

# **Main results of WRC-2000**

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# Plan

- Some statistics
- Main results
- The next steps...

# Some Statistics

- 4 weeks in Istanbul
- 2369 delegates,
- 544 documents x 3 languages,
- 18000 pages were treated (all 3 languages),
- 20 million photocopies,
- 49 new Resolutions,
- 31 revised Resolutions
- 2 revised Recommendations

# IMT-2000 third generation mobile systems

- 2 billion mobile users by 2010
  - Mobile data services
  - E-commerce
  - Wireless Internet access
- 160 MHz required on a world wide basis
- Problems with existing systems
  - Broadcasting
  - Radionavigation, radars, etc.

# IMT-2000 third generation mobile systems

- Terrestrial component - Three new global bands:
  - 806-960 MHz
  - 1710-1885 MHz
  - 2500-2690 MHz
- Satellite component
  - 1525-1544MHz, 1545-1559MHz, 1610-1626.5MHz, 1626.5-1645.5 MHz
  - 2483.5-2500MHz, 2500-2520 MHz, 2670-2690 MHz

# IMT-2000 third generation mobile systems

- Non-exclusive
- Flexibility of use by Administrations
- Evolution for 2<sup>nd</sup> generation systems
- Provides stable basis for industry
- Enables IMT-2000 services by satellite systems and the use of HAPS

# Sharing Between GSO and NGSO

- GSO - Geostationary Orbits
- NGSO – Non Geostationary Orbits
- Intense competition for:
  - high speed Internet
  - corporate intranets/extranets
  - e-commerce
  - videoconferencing
  - interactive services

# Sharing Between GSO and NGSO

- WRC-97
  - Authorized sharing with existing services
  - Introduced provisional power limits
  - Requested sharing studies
- Main difficulty:
  - balance the need to protect GSO networks while allowing new non-GSO systems to operate without undue constraints

# Sharing Between GSO and NGSO

- Compromise:
  - limits on earth stations of GSO networks
  - power limits on non-GSO systems
- ...13.75-14 GHz
  - Shared since 1992 by the FSS, the radiolocation and the radionavigation services
  - Antennas must be at least 4.5 meters
  - Introduction of VSAT

# Re-Planning of the Broadcasting-Satellite Service

- Regions 1 & 3 planned in 1977
- ~5 analog channels for national coverage
- More spectrum required for new services
- Requirements for new countries
- However, re-planning not supported by all
  - Technical problems
  - Existing systems
  - National sovereignty issues

# Re-Planning of the Broadcasting-Satellite Service

- Last minute agreement on:
  - Capacity: 10 ch.(Region 1) / 12 ch. (Region 3)
  - Relaxed planning criteria
  - Protection of existing terrestrial and space services
- Excellent work by BR planning team
- Plans unanimously adopted by Plenary
- New sharing studies before WRC-03

# Global Satellite Positioning Systems

- Eight million receivers in use
- Annual market is worth billions of dollars
- Hundreds of thousands jobs in coming years
- Sharing with safety-critical missions to civil aviation and ships at sea

# Global Satellite Positioning Systems

- New spectrum identified for:
  - Second generation GPS / GLONASS
  - New Galileo
- New allocations effective 3 June 2000 :
  - 1164-1215 MHz, 1260-1300 MHz and 5010-5030 MHz
  - space-to-space: 1215-1260 MHz and 1559-1610 MHz

# Global Satellite Positioning Systems

- 1559-1610 MHz
  - FS will continue with primary status until 2005
  - and secondary up to 2015 and then will be suppressed
  - Some countries insisted on primary status until 2010

# Quiet zones for Radioastronomy

- Concerns about interference with radio astronomy and other deep-space research services
  - passive monitoring
  - Radiotelescopes
  - Earth-satellite exploration and space research
- Measures have been adopted for better protection
- New allocations in several bands
- Use of spectrum above 275 GHz

# High-density fixed systems

- New wireless point-to-point and point-to-multipoint technologies
  - Fixed Wireless Access (FWA)
  - Local Multipoint Distribution Service (LMDS )
- Cost-effective, reliable metropolitan links
- Overcoming the risk of a local-loop bottleneck for broadband services

# High-density fixed systems

- Potentially lower costs for developing countries
- Way to meet rapidly the pent-up demand in densely populated areas

# High-density fixed systems

- Worldwide allocations to reduce costs:
  - Bands 31.9-33.4 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz
  - Bands 37-40 GHz and 40.5-43.5 GHz were added to footnote S5.547
- Difficulties on agreeing on rules governing the shared use of with other existing and future services

# Administrative due diligence

- Overfiling of satellite notices (paper satellites) results in increased coordination costs and large ITU processing backlog
- WRC-97 decision:
  - identity of the satellite network
  - the name of the operator, name of the satellite
  - the name of the space manufacturer for each satellite
  - the date of execution of the contract, contractual "delivery window"
  - number of satellites procured, name of the launch vehicle provider, date of execution of the contract
  - a launch or in-orbit delivery window and the name of the launch vehicle

# Administrative due diligence

- Effect of WRC-97 decision not yet apparent
- Too early to agree on Financial Due Diligence
- Plenipotentiary Conference to study report on impact of Administrative Due Diligence

# Cost-recovery for satellite filings

- PP98 approved cost-recovery
- Council in 99 agreed on the methodology and fee schedules
- WRC-2000 considered regulatory consequences of non-payment of such charges
- The date of entry into force of the new regulations will be set by PP02

# **Other Allocation Issues**

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# Footnotes (Resolution 26)

- Several countries made proposal to withdraw from or suppress footnotes that were no longer needed
- However, in strict application of Resolution 26, the Conference did not accept proposals made by a number of countries to be added to certain footnotes

# High Altitude Platform Stations (HAPS)

- Extended time frame for Res. 122 in 47 GHz band
- New studies within the fixed service in the 18-32 GHz range
- New studies for sharing within fixed and mobile services in bands above 3 GHz
- Non-interference, non-protection basis within the fixed service in the bands 27.5-28.35 GHz and 31.0-31.3 GHz for certain Region 3 countries

# MSS in the bands used by GPS

- No possible sharing in band 1559-1610 MHz
- Studies of the feasibility of allocating this band to MSS
- Resolutions 220 and 213 were suppressed

# Generic MSS

- Generic allocation for MSS has been preserved
- Resolution 222 (COM5/22) answers to some concerns of the civil aviation and GMDSS communities

# MSS below 1 GHz

- No further allocation to MSS below 1 GHz
- WRC-03 to re-examine the question

# Allocations above 71 GHz

- Allocations above 71 GHz to correspond to the needs of the Earth exploration-satellite service (EESS), the space research service (SRS) and the radio astronomy service (RAS)
- Up to 1000 GHz

# EESS in 18.6-18.8 GHz

- Worldwide allocation for the Earth exploration-satellite (passive) and space research (passive) services in the band 18.6-18.8 GHz
- Secondary status in certain Arab countries

# **Other regulatory issues**

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# Review of spurious emissions for space services

- Revisions of Appendix S3 and Recommendation 66 were adopted
- Further studies will be conducted on regulatory measures concerning the protection of passive services

# Coordination area around satellite Earth stations

- Revisions to ApS7 based on the new calculation methods taken from Recommendation ITU-R SM.1448

# Review of HF spectrum

- Encourage the use of digital selective calling instead of calling by radiotelephony
- Administrations are encouraged to use national working frequencies for routine calling
- New international routine calling frequencies for 12 and 16 MHz were also identified by changes to Article S52 and ApS17

# Satellite Earth stations on-board vessels

- Fixed-satellite service networks in the bands 3700 – 4200 MHz and 5925 – 6425 MHz
- Wideband services to cruise liners, passenger ships, naval vessels, seismic research, petroleum vessels and other deep draft vessels
- Resolution 82 (COM4/3) / two annexes contain provisional general and technical guidelines to be applied to ESVs

# Digital maritime VHF technology

- Resolution 342 was modified with a view to support the development of a new worldwide technology
- Conversion of duplex channels 02 to 05, 22 to 26, 61 to 65 and 82 to 86 to simplex channels for initial testing

# Rule of Procedure on S23.13

- Addition of 3 new Articles to provision S23.13 (S23.13A, S23.13B and S23.13C)
- Exclude a country from the service area by redefining it (if necessary with new test points) without adversely affecting the rest of the service area
- Lack of response will not be interpreted as an agreement or disagreement

# Coordination of non-planned services with ApS30/30A Plans

- Articles 6 and 7 now only point at Articles S9 and S11 to effect the coordination and notification of the non-planned services in the bands covered by Appendices S30 and S30A
- Proposals to correct the identified deficiencies have been adopted by the Conference

# Incorporation by reference

- Shall apply only to those references intended to be mandatory
- Resolutions 27 and 28 concerning the use of incorporation by reference and procedures for updating references have been comprehensively revised

# Radio Regulations Board - Rules of Procedures

- Conference decided not to change the provisions of Article S13 except to state that the minutes of the RRB should normally be available one month before the next meeting of the RRB

# Resolution 86

## Satellite procedures

- Extraordinary measures were needed to enable the elimination of the backlog
- Continued viability and credibility of the ITU satellite coordination process was at stake
- A few measures were finally adopted

# Resolution 86

## Satellite procedures

- Keep API but restrict any changes to the orbital position to  $\pm 12$  degrees without restarting the API
- Separate the up and down link calculations under App. S8
- BR to identify the specific networks likely to be affected

# Resolution 86

## Satellite procedures

- Use a coordination arc concept to identify coordination requirements for the FSS in certain C, Ku and Ka bands
- Mandatory electronic filing (with some restrictions for developing countries, until 3 June 2001) as of 3 September 2000

# Resolution 86

## Satellite procedures

- Into force 3 September 2000
- Developing countries making no more than three filings a year will however be able to continue to submit filings on paper until 3 June 2001

# **Resolution 87 – Role of notifying Administrations**

- Agreed not to modify the Radio Regulations but to add some explanatory text in the minutes of the Plenary meeting

# Disaster mitigation and relief operations

- Resolution 644 relates to telecommunication resources for disaster mitigation and relief operations
- Resolution 10 covers the use of wireless two-way telecommunications by the International Red Cross and Red Crescent Movement

# Equitable access to the radio-frequency spectrum and satellite orbits

- Resolution 80 of WRC-97
- Criteria implicit in the Radio Regulations (S0.3) require countries, in putting into use frequencies and usage of the geostationary satellite orbit (GSO), to take into account a number of principles:

# Equitable access to the radio-frequency spectrum and satellite orbits

- Need to ensure rational use
- Utilize the resources efficiently
- Use the minimum number of frequencies possible (economical usage)
- Operate in conformity with the Radio Regulations
- Ensure equity of access by all countries
- Take into account the special needs of developing countries
- Take into account the geographical situation of other countries

# Equitable access to the radio-frequency spectrum and satellite orbits

- Resolution 80 was revised to incorporate the recommendations of the UN Committee on the Peaceful Uses of Outer Space concerning ways to foster equitable access
- Radiocommunication Advisory Group to draw up draft provisions that would link the formal filing procedures with the principles

# Review of Res. And Rec.

- Resolution 95
- Conference performed a general review, based on Director's report.
- 36 Res. and 9 Rec. were abrogated
- 10 Res. and 2 Rec. were amended
- Res. 95 amended to clarify the mandate of WRC's

# WRC-03 / WRC-06

- WRC-03
  - More detailed
  - Res. 800 - 34 agenda items, 4 subject to additional financial resources, 8 standing items
  - Council 2000 decides
  - Invitation by Venezuela
- WRC-06

# WRC-03

- HF BC issues (new use of new modulation techniques, adequacy of current allocations)
- Issues related to harmonization of bands for public protection services
- Issues related to the RNSS
- Maritime issues
- Issues related HIPERLAN systems (5 GHz)
- HDFSS
- Unwanted (OOB/spurious in S3) emissions
- Interactive wide band multimedia services

# **Main results of WRC-2000**

August 2000

BR