



# Radio Spectrum Management for a Converging World

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New Initiatives Workshop on  
Radio-spectrum Management  
for a Converging World

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# Overview

- **Trends in spectrum demand**
- **Spectrum management framework**
- **Role of spectrum management**
- **New approaches to spectrum management**
  - **Spectrum trading**
  - **License-exempt use**
- **Cross-cutting issues**
  - **Non-commercial uses**
  - **International aspects**



# Spectrum Demand

- **Liberalization, deregulation, privatization**
- **Technology and service innovation**
  - **Telecommunications**
    - e.g. wireless LAN, mobile data, etc
  - **Non-telecommunications**
    - e.g. RFID, GPS, etc.
- **Need for mobility**
- **Advantages of wireless infrastructure**
  - e.g. local loop, wireless broadband, etc.



# Regulatory Framework

- **International**
  - ITU
  - Regional Organizations
  - Bilateral Agreements
- **National**
  - Allocation
  - Assignment
    - “First come, first served”, beauty contest, lotteries
    - Auctions

# Role of Spectrum Management

- **Objectives**

- Technical efficiency, economic efficiency and public policy

- **Changing paradigm**

- Rapid technological change
- Unpredictable markets
- Greater capabilities of market players
- Convergence



**Strain on centralized admin. structure**



# New approaches

- **Market-based approaches**
  - Wide range of options
- **Exclusive rights**
  - Auctions
  - Administrative incentive pricing
  - Secondary trading
    - e.g. leasing, change of ownership, reconfiguration, change of use, etc.
- **Non-exclusive rights**
  - License-exempt spectrum
    - E.g. open access spectrum, spectrum commons, etc.



# New Approaches

## Spectrum Trading

- **Modes and variations**
  - **Change of ownership**
  - **Reconfiguration**
    - Partitioning and aggregation
  - **Change of use**
    - Constraints
      - e.g. interference, international obligations
  - **Leasing / Sharing**



# New Approaches

## Spectrum Trading (con't)

### ■ Implementation

- **Transition**

- e.g. Management rights (N.Z.), overlay licensing

- **Dividing and packaging spectrum**

- e.g. Standard Trading Units (Aust.)

- **License duration**

- **Institutional arrangements**

- Competition safeguards
- Trading mechanisms
- Windfall gains and taxation





# New Approaches

## License-exempt spectrum

- **Open access spectrum**
  - **Low power transmissions or allocated bands**
  - **“Hostile environment” and power limitations - leads to technological innovation**
    - e.g. mesh networks, agile radios, intelligent antennas, etc.
  
- **Spectrum commons**
  - **Common property management model**
    - e.g. Unlicensed PCS in the United States



# New Approaches

## A flexible framework

- **Exclusive vs. Non-exclusive approaches**
  - **Interference (and spectrum scarcity)**
    - Underutilization vs. overuse
  - **Technology and innovation**
  
- **A flexible framework?**
  - e.g. different regimes in different bands, open access to spectrum underlay, etc.



# Cross-cutting issues

- **Non-commercial users**
  - Administrative incentive pricing
  - Spectrum leasing / sharing
  
- **International aspects**
  - Harmonization
  - Interference management



## Workshop agenda

- **New approaches to spectrum management**
- **ITU country case studies**
  - **Australia, Guatemala and the United Kingdom**
- **Country experiences**
  - **Policy and regulatory challenges**
- **Concerns of specific categories of users**
  - **Broadcasting, defense, aviation, satellite, etc.**
- **Advanced wireless technologies**
- **Improving the int'l regulatory framework**
- **Spectrum management & development**



**Thank you**

<http://www.itu.int/spectrum>

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