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SATELLITE EXPLORATION IN BRAZIL

Regulatory Aspects

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at an International Level



REGULATORY FRAMEWORK



General Regulation for Satellite Operation (Res. 748/2021)

- Establishes authorization rules for Brazilian and/or foreign GSO and NGSO satellite systems;
- Establishes coordination criteria at the national level, to strengthen national regulatory security.

Technical and operational requirements (Act 9.523/2021)

- Operational limits and technical criteria for coordination;

In addition to the mentioned instruments, the satellites operation must follow the provisions of the Allocation of Frequency Table in Brazil (PDFF).

REGULATORY FRAMEWORK

The authorization in Brazil is subject to prior analysis of the legal, technical, regulatory and coordination aspects.



Satellite communication systems must be associated with satellite networks (*Satellite Network Filing*), which are simplified technical projects submitted to the International Telecommunication Union.

Anatel authorizes the exploration of both, Brazilian and foreign satellite communication systems, to provide capacity over Brazilian territory.

- **Brazilian Satellite:** is the one associated with satellite networks submitted by Brazil to the ITU and whose control and monitoring station is installed in Brazilian territory;
- **Foreign Satellite:** that one associated with satellite networks submitted by other countries to the ITU;

TYPES OF AUTHORIZATION

THE TYPE OF AUTHORIZATION REQUIRED TO EXPLORE SATELLITES IN BRAZIL IS RELATED TO THE ASSOCIATED RADIOCOMMUNICATION SERVICE, BEING APPLICABLE TO BOTH GSO SATELLITES AND NGSO SYSTEMS



Radiocommunication service:

Fixed-satellite service

Mobile-satellite service

Broadcasting-satellite service

Authorization:

Satellite Landing Rights



Radiocommunication service:

Amateur-satellite service

Authorization:

Amateur Station Certificate and License



Radiocommunication service:

Space research service

Space operation service

Meteorological-satellite service

Earth exploration-satellite service

Authorization:

Limited private service and RF authorizations



Radiocommunication service:

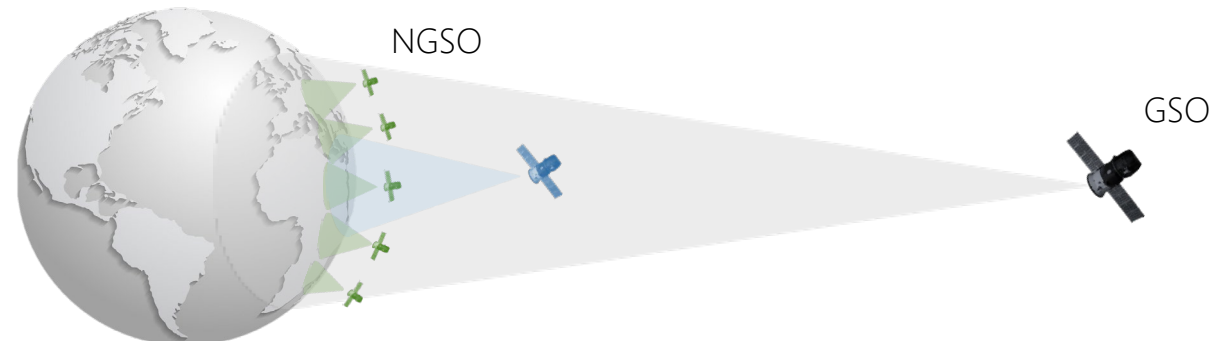
Inter-satellite service

Radiodetermination-satellite service

Standard frequency and time signal-satellite service

Authorization:

Authorization is not required



PREMISES



authorization requests

Check satellite exploration rights (Brazilian or foreign) in order of arrival.



associated satellite

Binding of the exploration right to the satellite, including the period of validity of the right.

Extension

Removal of the limitation for a single extension (extension linked to the useful life of the GSO satellite / for periods of up to 15 years for NGSO).

COORDINATION ASPECTS

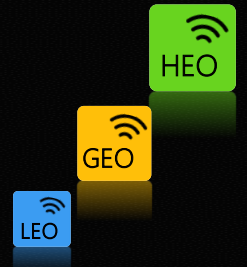
For the verification of the Right to Explore Satellites, the operator of the incoming system must coordinate with the operators of the systems that have already requested authorization or are already authorized to operate in Brazil, observing the aspects of the Technical Requirements Act.



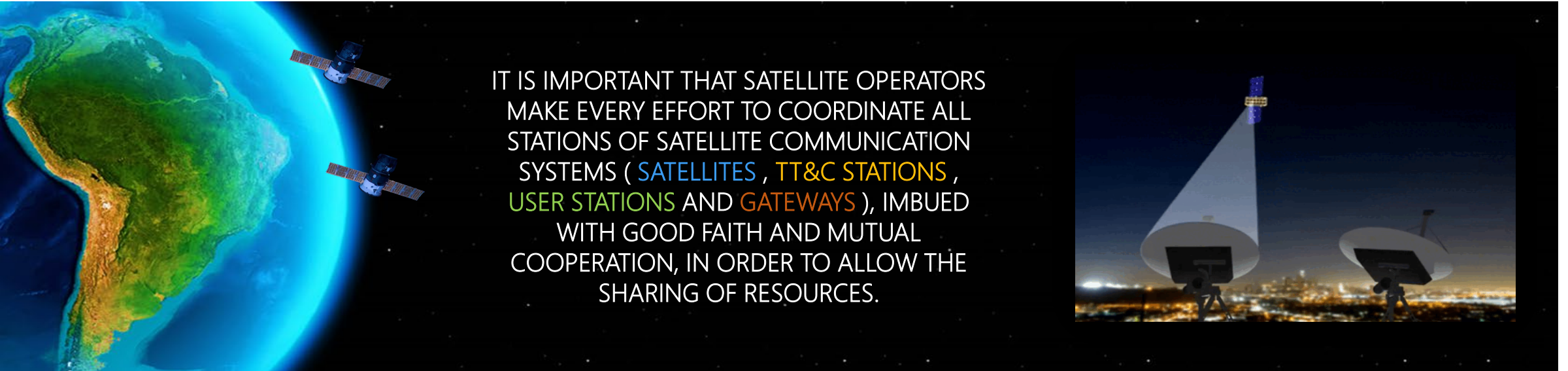
Relevant issues

- Establishment of coordination priority at the national level, with the aim of providing legal security to satellite systems already authorized in the country.
- Note to Article 22 of the ITU Radio Regulations for protection guidelines between GSO and NGSO systems.

There is the possibility of obtaining the right to exploit the satellite even if the coordination has not been successfully concluded, since the incoming system does not cause interference or request protection, for cases of coordination between non-geostationary satellite systems or between non-geostationary satellites and geostationary or between geostationary satellites with orbital separation of 2° (two degrees) or more;



COORDINATION ASPECTS



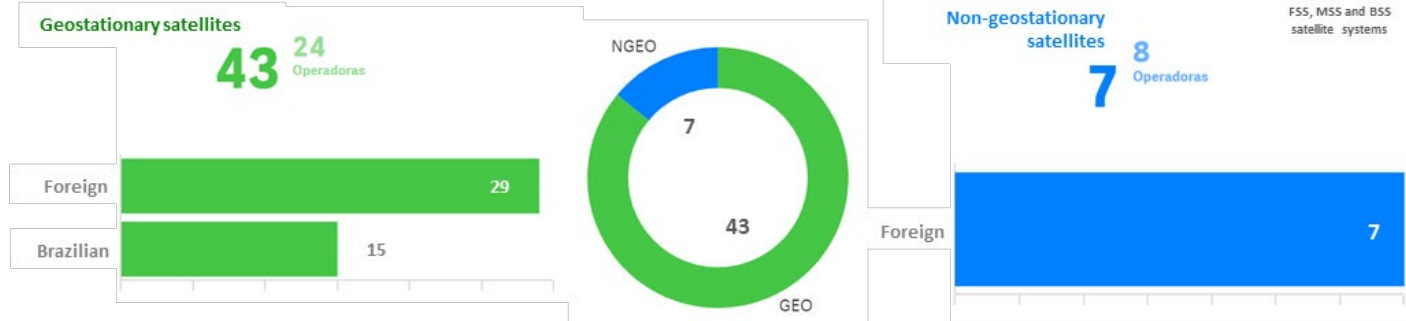
IT IS IMPORTANT THAT SATELLITE OPERATORS MAKE EVERY EFFORT TO COORDINATE ALL STATIONS OF SATELLITE COMMUNICATION SYSTEMS (SATELLITES , TT&C STATIONS , USER STATIONS AND GATEWAYS), IMBUED WITH GOOD FAITH AND MUTUAL COOPERATION, IN ORDER TO ALLOW THE SHARING OF RESOURCES.

- The coordination priority at the national level aims to provide the necessary regulatory security to systems that are already authorized or that have requested authorization in relation to systems that may request authorization later.
- However, the coordination priority does not mean that the entities have an exclusive prerogative of using those resources. Scarce resources should be shared by as many stakeholders as possible through systems coordination.
- Thus, it is important to note that, regardless of coordination priority, satellite operators must make the best efforts to accommodate new entrants.

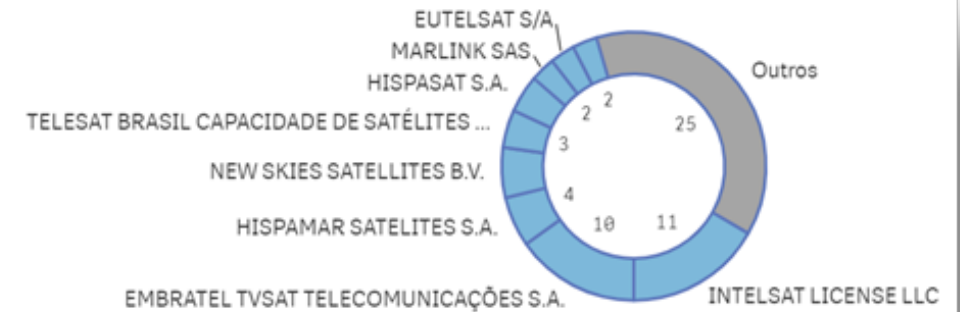
Overview of the Satellite communications in Brazil

- All major global market players have Landing Rights to operate in Brazil.
- Several non-geostationary satellite constellations have already received authorization in addition to numerous geostationary satellites.

Number of satellite systems operating in Brazil



Landing rights per Operator in Brazil





Regulatory Framework Future Works





RESOLUTION 219 (BUCHAREST, 2022)

Sustainability of the radio-frequency spectrum and associated satellite-orbit resources used by space services



resolves 1 to instruct the RA, as a matter of urgency, to perform the necessary studies through relevant ITU-R SGs: increasing use of radio-frequency spectrum and associated orbit resources in NGSO orbits (...) long-term sustainability (...) equitable access (...) rational and compatible use of, the GSO and non-GSO orbit and spectrum resources, consistent with the objectives of Art.44 CS



RESOLUTION 218 (BUCHAREST, 2022)

ITU's role in the implementation of the "Space2030" Agenda: space as a driver of sustainable development, and its follow-up and review process



resolves 1 ITU should support the implementation of the "Space2030" Agenda (...) taking into account the unique role of ITU with respect to access to the radio-frequency spectrum and associated satellite orbits, consistent with Art.44 CS

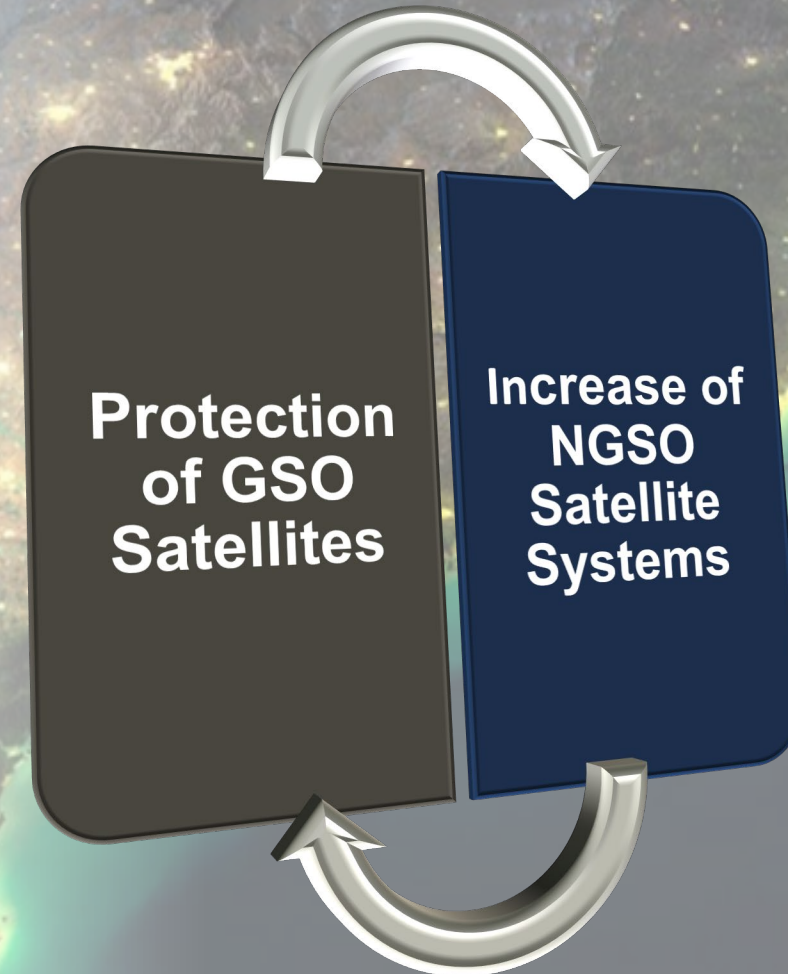
recalling b) overarching objective 3 of UNGA Resolution 76/3: improve access to space for all and ensure that all countries can benefit socio-economically from space science and technology applications and space-based data, information and products, thereby supporting the achievement of the Sustainable Development Goals (SDGs)

instructs WRC-23 and nexts: to continue to give high priority to the matter of equitable access to satellite orbits, taking into account the special needs of developing countries and the geographical situation of particular countries



CHALLENGES IN THE REGULATION OF SPACE SERVICES

HOW TO GUARANTEE
THE **PROTECTION** OF
NEW AND EXISTENT
GSO SATELLITES
WHILE ALLOWING THE
SECURE INCREASE OF
NGSO SATELLITE
SYSTEMS?



CHALLENGES IN THE REGULATION OF SPACE SERVICES



- UNOOSA - United Nations Office for Outer Space Affairs
- COPUOS - Committee on the Peaceful Uses of Outer Space
- IADC - Inter-Agency Space Debris Coordination Committee
- IAA - International Academy of Astronautics
- IAU - International Astronomical Union
- ROSCOSMOS - Russian Space Agency
- CNSA - China National Space Administration (China)
- ISRO - Indian Space Research Organisation (India)
- AEB – Brazilian Space Agency
- NASA - National Aeronautics and Space Administration (USA)
- ESA - European Space Agency (Europe)
- JAXA - Japan Aerospace Exploration Agency (Japan)
- SSC - Space Safety Coalition
- SWF - Secure World Foundation
- ...

IT'S NECESSARY TO
WORK TOGETHER,
BECAUSE, WITHOUT
AN IMPROVED
COORDINATION
PROCESS, THIS
COULD BECOME A
PROBLEM THAT
AFFECT **ALL WORLD**

CHALLENGES IN THE REGULATION OF SPACE SERVICES

EXPONENTIAL GROWTH OF NGSO OCCUPATION



Radio-frequency spectrum management;

Satellite orbits management;

Access to space for all and ensure that all countries can benefit socio-economically from space science, technology applications, space-based data, information and products;

Special needs of developing countries and the geographical situation of particular countries;

Space debris, as they “bring risk” to the development of satellite projects even in other orbits;

Possible future risks to satellite launch activities, space research, meteorology measurements, Radioastronomy observations, and possible environmental damage that is still little explored; ...



CREATE A SOLUTION ENVIRONMENT

- ✓ Expand coordination and cooperation between countries, in order to establish postures and regulations that allow for a more uniform treatment in terms of rights and obligations
- ✓ Stimulus and competition creating new systems without harming national networks
- ✓ Strengthen the ITU-R to address these new issues and build the framework and global solutions needed

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***THANK
YOU ALL***

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