



INTERNATIONAL TELECOMMUNICATION UNION
Workshop on Radio Spectrum Management for a Converging World
Geneva — ITU New Initiatives Programme — 16-18 February 2004



SPECTRUM MANAGEMENT REFORM IN DEVELOPING COUNTRIES

BRAZIL



Topics

- **Current Spectrum Management**
- **Future Changes on Spectrum Management**
- **Particular Challenges**
- **Supporting Growth in Wireless**
- **Sharing experience**



➤ Current Spectrum Management

- spectrum regulation establishes usage conditions (technical, coordination, sharing condition, band use)
- channeling plan & block arrangements
- systems must be certified
 - certification process - Agency, DCB and TestLab
 - Mutual Recognition Agreement



➤ Current Spectrum Management

- unlicensed systems

- restrict radiation device

License-exempt station operation

System certification by Agency or Accredited Lab need

- regulation applies short range devices (cordless phone, keyless, RLAN – DIG MOD)

- spectrum use on secondary basis



➤ Current Spectrum Management

- unlicensed systems

- RLAN - 2400-2483.5 MHz (4W e.i.r.p.)

- 5725-5850 MHz (4W e.i.r.p.)

- Public Consultation (conditions may change)

- 5150-5350 MHz (200mW e.i.r.p.) +TPC+indoor

- 5250-5350 MHz (200mW e.i.r.p.) + DFS

- 5470-5725 MHz (1W e.i.r.p.) + DFS + TPC

- 5725-5850 MHz (Dig MOD)



➤ Current Spectrum Management

- Mobile Service

- 1996 – first regulation

800 MHz band (824-849/869-894MHz) - AMPS

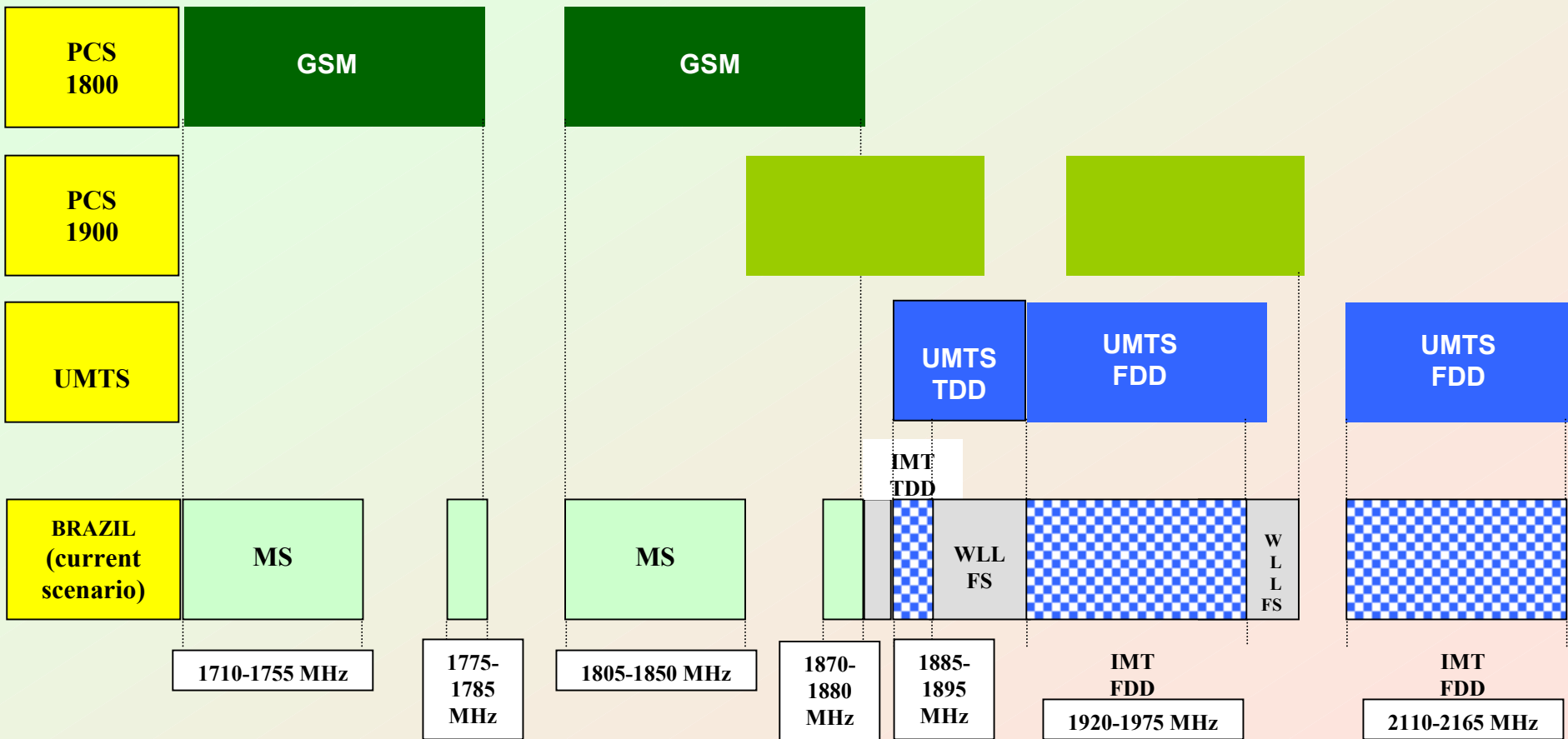
(evolution – CDMA/TDMA)

- 1998 – privatization / new bands under study
 - 2000 – new bands available (1700/1800/1900MHz)
 - 2003 – harmonized solution

WLL(FS) = MS = IMT 2000 applic



➤ Current Spectrum Management – Mobile Service



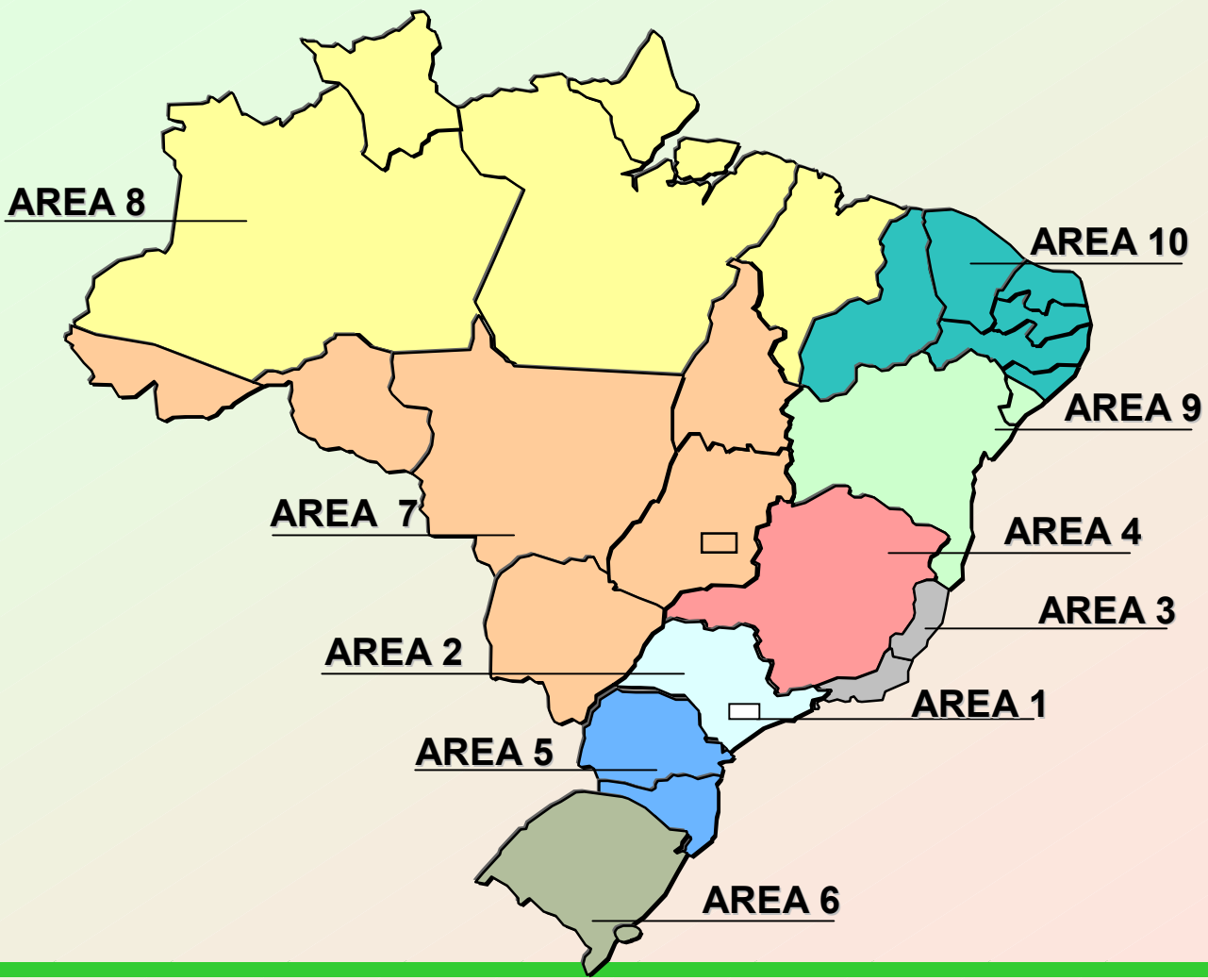
Extended bands for MS in 800 MHz and 900 MHz not represented



- **Current Spectrum Management – Mobile Service**
 - License regime
 - service authorization granted under beauty contest
 - area licensing
 - frequency license granted along with service authorization



BRAZIL: MOBILE SERVICE AREAS





➤ Current Spectrum Management – Mobile Service

➤ Panorama

- 3 Main Mobile Groups
- 10 Regions
- 46 mil accesses (76% pre-paid + 24% pospaid) *dec/03*
- teledensity ~26/100 inh (179 mil inh)
- 110 mil accesses Latin America (~42% Brazil) *sep/03*
- faster growth than wireline service (MS x FS)



➤ Future Changes on Spectrum Management

- trends on Regulation
 - block arrangements x channeling plan
 - area licensed (MS, LMDS 28GHz, MMDS 2GHz)
- previous coordination between players sharing spectrum
- frequency leased under trade agreement between players
(under study)



➤ Future Changes on Spectrum Management

- single regulation on spectrum use efficiency
 - current bit/Hz
- regulation on spectrum usage conditions
 - IMT 2000 applications
 - DTV (channeling plan)

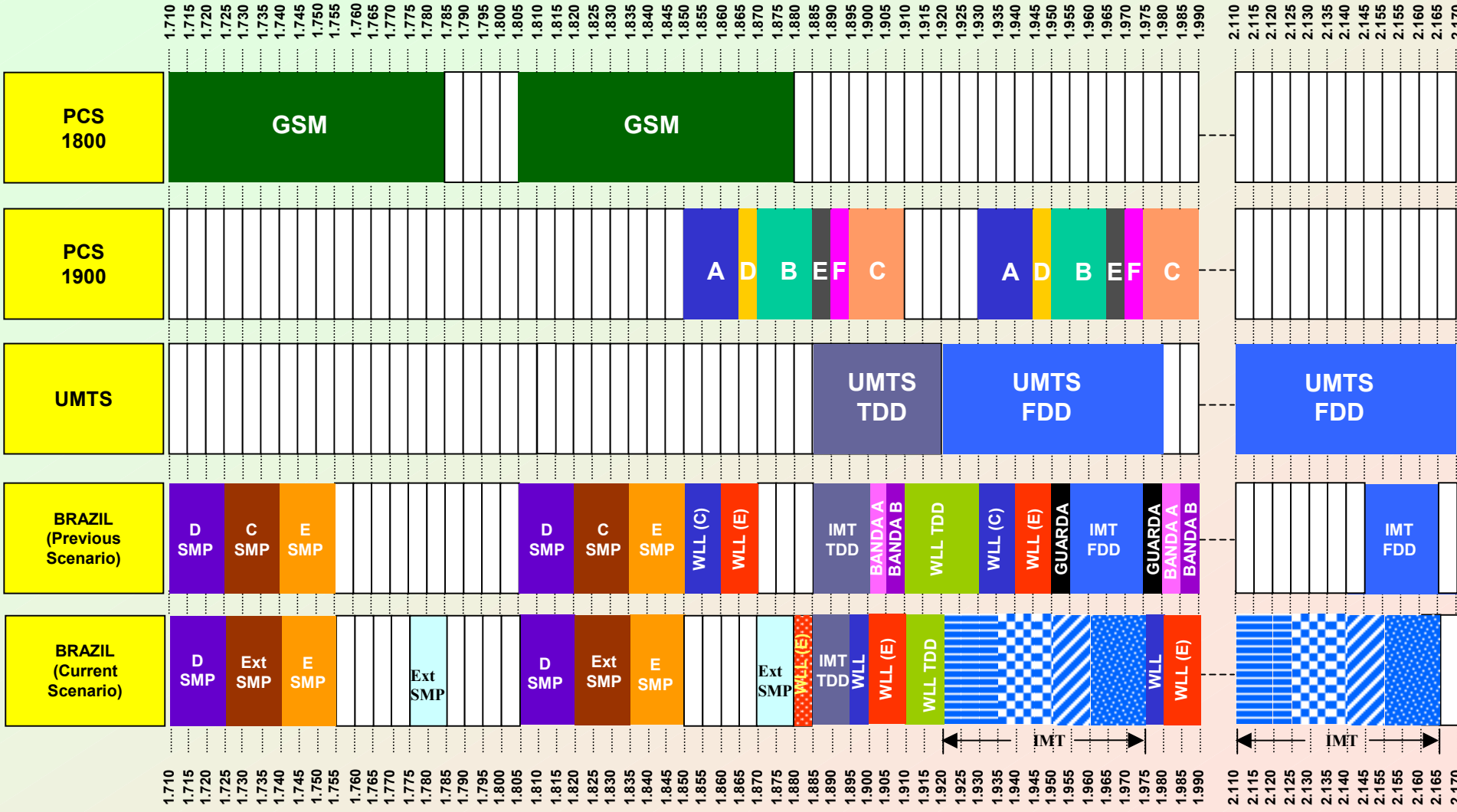


➤ Challenges Faced by Agency

- MS & IMT 2000 bands required refarming
- 450 MHz bands for MS
- spectrum use enforcement
- need to fast provide regulation on new application/technologies
- need to provide neutral policies on spectrum use conditions
regulation



Challenges Faced by Agency - Refarming



*MS 800MHz & 900MHz bands not represented



➤ Challenges Faced by Agency

- 450 MHz bands for MS
 - opportunity to gap digital divide
 - great number of analogue systems
 - refarming/move current users
- spectrum use enforcement
 - wide country – unauthorized stations transmitters – develop effort on radiomonitoring solution (investment) & facilitate regularization



➤ Challenges Faced by Agency

- Health affect non-ionization radiation
 - citizens worried claiming for policies
 - agency provided existing regulation
 - supported by international consultation
 - adopted ICNIRP limits for SAR
 - JUL/2003 – 50% stations evaluated
 - JUL/2004 – last 50% evaluation concluded
- ~32.5 mil stations nationwide



➤ Challenges Faced by Agency

- need to provide regulation on new application/technologies
- need to provide neutral policies on spectrum use conditions regulation
 - all technologies complies same regulation



➤ Spur Growth in Wireless Service

- radio frequency systems provides fast mean to increase competition
 - FS-WLL, Pay-TV (MMDS), PMP 3.5/10.5GHz (data access)
- spectrum for unlicensed use
- authorization for scientific trial spectrum use
 - brought up new applications (38GHz PMP systems, DTV)



➤ Rec & Practices from Brazilian Experience

- relay on International Organization Recommendations on Spectrum and Treatments (from ITU-R, CITEL, MERCOSUL, IEEE, ETSI, ...)
- public consultation before policy establishment
- round-table between interested in spectrum use (industry, service providers, associations, citizens representatives, ...)
- success on regulations characterized by
 - block arrangements, area licensed, unlicensed systems, scientific trials.



INTERNATIONAL TELECOMMUNICATION UNION
Workshop on Radio Spectrum Management for a Converging World
Geneva — ITU New Initiatives Programme — 16-18 February 2004



Thank you

Marco A O Tavares

tavares@anatel.gov.br