



# Orbital Spectrum International Regulatory Framework

Cessy Karina

## ITSO/ITU WORKSHOP on Satellite Communications

Afralti, Nairobi

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# Legal Framework & ITU Role

## ■ **United Nations Outer Space Treaty (1967)**

1

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

2

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

3

- States shall be liable for damage caused by their space objects

# Legal Framework & ITU Role

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

1

- **Principles of use of orbit/spectrum**

2

- **Allocation of frequency bands**

3

- **Procedures, Plans, operational measures**

4

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

# ITU Constitution

## **Article 44**



**Radio frequencies & satellite orbits  
are limited natural resources**



**Rational, Efficient, Economical Use**



**Equitable Access**

# Purpose 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.”

# Objectives of ITU-R

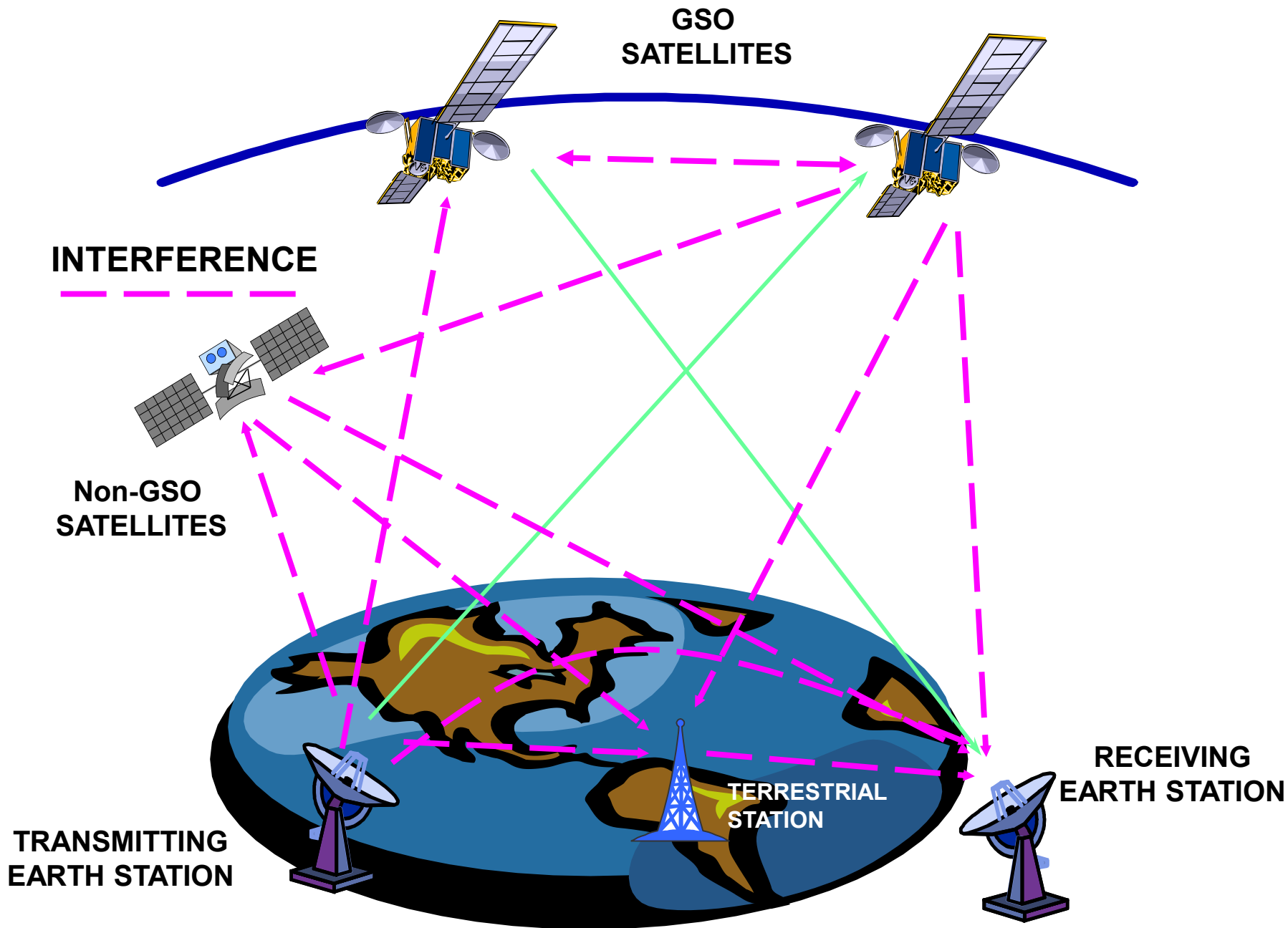
- **To avoid harmful interference**
- **To establish global standards and associated material to assure the necessary required performance, interoperability and quality**
- **To ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum and satellite-orbit resources**



# Radio Regulations

- 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 Radiocommunications Conferences, WRCs





# Propagation of Radio waves



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

## Interference



- possible between radio stations of different countries
- High risk in Space Radiocommunications

## Radio Regulations (RR)

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

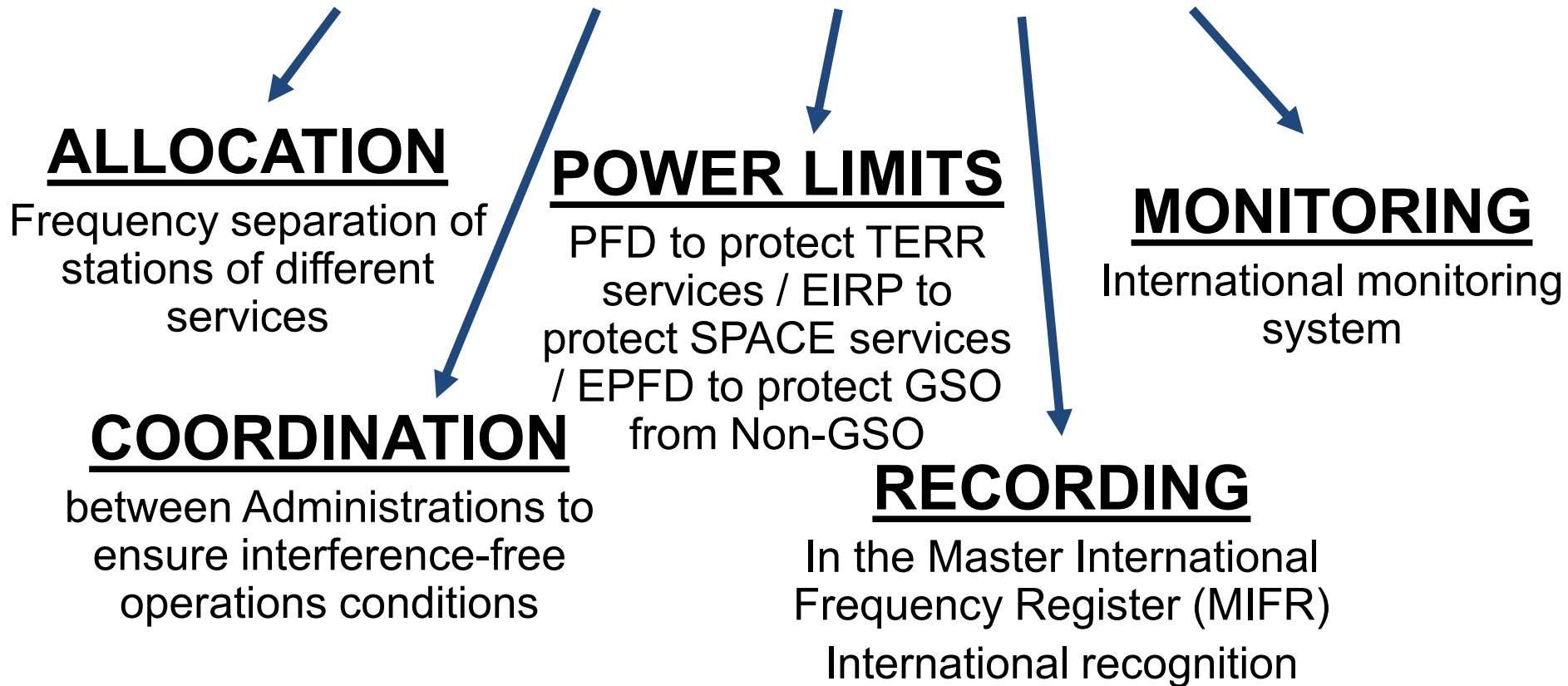
# Radio Regulations

## 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 Mechanism

## Control of Interference



## **Article 15- Interference Infringement of the Constitution or Radio Regulations**

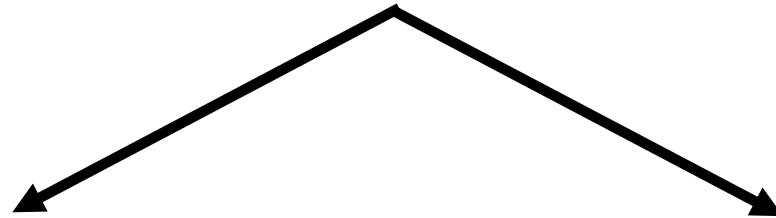
- **No.15.1:** All stations are **forbidden** to carry out unnecessary transmissions, or the transmissions of superfluous signals, or the transmission of false or misleading signals or the transmission of signals without identification.
- The station which is causing harmful interference **shall immediately eliminate** this harmful interference
- 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 (Article 18 of the Radio Regulations)

# **Article 18 - Licenses**

- No.18.1: 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 (FCFS)

## Planning Approach

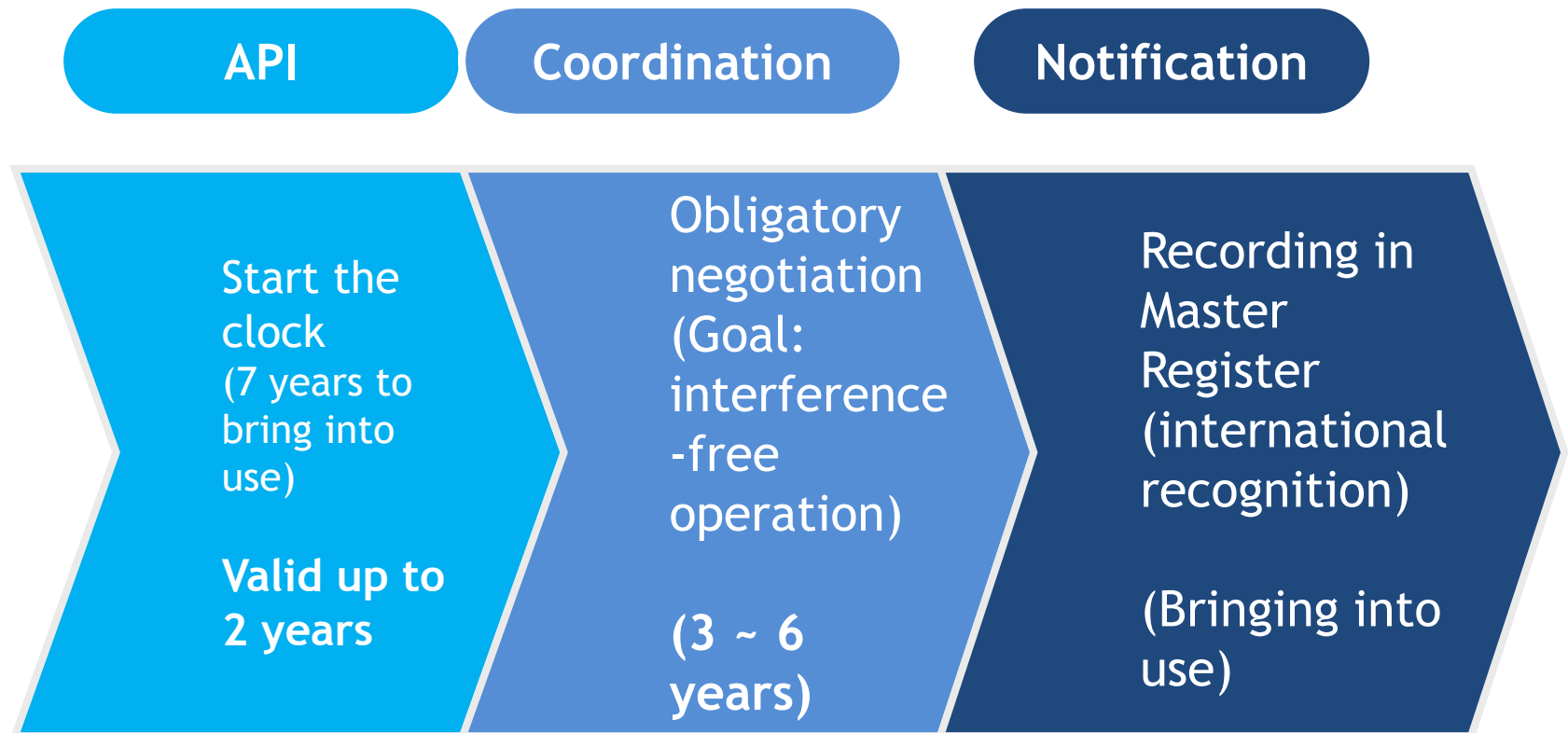
Equitable access  $\Leftrightarrow$  Plan for future use

# 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





### 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 of the 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...



# Key Issues in ITU-R

## ➤ WRC-12: implementation of decisions

➤  (e.g., Rules of Procedure, software development)

## ➤ WRC-15: preparations



➤ (e.g., Study Group activities, regional preparations, secretariat preparations, information meetings)

➤ Wireless broadband (IMT) spectrum : additional bands, channelling arrangements



➤ Assistance: migration to digital TV, digital dividend, spectrum harmonization

