COST 605 Econ@Tel WG3 on Regulation

Workshop 1 in Paris, 27-28. April 2009

Future impact of new adaptive devices on spectrum regulation and management

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Overview

Note: the presentation shows the opinion of the author, it is not an official approach of any Authority

- The shortage in spectrum
- Global competition for spectrum
- Emerging new demand for spectrum
- EU concentrates spectrum management
- Competiton among technologies
- Adaptivity in spectrum usage
- Economic value of a frequency band
- Financing the frequency management
- Ecpected impact of free access to spectrum
- Possible new regulatory approach

There is a shortage in spectrum

Wireless networks

- Narrow band mobile communication spread all over the world, even in less developed countries
- Fix and mobile networks are converging
- Broadband wireless networks serve mobile internet
- Intelligent applications are spreading, like navigation

Broadcasting and content providing

- Analogue broadcasting is to change int digital ones,
- Comprising technologies of media content are more effectives (MPEG2-MPEG4)
- Local and other communities need chanels
- New content providing applications (like games) need wireless communications

Global competition for spectrum

Coordination in ITU-R

- Spectrum is a common good of the humanity
- It is coordinated by the ITU-R section
- The decision methodology is to find consensus
- Low income countries are also participating in the decision process
- Experts has to participate in the process

European coordination in CEPT-CEEC => ERO,

- There are European countries participating out of the EU
- In harmony with the ITU, but handeling special regional interests

EU coordination in FMG

- Inside coordination for only few years

Emerging new demand for spectrum

Spreading wireless communication among peoples and computers

- Mobile communication
- Navigation systems
- Mobile internet
- New access technologies for metropolitan areas
- Public data services

Communications among objects and things

- RFID, NFC, Blue tooth
- Wireless sensors
- Ad-hoc networks
- Intelligent applications like transport systems, vehicles, buildings, household machines

EU concentrates spectrum management

Opportunity of digital broadcasting

- Analogue broadcasting has to be stopped
- New digital transferring technologies provide more channels
- *Seemed to be no shortage in chanels for broadcasting*

Spectrum management process through ERO

- European Radio Office is the major information register for frequency management rules
- Unified register of the usage and the application process is needed, and it has begun

My opinion is, that this is good but not enough for the future

Competition among technologies

New wireless technologies need spectrum

- Wireless sensors
- Near field communication
- Next generations of mobiles
- Mobile internet
- Navigation
- Devices for assisted living
- RFID and other individual identification systems

Way to acess spectrum:

- Every new wireless technology need space in the spectrum to be dedicated
- WRC is to allocate bands for new emerging technologies
- There is a large demand for free bands to use adaptive devises

Adaptivity in spectrum usage

Adaptive spectrum usage is not a new technology:

- Spread spectrum usage used to be a military technology in the late 80-s; It has been transferred to the business area after 90-s.
- Software defined radio and Cognitive radio measures the usage and use the free slots to put an information package

It can be a disruptive technology in the next few years:

- There is a shortage in spectrum
- This can be used in a shared spectrum way
- It can be used together with individual identification technologies (like RFID or biometry)

Economic value of a frequency band

For the Business community

- Use as a scared input for the technology usage
- Put a minimum investment limit for newcommers, to deffend the market power of the players
- Obtain profit using the given technology
- Not to allow other players to the market

Opportunities for the government

- To sell the right to use it as a concession for 10-15 years
- To expect a fast growing investment in the network
- To get frequency fee continuously from the usage
- To finance the frequency management activity within the civil service

Financing the spectrum management task

Tasks & cost of spectrum management:

- Achieve positions in the global coordination in ITU and CEPT
- Software modelling frequency usage in digital maps
- Coordinate with the neighbouring countries
- National Frequency Plan
- Allocate frequency bands for players (register)
- Enforcement of allocation including complaint and measures
- Reallocation in some cases (like governmental usage after changes)

How to finance it:

- *from frequency fee, which is sector specific, paid by the parket players*

Expected impact of free access to spectrum

For business community

- *Use as an unscared input for the technology usage*
- *The a minimum investment limit for new-commers would be to invest into innovation*
- *Profit/investment rate decreases for incumbents*
- *Other players can enter to the market without any control*
- *The customer may get services with the „best effort approach" at a lower price*

For NRA-s and Community Authorities

- *There is no rights to sell as a concession for 10-15 years, and no frequency fee continuously from the usage*
- *Investment into the network becomes a spontaneous busines process*
- *Spectrum management activity decreases within the civil service, loosing some of the functions and financing background*

Possible new regulatory approach

Goals of regulation:

- Enhance the development of the markets and innovation processes
- Defend customers (health and budget) in an asymmetric information situation
- Enforce community interests over individual ones

Possibility of regulation

- *Let free access to spectrum, but regulate the power emission*
- *Wireless devices should pay a sector specific fee for power emission at approval*
- *Service providers should pay a small emission activity fee according the active units (SIM cards, RFID cards or other active devices)*