

“The ITU Radio Regulations & *Space Sustainability*”

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ITU in brief



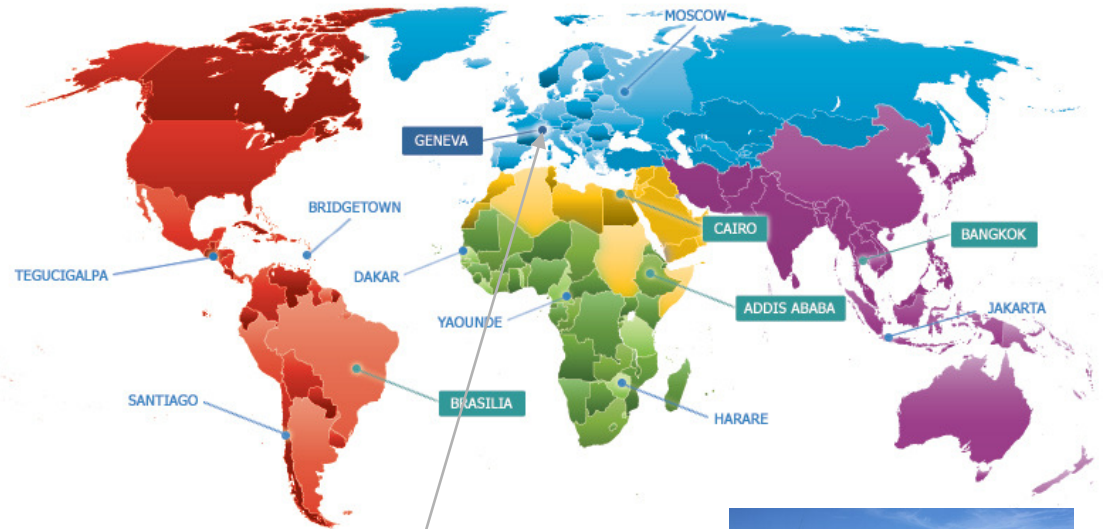
**Leading United Nations
agency for ICTs**

✓ **Founded on 17 May 1865**



5 Elected Officials

- ✓ **193 Member States,
>700 Sector Members, Associates
& Academia**
- ✓ **750 staff & >100 nationalities**
- ✓ **Annual budget = US\$ 180,000,000**



**4 regional offices,
8 area offices
HQ in Geneva,
Switzerland**



<http://www.itu.int>

Role of ITU



**international
regulations**

**global
standards
& guidelines**

**assistance to
administrations**

- ✓ **Rights of access to the spectrum**
- ✓ **Rational, Equitable, Efficient, Economical use of spectrum**
- ✓ ***Operation free from interference***
- ✓ **Economies of scale**
- ✓ **Interoperability and roaming**
- ✓ **Global harmonization**
- ✓ **Guidelines for national & regional regulations**

**GOOD QUALITY
AND CHEAPER
EQUIPMENTS**

**MORE FAVORABLE
INVESTMENT
ENVIRONMENT
(CLEAR, STABLE,
PREDICTABLE)**



- radio spectrum
- international standards

radio spectrum

- telecommunications
- climate change

- digital dividend
- cybersecurity



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

Legal Framework

- **United Nations Outer Space Treaty (1967)**



- **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)
-

Outer Space Legal Framework



- **ITU** is a **founding observer** and active participant to the UN COPUOS and its STS and LSC
- ITU-R is regularly submitting to the STS the ***Annual Space Report on the use of the geostationary-satellite orbit (GSO) and other orbits:***
<http://www.itu.int/en/ITU-R/space/snl/Pages/reportSTS.aspx>
- ITU is a member of the STS Working Group on the Long-term Sustainability of Outer Space Activities and provided an input Report on the ITU Regulatory Framework for Space Services:
http://www.itu.int/en/ITU-R/space/snl/Documents/ITU-Space_reg.pdf
- *ITU is observer to the UN International Committee on Global Navigation Satellite Systems (ICG)*

ITU Constitution



Article 44



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



**Rational, Efficient, Economical
Use**



Equitable Access

ITU Radio Regulations

- Part of ITU Administrative Regulations and Instruments in addition to the *ITU Constitution* (CS) and *Convention* (CV), which govern the use of telecommunications
- Intergovernmental Treaty – *legal bindings* on all Member states, 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
 - Principles of use of *orbit/spectrum*
 - *Allocation* of frequency bands and *services*
 - *Procedures and Plans*
- Updated every 3-4 years by World Radiocommunication Conference, (WRC)
- Are we obliged to apply the ITU Radio Regulations?
 - *Ratification of the ITU Convention (CV) implies acceptance of the RR*



ITU Radio Regulations



OBJECTIVES:

- to facilitate **equitable access to** and **rational use** of the natural resources of the **radio-frequency spectrum** and **any associated orbits**;
- to ensure the **availability and protection** from harmful interference of the frequencies provided for **distress and safety purposes**;
- to assist in the **prevention and resolution of cases of harmful interference** between the radio services of different administrations;
- to facilitate the **efficient and effective operation** of all **radiocommunication services**;
- to provide for and, where necessary, **regulate new applications** of radiocommunication technology.

ITU Radio Regulations



Propagation of Radio waves



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

Interference



- ***Possible*** between radio stations of ***different countries*** and/or different services
- This risk is ***high*** in Space Radiocommunications

Radio Regulations

- 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 Regulation Mechanisms

Control of Interference

ALLOCATION

Frequency separation of stations of different services

POWER LIMITS

PFD (prot. TERR services)
EIRP(prot. SPACE services
EPFD (prot. GSO from N-GSO)

MONITORING

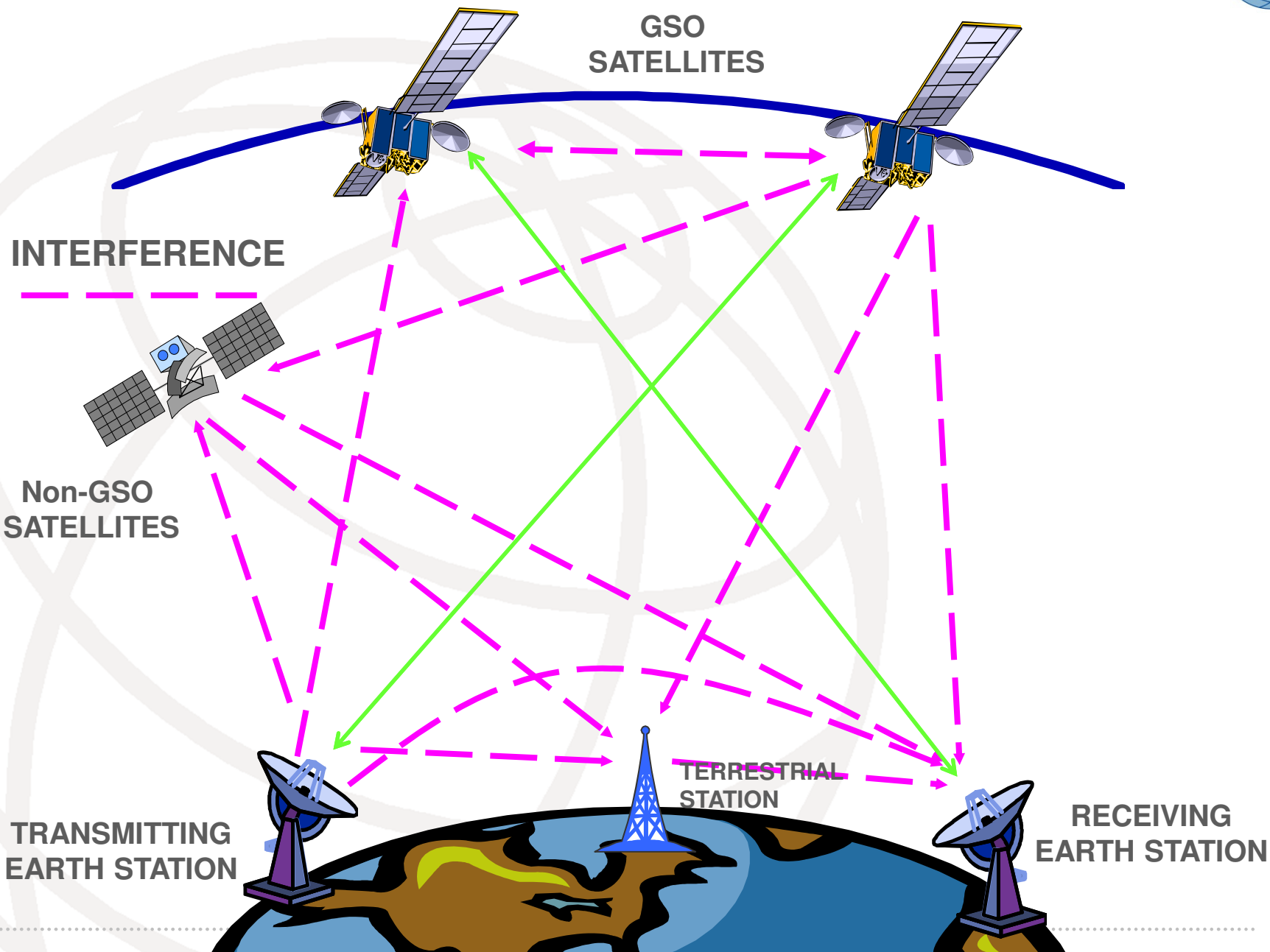
International Monitoring System

REGULATORY PROTECTION

e.g. No. 22.2: Non-GSO to protect GSO (FSS and BSS)

COORDINATION

between Administrations to ensure interference-free operation conditions





ITU Constitution

(CS 37) The Member States are bound to abide by the provisions of this Constitution...in all stations established or operated by them...which are capable of causing ***harmful interference***

(CS 38) The Member States are also bound to take the necessary steps **to impose the observance** of the provisions of this Constitution...

Article 45 (Harmful Interferences)

Each **Member State is responsible** to ensure that the stations duly authorized by them **(CS 198) shall not cause harmful interference** to radio services of other member states **(CS197)**



ITU Constitution

Article 34 (Stoppage of communications)

Member States reserve the right to cut off, in accordance with their national law, any other private telecommunication which may appear dangerous to the security of the States or contrary to its laws, to public order or to decency **(CS 181)**

Article 48 (Installation for National Defence Services)

Member States retain their entire freedom with regard to military radio installations **(CS 202)**

Nevertheless, these installations must, so far as possible, observe ...provisions relatives...to the measure to be taken to prevent harmful interference **(CS 203)**

Article 15 - Interference

Infringement of the Constitution, Convention or Radio Regulations

- 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***. (RR15.1)
- The station which is causing harmful interference ***shall immediatly 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)

Consequences:

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

Spectrum /orbit resource
scarcity

International regulatory framework:

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



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downloads | ITU session | 1st day | 2nd day | 3rd day |

Final Program

update: June 06, 2008

Downloads

- Download "EMC2008 final program with details" (*.pdf 206 KB)
- Download "EMC2008 Author's index" (*.pdf 41 KB)
- Download ITU session program" (*.pdf 91 KB)

ITU 1-Day Session

The 19th International Wrocław Symposium and Exhibition on Electromagnetic one-day session on "Efficient Use of Orbit/Spectrum by Satellite Systems" 2008 by ITU-R.

The objective of that session is to provide participants with an open forum, satellite industry and whether technical progress in frequency sharing will be regulatory and economical mechanisms in fostering the efficient use of this. The session consists of 4 sub-sessions (ITU 1 - ITU 4). A background paper available [here](#)

Sessions and list of speakers and titles of presentations are available [here](#)

For any s

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- an
- Mr

Technical



International Telecommunication Union

ITU/IDA-2010

Workshop on the efficient use of the spectrum and orbit resource

www.itu.int/ITU-R/go/space-workshop-2010

Singapore, 17-18 June 2010

IDA



WORKSHOP

ON THE EFFICIENT USE OF THE SPECTRUM/ORBIT RESOURCE

GENEVA, WEDNESDAY 6 MAY 2009

www.itu.int/ITU-R/go/space-workshop-09

ITU



EMC EUROPE 2010

WROCLAW, POLAND

BR Workshop(s) 2011

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 ?



Participants: **3042**

Countries: **165**

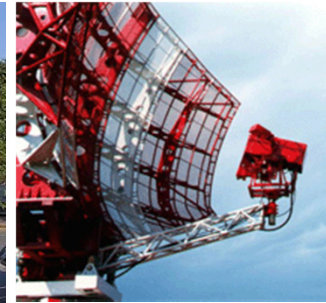
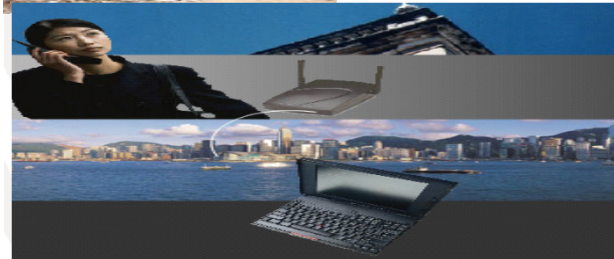
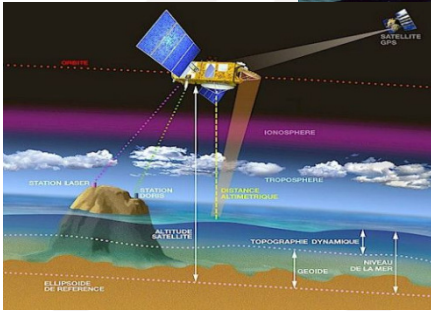
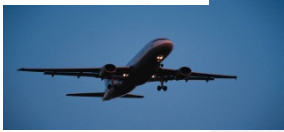
Companies: **101**

- **33 Agenda items (Successfully addressed **without a vote**)**
- **First ITU **paperless** World conference in 6 Languages**



WRC-12

9 kHz > proposals > 1000 GHz



<http://www.itu.int/ITU-R/go/WRC-12>

Issues related to Space sustainability



- ✓ **Satellite Regulations:** Rights of access to the spectrum/orbit resources
- ✓ **Article 15 of the RR:** Interferences
- ✓ **Safety Issues:** Aeronautical, Maritime, space...





Satellite regulations

- ✓ **clearer definition of the date of bringing into use of a satellite network (i.e., a technically capable satellite must occupy an orbital location for at least 90 days to be considered as “in use” or “back in use”),**
- ✓ **extension of the suspension period to 3 years (as it is considered to be a more realistic timeframe),**
- ✓ **enhancement of the satellite frequency coordination requirements by reducing the coordination arc in the most demanding frequency bands (C and Ku), and**
- ✓ **better control by the ITU of the spacecraft movements in the orbit.**

WRC-12

Article 15 - Interference



Infringement of the Constitution, Convention or Radio Regulations

- WRC-12 reaffirmed that recent and repeated cases of intended harmful interference represent infringements and that Member States under the jurisdiction of which the signals causing this harmful interference are transmitted have the ***obligation to take the necessary actions***

Section I – Interference from Radio Stations

No. 15.1 § 1 All stations are forbidden to carry out unnecessary transmissions, or the transmission of superfluous signals, or the transmission of false or misleading signals, or the transmission of signals without identification (except as provided for in Article 19).

Section V – Reports of Infringements

WRC-12 MOD

No. 15.21 §13 If an administration has information of an infringement of the Constitution, the Convention or the Radio Regulations (in particular Article 45 of the Constitution and No. 15.1 of the Radio Regulations) ***committed by a station*** ~~over which it may exercise authority, under its jurisdiction,~~ the administration shall ascertain the facts, ~~fix the responsibility~~ and take the necessary actions.

SPACE SERVICES HOMEPAGE


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Space Services Department (SSD)

The Space Services Department (SSD) is responsible for coordination and recording procedures for space systems and earth stations.

The Department handles capture, processing and publication of data and carries out examination of frequency assignment notices submitted by administrations for inclusion in the formal coordination procedures or recording in the Master International Frequency Register (MIFR).

The Department is also responsible for managing the procedures for space related assignment or allotment plans of the ITU and for provision of assistance to administrations on all of the above issues.

Structure of the SSD

- Space Publication and Registration Division (SPR)
- Space Systems Coordination Division (SSC)
- Space Notification and Plans Division (SNP)

Activities

- [ITU/IDA Workshop on the efficient use of the spectrum/orbit resource](#)
- [Spectrum/orbit workshop - Geneva 2009](#)
- [Res.647 \(WRC-07\) - Emergency and disaster relief radiocommunication](#)
- [ITU-R Circular Telegrams \(CTITU\)](#)
- [Res.609 \(rev. WRC-07\) - Consultation meeting](#)

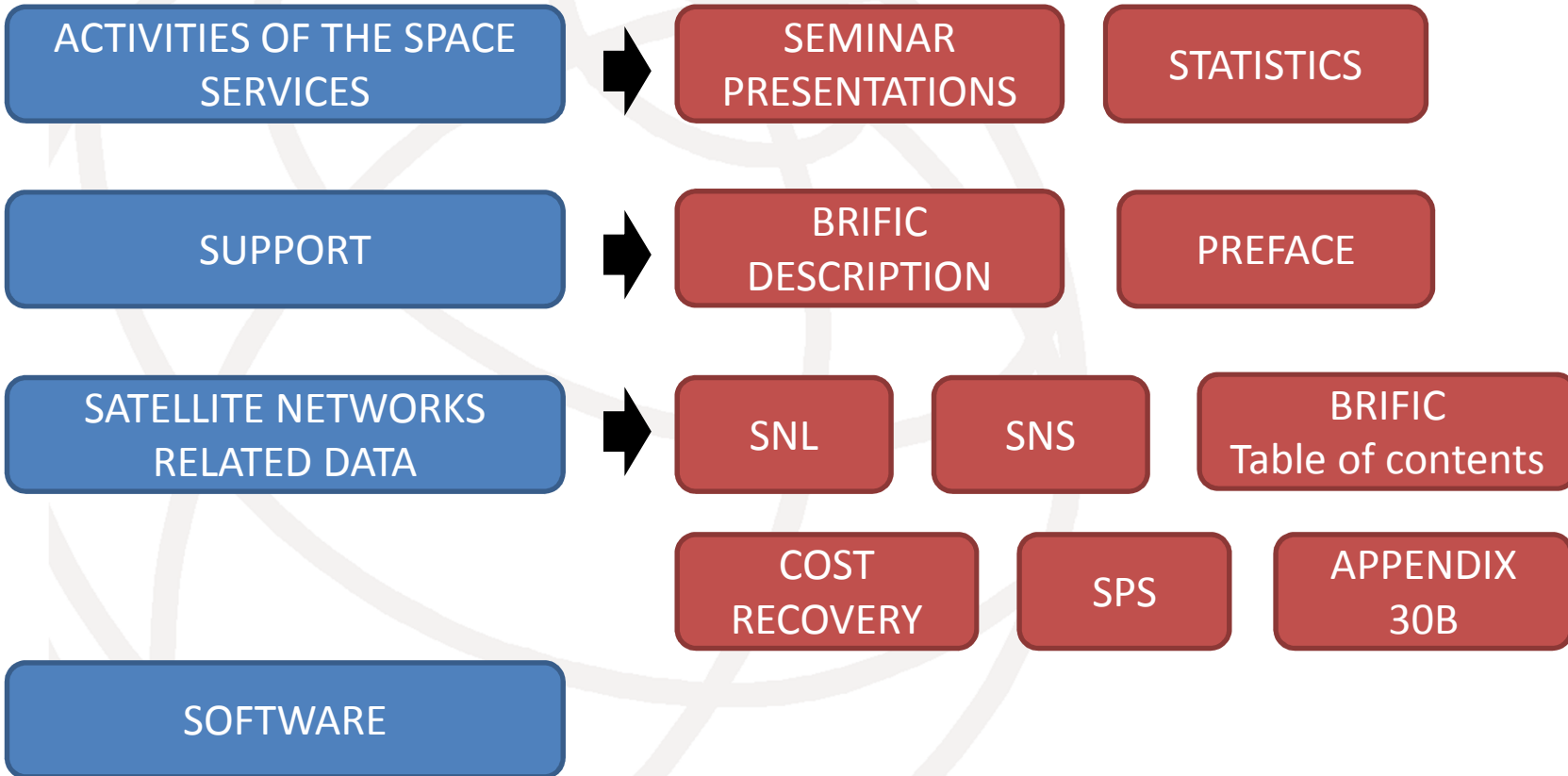
Statistics

- [Space Notices Treatment](#)

Space database and tools

- [Space Software](#)
- [BR Space seminar documents](#)
- [Bringing into use of satellite networks](#)
- [List of suspended satellite networks](#)

WHAT YOU CAN FIND there



RESOURCES (DATABASES)

- **SNS online** (<http://www.itu.int/sns/>)
SNS data of the networks, subscription service

- **SNL online** (<http://www.itu.int/ITU-R/space/snl/>)
 - Use of the frequency spectrum and occupancy of the orbit (Part-A)
 - Special sections and Parts reference publications (Part B)
 - List of information « As received » (Part C)
 - List of networks suspended
 - Bringing into use of satellite networks
 - BSS service area exclusion

- **IFIC database** (IFICxxx.mdb)
(<http://www.itu.int/sns/demowic.html>)

- **Space Plans System (SPS) Database**
(<http://www.itu.int/ITU-R/go/space-plans-mifr/en>)

- **'WRC-07' FSS Plan; Appendix 30B**
(<http://www.itu.int/ITU-R/go/space-plans-ap30b/en>)

RESOURCES (SOFTWARE & OTHER)

- **Space networks and related software**
<http://www.itu.int/ITU-R/go/space-software/en>
- **Cost recovery (List of invoices issued / Free entitlements)**
<http://www.itu.int/ITU-R/go/space-cost-recovery/en>
- **Latest version of seminar presentations and documents**
<http://www.itu.int/ITU-R/go/space-presentation/en>
- **Circular telegrams ITU-R**
<http://www.itu.int/md/R00-CTITU-CIR/en>
- **BR Circular letters**
<http://www.itu.int/md/R00-CR-CIR/e>
- **Publications relating to change of notifying administration**
<http://www.itu.int/ITU-R/go/space-publication-change-of-administration/en>

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Merci

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