

# Regulatory harmonisation for earth stations : what is the best level?

Spectrum access for earth stations  
a key element for a successful  
deployment of satellite systems

# Summary

1. Some characteristics of satellite systems
  - Technical and operational aspects
  - Regulatory aspects
2. Various layers of regulation
3. Spectrum access for space stations
  - Stable principles ...
  - ... and tools exist to maintain accurate their implementation
4. Spectrum access for earth stations
  - Frequency management: international allocations need to be introduced into National Tables of Frequency Allocations
  - Licensing: procedures and fees should not hinder the deployment of satellite applications

# Some characteristics of satellite systems

## Technical and operational basic facts

- Satellite systems have natural broadcasting capabilities
- They inherently provide international coverage
  - Global in L, S or C bands
  - Regional in Ku and Ka bands
  - But all recent Ka-band satellites use multiple spot beams: is it an opportunity for more local content?
- Business plans for satellite systems are based on:
  - The ability to serve a large area with the same frequencies
  - The availability of these frequencies on the ground (i.e. the practicability to deploy earth stations)
  - Currently the focus is on the ability to receive (e.g. for DTH applications) but the emergence of bidirectional mass-market applications should be noted

## Some regulatory aspects

- Two types of radio stations
  - Space stations
  - Earth stations
- Space orbits basically fall under the purview of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1962)
  - “Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.”
- Therefore spectrum access for space stations is essentially governed by the Radio Regulations (i.e. an **international** Treaty)
- On the counterpart, spectrum access for earth stations is essentially governed by **national** laws

# Various layers of regulation

# Regulating access to spectrum

- International level: ITU
  - Radio Regulations (binding Treaty)
  - ITU-R Recommendations and Reports
- Regional level: CEPT, EU, CITELE, APT, ATU...
  - Decisions
  - Recommendations
- National: national regulatory authorities
  - National Tables of Frequency allocations
  - Licenses

*What is the best level to regulate each kind of radio stations of a satellite system?*

# Spectrum access for space stations



## Spectrum access for space stations

- Spectrum and orbit access for space stations is governed by the Radio Regulations
- It applies between States, which represent the satellite operators incorporated in their country
- Two types of fundamental procedures
  - Coordination: “first come first served” principle
  - A priori planning: giving to each State a certain part of the total resources
- These two sets of principles are remarkably stable

# Spectrum access for space stations

- Not only are the principles stable...
- ...but institutional tools are also in place for continuously reviewing and updating them
  - Within ITU-R, World Radiocommunication Conferences are regularly held
  - The WRC process triggers regional and national thoughts on these principles and the difficulties arising from their implementation or daily use
- Improvements can be made on details but it would be hazardous to change the overall approach

# Spectrum access for earth stations

## Spectrum access for earth stations

- Contrary to space stations, earth stations are generally located in a place falling under a national jurisdiction
- Two aspects are at stake:
  - Frequency management: is the international allocation translated in the National Table of Frequency Allocations ?
  - Licensing procedures and fees: do the licensing procedures permit the effective deployment of satellite applications ?

## Earth stations: frequency management

- Once a satellite allocation is agreed at the international level (i.e. in the Radio Regulations), it should be introduced in the National Tables of Frequency Allocations to really make available this spectrum in each country...
- ...but it should be introduced in an harmonised way throughout a regional area commensurate with satellite footprints and markets
  - e.g. introducing BSS in France only would have very little interest for the satellite industry: introducing it in Europe is necessary to trigger launches

# Earth stations: frequency management

- In Europe, CEPT carries out this task through ECC Decisions
  - These Decisions are of voluntary application
    - e.g. availability of 28 GHz bands, of extended MSS L band, possibility of VSAT deployment in Ku and Ka exclusive bands...
  - Thanks to the in-depth preparatory work, it remains a major thrust for regulatory harmonisation in Europe
  - However, there is a need to promote more actively these texts to widen their implementation
- In cases where voluntary harmonisation is not enough, the European Commission can issue mandatory Decisions through a process to which Member States are associated.
  - e.g. EC Decision on the 2 GHz MSS bands

## Earth stations: licensing aspects

- Licensing procedures are historically dealt quasi-exclusively at national levels
- Licensing procedures and fees are closely linked with political agendas
  - promoting the most efficient spectrum usage,
  - providing consumers with more choice,
  - ensuring that each citizen can have access to broadcasting and telecommunications applications
  - fostering innovation...
- Each country decides on the weight it prefers to give to each objective.

## Earth stations: licensing aspects

- However, for satellite applications, these national approaches should be discussed between countries likely to be in the same satellite markets in order not to hinder their development:
  - Exclusive bands where network licensing is possible are meaningful only if available across the footprint of the satellite
  - “Network licensing” is often more effective if it is defined in a similar way by States throughout the satellite coverage
  - Licensing fees should be defined so that they do not hinder the actual deployment of satellite applications:
    - Individual licensing inhibits the deployment of ubiquitous earth stations
    - Fees should take into account the satellite applications’ business plans
- Regional fora are ideal places to discuss and agree on similar approaches that can be subsequently applied on a national level.



# Conclusion

- The *international* framework governing the spectrum access for space stations works well.
- Spectrum access to earth stations needs to be coherent across satellite footprints.
- New trends like bidirectional mass-market applications emphasize the need for *regional* cooperation and harmonisation:
  - in the field of frequency management: to ensure the actual availability of spectrum
  - in the field of licensing procedures: not to hinder the effective deployment of satellite applications and to exchange best practices, so that *national* implementations will be consistent