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

AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
AREA 9
AREA 10
Current Spectrum Management – Mobile Service

Panorama

- 3 Main Mobile Groups
- 10 Regions
- 46 mil accesses (76% pre-paid + 24% pospaid) <sub>dec/03</sub>
- teledensity ~26/100 inh (179 mil inh)
- 110 mil accesses Latin America ( ~42% Brazil) <sub>sep/03</sub>
- 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 affects 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 million 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 comply the 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, scientifical trials.
Thank you

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