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Orbit/Spectrum International Regulatory Framework

Challenges in the 21st century

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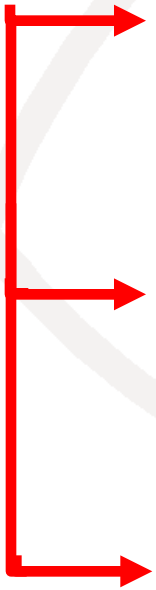
30 October – 1 November 2012

Legal Framework

- United Nations Outer Space Treaty (1967)



Outer space free for exploitation and use by all states in conformity with international regulations

States retain jurisdiction and control over objects they have launched into outer space

States shall be liable for damage caused by their space objects

United Nations Outer Space Treaties

1. **Principles** Governing the Activities of States in the **Exploration and Use of Outer Space**, including the Moon and Other Celestial Bodies – 1967

2. **The Agreement** Governing the **Activities of States on the Moon and Other Celestial Bodies –** 1984

3. The **Agreement on the Rescue of Astronauts** -1968

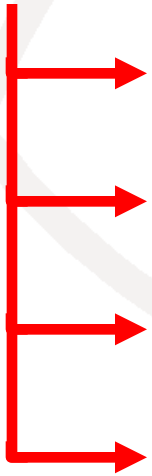
4. **The Convention** on **International Liability for Damage Caused by Space Objects** (States retain jurisdiction and control over objects they launch into outer space) - 1972

5 **The Convention** on **Registration of Objects Launched into Outer Space -** 1976

ITU – CS/CV of 1992 is listed under other agreements and ITU is recognized as the specialized agency responsible for telecommunication issues

Legal Framework

- United Nations Outer Space Treaty (1967)
- International Telecommunication Union



Principles of use of orbit/spectrum

Allocation of frequency bands

Procedures, Plans, operational measures

Instruments (CS, CV, RR, RoPs, Recs)

ITU Constitution

Article 44

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Radio frequencies & satellite orbits are limited natural resources

↓

Rational, Efficient, Economical Use

↓

Equitable Access

Purposes of the Union

- “The Union shall effect allocation of bands of the radio-frequency spectrum, the allotment of radio frequencies and the registration of radio frequency assignments and, for space services, of any associated orbital position in the geostationary-satellite orbit or any associated characteristics of satellite in other orbits, in order to avoid harmful interference between radio stations of different countries.”

- This is the purpose of the Radiocommunication Sector (ITU-R)

Objectives of ITU-R

- To avoid harmful interference
- To establish global standards and associated material to assure the necessary required performance, interoperability and quality
- To ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum and satellite-orbit resources



Radio Regulations

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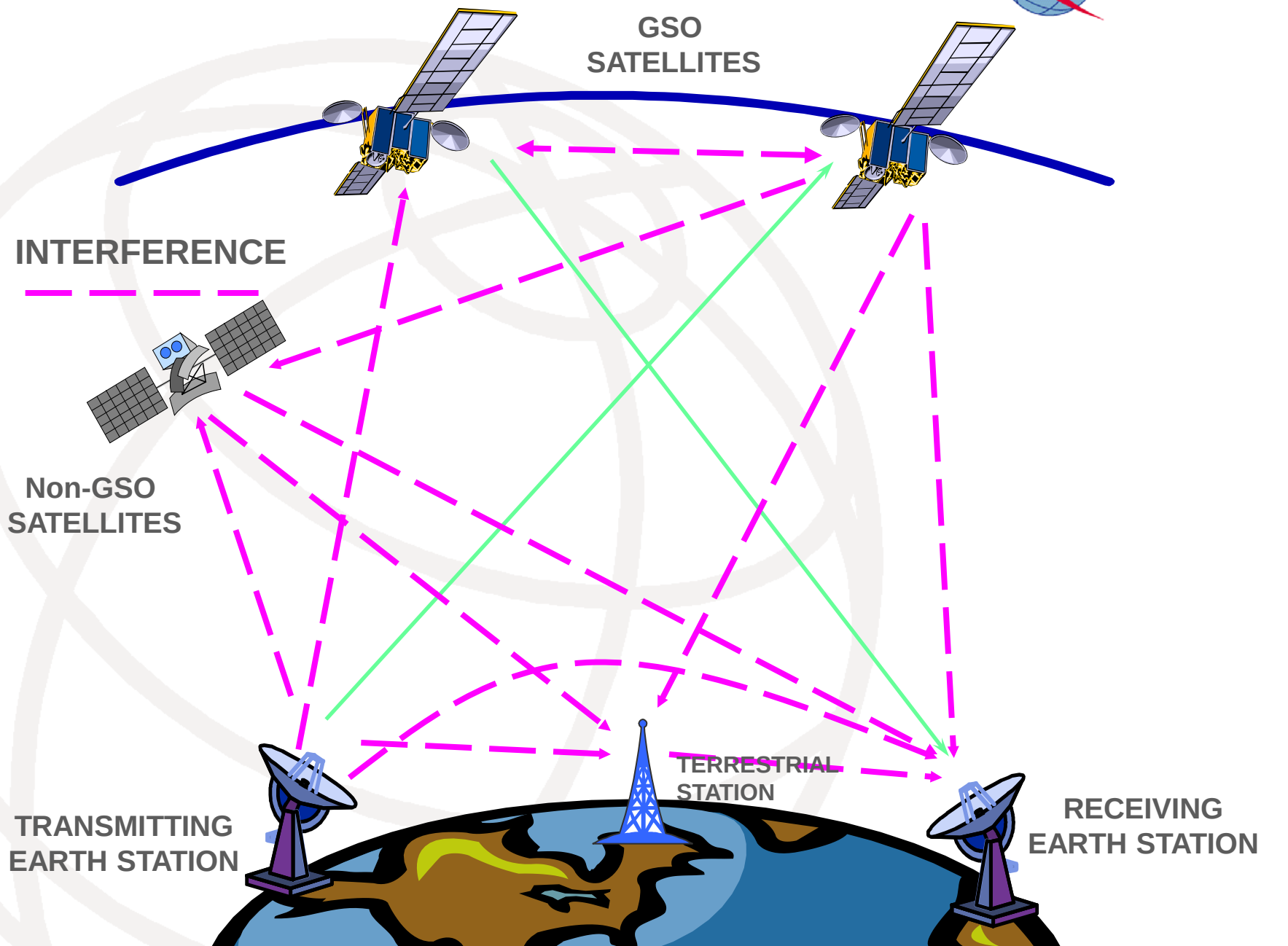
International Telecommunication Union

- Intergovernmental Treaty governing the use of spectrum/orbit resources by administrations
- Define the rights and obligations of Member States in respect of the use of these resources
- Updated every 3-4 years by World Radiocommunication Conferences, WRCs

100 YEARS OF RADIO REGULATIONS
ITU-R
ITU
RADIOCOMMUNICATION SECTOR
1906 – 2006


GSO
SATELLITES
INTERFERENCE
Non-GSO
SATELLITES
TERRESTRIAL
STATION
TRANSMITTING
EARTH STATION
RECEIVING
EARTH STATION

Propagation of Radio waves

- Laws of physics
- Radio waves do not stop at national borders

Interference

- possible between radio stations of different countries
- This risk is high in Space Radiocommunications

Radio Regulations (RR)

- One of its main purposes - Interference-free operation of Radiocommunications

Radio Regulations

- Procedure
  - + Efficient use of spectrum
  - + Equitable access
  - + Opportunity to resolve interference before operation
  - + Prevents loss of investment, customers & revenue by minimizing unusable capacity due to interference

Radio Regulations Mechanisms

Control of Interference

ALLOCATION
Frequency separation of stations of different services

COORDINATION
between Administrations to ensure interference-free operations conditions

POWER LIMITS
PFD to protect TERR services / EIRP to protect SPACE services / EPFD to protect GSO from Non-GSO

RECORDING
In the Master International Frequency Register (MIFR)

International recognition

MONITORING
International monitoring system

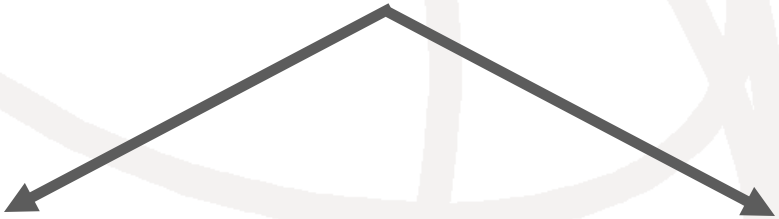
In case of interference into an assignment recorded in the MIFR

- The station which is causing harmful interference must immediately cease it
- This assumes a legal link between the transmit station and the administration under the jurisdiction of which it is placed:
- This is the purpose of the licence: ”No transmitting station may be established or operated by a private person or by any enterprise without a licence issued in an appropriate form and in conformity with the provisions of these Regulations by or on behalf of the government of the country to which the station in question is subject”

Radio Regulations

- Rights & obligations + applicable procedures

- Two mechanisms of sharing orbit / spectrum:



Coordination Approach

First come, first served for actual requirements

Planning Approach

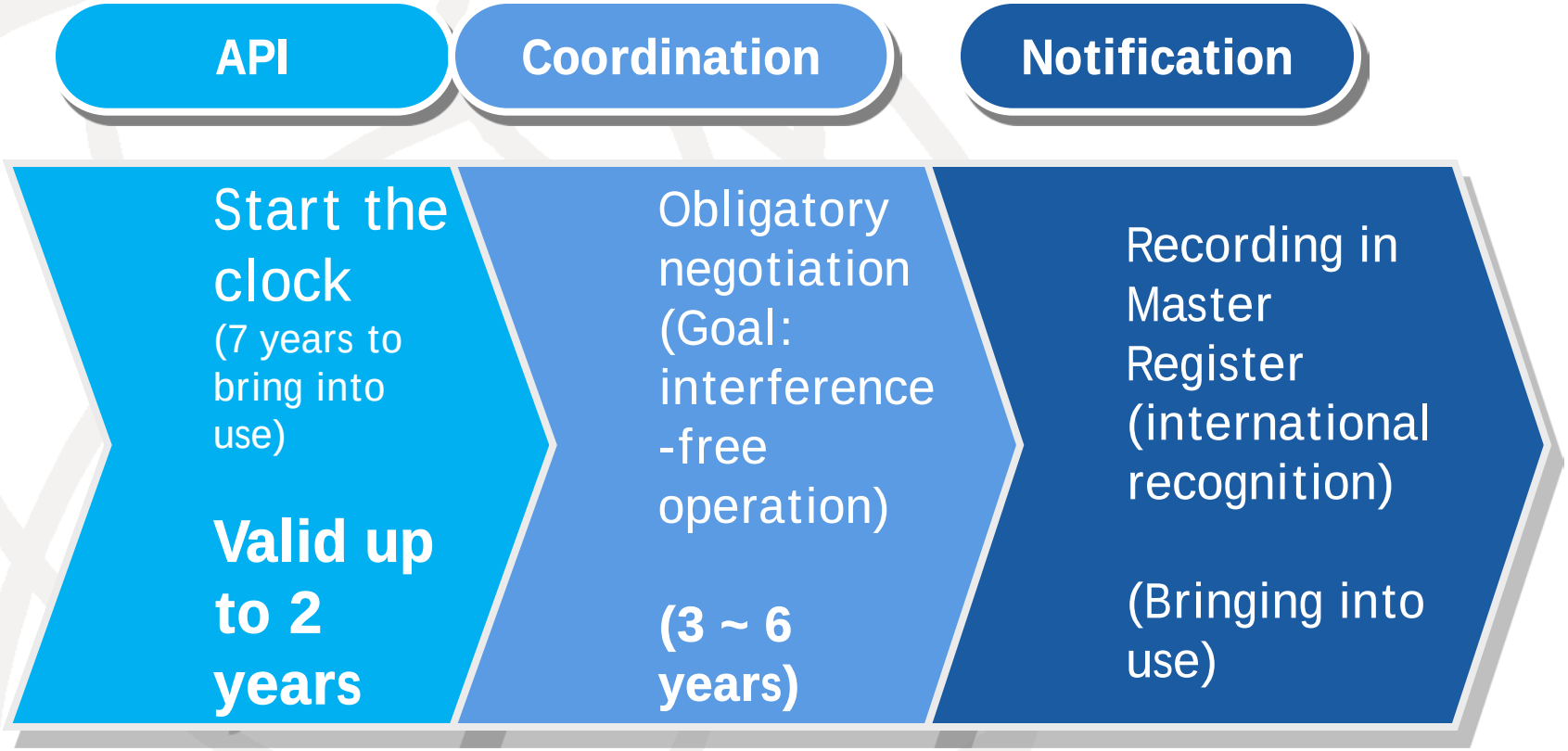
Equitable access ⇔ Plan for future use

Efficient & Rational Utilization

"First Come, First Served" Procedure

- Rights acquired through **coordination** with administrations concerning **actual usage**
- Efficient spectrum / orbit management
- Dense/irregular orbital distribution of space stations

Summary for non-planned services …



Equitable Access

Plan Procedure

- Congestion of the GSO
- Frequency / orbital position plans
- Guarantee for equitable access to the spectrum / orbital resources
  - Spectrum set aside for future use by all countries
  - Predetermined orbital position & frequency spectrum

Consequences:

- Difficulty to complete coordination
- Multiple filing submissions
- Operation without prior coordination
- Fait-accompli approach
- Fictitious recorded assignments ...

Spectrum /orbit resource scarcity

International regulatory framework:

- Lengthy & complex procedures
- Lack of incentive to review underused spectrum/orbital position

Question

What mechanisms & practical strategies can be employed to **ensure efficient use** of the spectrum/orbit resource and **improve** the existing international satellite spectrum management systems ?

What to do?

- To introduce new milestones in Res 49
- To notify more realistic parameters at the notification/recording stage
- To charge fees for data in the MIFR
- To review satellite service/application definitions
- to introduce more deterrent enforcement mechanisms (...monitoring)
- to improve procedures?

Goal:

- To ensure rational, equitable efficient and economical use radio frequency spectrum
- To ensure compliance of orbit/spectrum use with RR
- To develop procedures that facilitate access to the resources
- To guarantee interference-free satellite network operation...


Geneva, Switzerland, 23 January-17 February 2012
www.itu.int/ITU-R/go/WRC-12
PRESIDENT WRC

WRC-12

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Merci!

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