IMT-2000 and systems beyond)**
  - Presented contribution (8F/356) providing forecasts on services and applications provided by IEEE 802.16 systems to assist WP 8F in their spectrum estimation for systems beyond IMT-2000.
- **WP 9B (Characteristics of systems in the Fixed service)**
  - Presented contributions (9B/57 and 9B/100, at sequential meetings) proposing an ITU-R Recommendation pointing to IEEE Std 802.16-2004 – aimed at international acceptance of IEEE 802.16. Strong collaboration with ETSI during the development of the IEEE contributions and the work in WP 9B. WP 9B completed the draft Recommendation at its April 2005 meeting and submitted it to SG 9 for adoption (9/51).
- **JTG 6-8-9 (Spectrum sharing in 2500-2690 MHz between terrestrial and satellite; preparations for WRC-07 Agenda Item 1.9)**
  - Presented contributions (6-8-9/21 and 6-8-9/41 at sequential meetings on the characteristics of IEEE 802.16 for sharing studies, as provided by industry. Further proposed a contribution expecting contributions from industry groups (L80216-05_044r1.doc or 6-8-9/52)
- **WP 4A (Fixed Satellite)**
  - Presented contribution (4A/58) to WP4A aimed at attempts from the satellite community that could result in the imposition of additional constraints on the use of the band 5150-5250 MHz by IEEE 802.11a systems. Work is in progress.

List of IEEE Contributions to ITU-R

Number	Date	Source	Title
4A/58	2004-04-07	IEEE	Comments on "a preliminary draft revision to Recommendation ITU-R S.1427" - Methodology and criterion to assess interference from radio local area (RLAN) transmitters to non-GSO MSS feeder links in the band 5 150-5 250 MHz
6-8-9/52	2005-08-09	IEEE	Characteristics of incumbent terrestrial systems in the 2 500-2 690 MHz band
6-8-9/41	2005-01-17	IEEE	Characteristics of IEEE 802.16 systems in 2 500-2 690 MHz
6-8-9/21	2004-03-19	IEEE	Characteristics of wireless metropolitan area networks
8A/242	2005-09-12	IEEE	Institute of electrical and electronics engineers (IEEE) - Working document towards a preliminary draft new report software defined radio in the Land Mobile Service
8A/223	2005-08-09	IEEE	Proposed amendments to Annex 15 to Doc. 8A/202
8A/178	2005-04-01	IEEE	Proposed working document towards a preliminary draft new Recommendation ITU-R M.[8A/BWA] - Radio interface standards for broadband wireless access systems in the mobile service operating below 6 GHz
8A/112	2004-08-31	IEEE	Proposed revision to working document toward a PDNR - Protection criteria for wireless access systems, including radio local area networks, operating in the mobile service in the bands 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz
8A/109	2004-08-31	IEEE	Proposed amendments to working document towards PDNR ITU-R F.[9B/BWA] - Recommended standards for broadband wireless access
8A/45	2003-11-18	IEEE	Radio local area network protection criteria
8F/501	2005-05-30	IEEE	Information on IEEE P1900 purpose, plans, progress and relevance to the work of ITU-R WP 8F
8F/356	2005-01-04	IEEE	Response to ITU-R WP 8F Questionnaire on the services and market for the future development of IMT-2000 and systems beyond IMT-2000
9B/57	2004-08-31	IEEE	Proposed amendments to working document towards PDNR ITU-R F.[9B/BWA] - Recommended standards for broadband wireless access

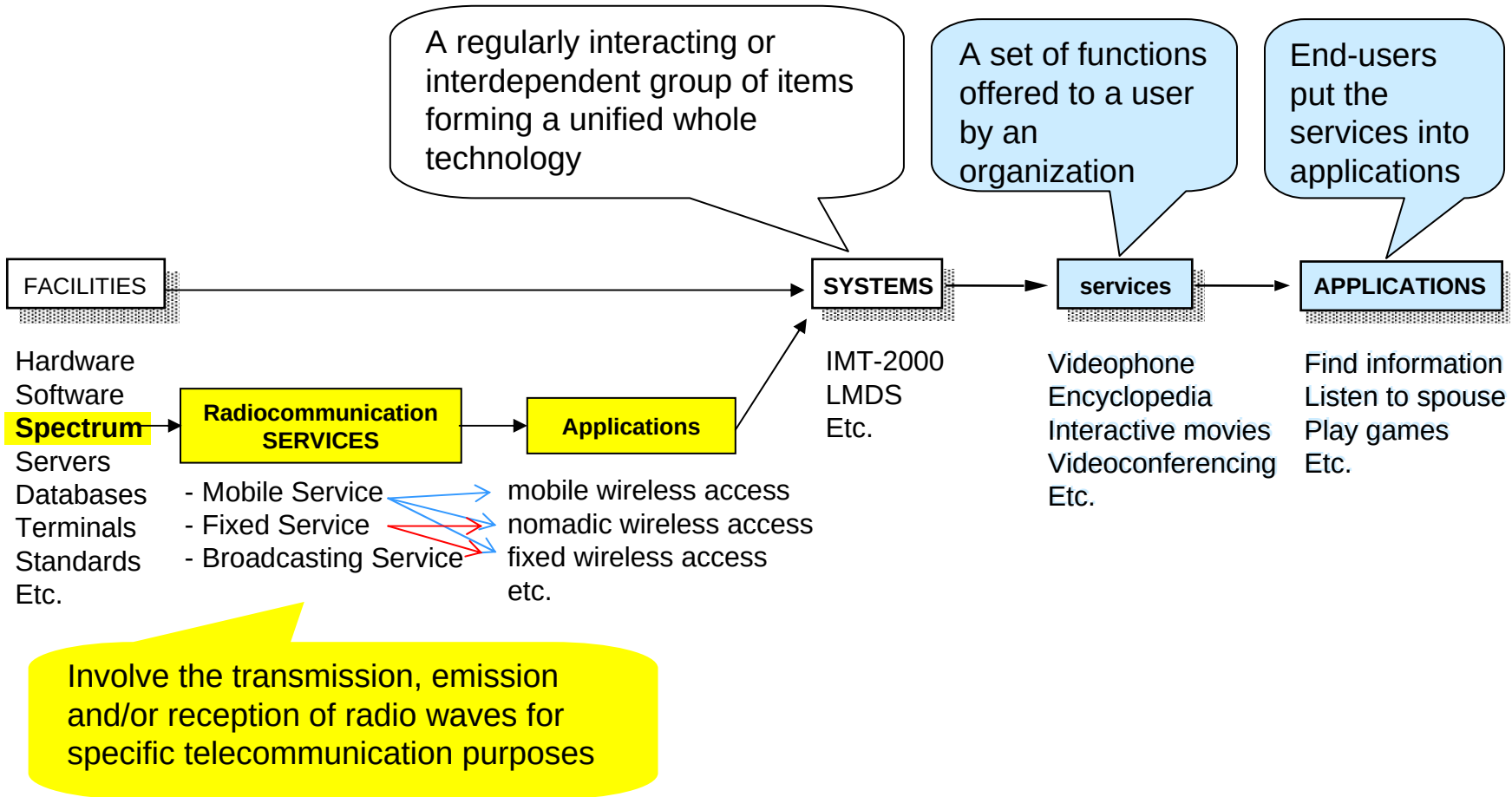
What is ITU-R?

The **ITU Radiocommunication Sector** specializes in facilitating international collaboration to ensure the rational, equitable, efficient and economical use of the radiofrequency spectrum and satellite orbits, by:

- Holding **World and Regional Radiocommunication Conferences** to expand and adopt **Radio Regulations** and **Regional Agreements** covering the use of the radio-frequency spectrum;
- Establishing **ITU-R Recommendations**, developed by **ITU-R Study Groups (SGs)** in the framework set by Radiocommunication Assemblies, on the technical characteristics and operational procedures for radiocommunication services and systems;
- Coordinating endeavours to eliminate harmful interference between radio stations of different countries;
- Maintaining the Master International Frequency Register, based on inputs from administrations; and
- Offering tools, information and seminars to assist national radio-frequency spectrum management.

The need for spectrum:

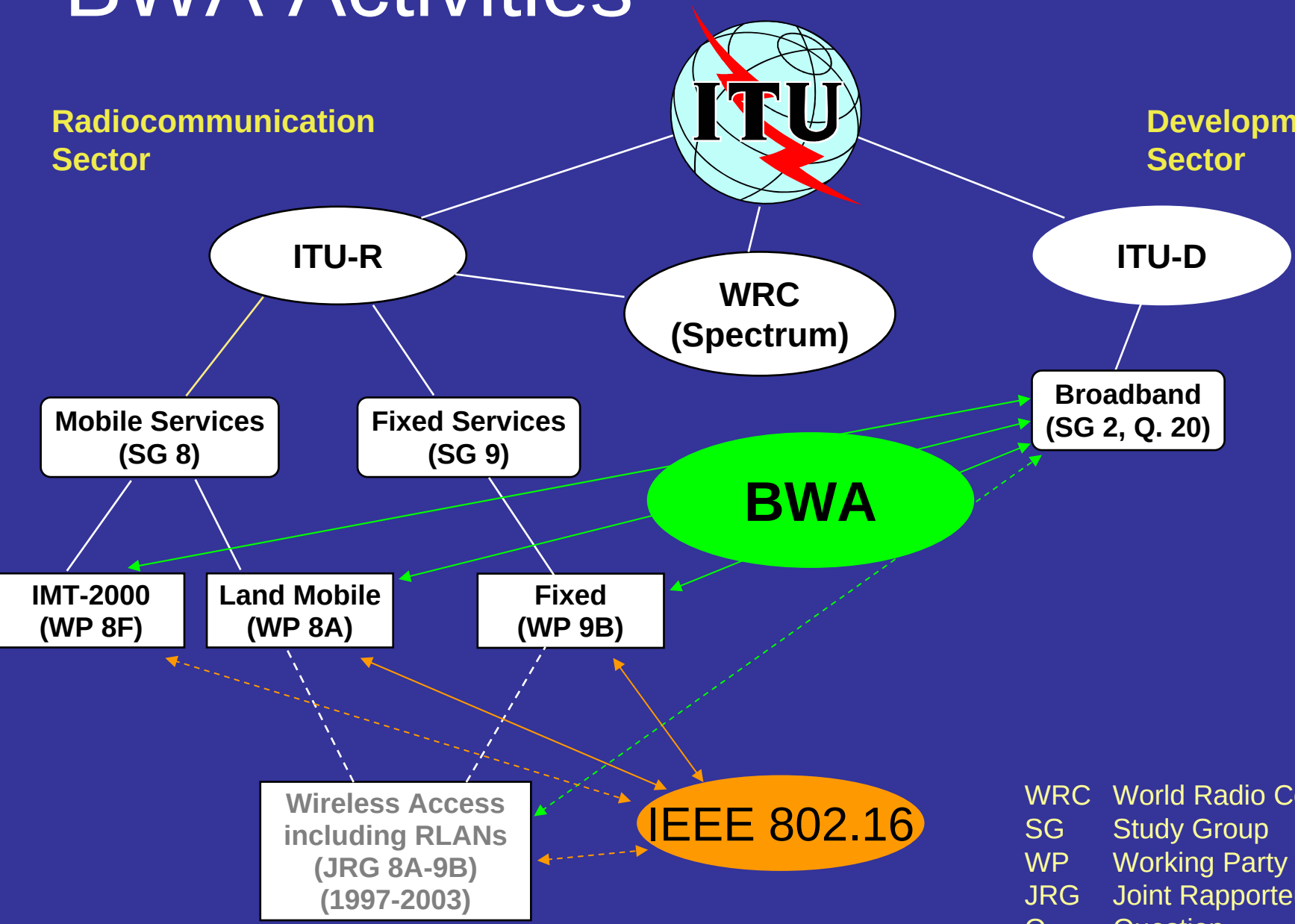
Radiocommunication Services enable wireless telecommunication services



ITU-R Study Groups and equivalent

SG 1 Spectrum management (Chair: T. Jeacock, UK)
SG 3 Radiowave propagation (Chair: D.G. Cole, Australia)
SG 4 Fixed-satellite service (Chair: V. Rawat, Canada)
SG 6 Broadcasting services (Chair: A. Magenta, Italy)
SG 7 Science services (Chair: R.M. Taylor, USA)
SG 8 Mobile, radiodetermination, amateur and related satellite services (Chair: C. Van Diepenbeek, The Netherlands)
SG 9 Fixed service (Chair: V.M. Minkin, Russia)
CCV Coordination Committee for Vocabulary (Chair: J.-P. Huynh, France)
CPM Conference Preparatory Meeting (Chair: K. Arasteh, Iran)
SC Special Committee on regulatory/procedural matters (Chair: F. Rancy, France)
RAG Radiocommunication Advisory Group (Chair: B. Gracie, Canada)
CVC Chairmen and Vice-Chairmen Meetings (Chair: V. Timofeev, Director BR)

BWA Activities



WRC	World Radio Conference
SG	Study Group
WP	Working Party
JRG	Joint Rapporteur Group
Q	Question

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.
  - Preliminary draft new Recommendation for WMANs originally developed in ITU-R 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.
  - There is another relationship between IEEE 802.16 and ITU-T Study Group 9 (broadband cable networks) to investigate the synergism between IEEE 802.16 and cable networks.

ITU-R WP 9B (Fixed Service)

- Preliminary Draft New Recommendation ITU-R F.[9B/BWA]:
  - "Radio interface standards for broadband wireless access systems in the fixed service operating below 66 GHz"
  - Includes the IEEE WirelessMAN standards (IEEE 802.16) and ETSI HiperMAN standards (ETSI BRAN).
- Developed mainly by contributions from ETSI and IEEE, showing the harmonized standards
- WP 9B approved the draft Recommendation for submission to Study Group 9 (1-2 December 2005).

ITU-R WP 8A (Land Mobile Service)

- Broadband Radio Local Area Networks (RLANs)
  - Standards: Recommendation ITU-R M.1450
  - Spectrum: 83.5 MHz at 2.4 GHz and 455 MHz at 5 GHz
- Proposed (IEEE) draft Recommendation "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 and Doc. 8A/223):
  - enhancements to the IEEE Standard 802.16-2004 (P802.16e)
- Proposed (USA) draft Recommendation: "Radio interface standards for broadband wireless access systems in the mobile service operating below 6 GHz" (Annex 13 to Doc. 8A/277)
  - includes P802.16e and several other standards from ATIS and TIA.
- Next meeting of WP 8A: 21-30 March 2006, Geneva (deadline for contributions 13 March 2006, 16:00 hours UTC)