



Satélite de Telecomunicaciones
Simón Bolívar



Satélite Observación
Francisco de Miranda



INVESTIGACIÓN • FORMACIÓN • DISEÑO • FABRICACIÓN • NORMALIZACIÓN • SEGUIMIENTO • CONTROL • MANTENIMIENTO



SPACE ACTIVITIES IN THE BOLIVARIAN REPUBLIC OF VENEZUELA

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OUTLINE

- 1. BACKGROUND OF SPACE ACTIVITIES IN VENEZUELA**
- 2. BOLIVARIAN AGENCY FOR SPACE ACTIVITIES (ABAE)**
- 3. NATIONAL SPACE PROGRAMS:**
 - a) VENESAT-1 PROGRAM**
 - b) VRSS-1 PROGRAM**
 - c) CENTER FOR SPACE RESEARCH AND DEVELOPMENT**
 - d) VRSS-2 PROGRAM**
 - e) HUMAN TRAINING**
- 4. INTERNATIONAL COOPERATION**
- 5. FINAL CONSIDERATIONS**



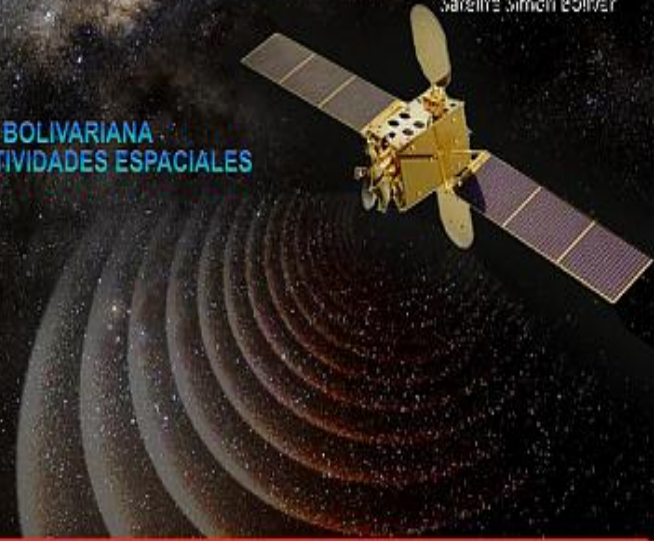
1. BACKGROUND OF SPACE ACTIVITIES IN VENEZUELA





AGENCIA BOLIVARIANA
PARA ACTIVIDADES ESPACIALES

Observación de la Tierra
Satélite Miranda



* Suscripción del tratado
general del espacio (1967)
* Cartografía - Astrofísica (1969-7 i)



1973

* Creación CPDI-FII (1983)



1999

- * Creación Ministerio Ciencias y Tectología
- * Comisión Inter-Ministerial Venezolana para el uso pacifico del espacio (2004)
- * Cooperación Bilateral China-Uruguay-India
- * Centro Espacial Venezolano (2006-07)



2008

- * Lanzamiento VeneSat-1
- * Lanzamiento VRSS-1 Satélite Miranda
- * Centro de Diseño, Ensamblaje, Integración y Verificación de Pequeños Satélites

2012

2013

THE BOLIVARIAN AGENCY FOR SPACE ACTIVITIES (ABAE)





2. BOLIVARIAN AGENCY FOR SPACE ACTIVITIES (ABAE)

- Created by law in August 9th 2007 by the National Assembly. The creation law was officially published in October 25th 2007 in the GO N° 38.796.
- Operations started from January 01st 2008.
- Is a public institution attached to the Ministry of Popular Power for Higher Education, Science and Technology.
- It is the national institution in charge of running space activities at the Bolivarian Republic of Venezuela.
- Current national space programs: VENESAT-1 (telecom), VRSS-1 (EO), Research and Development Center for Small Satellites, VRSS-2 (EO).



3. NATIONAL SPACE PROGRAMS

a) VENESAT-1 PROGRAM (SIMÓN BOLÍVAR SATELLITE)

TECHNICAL FEATURES OF VENESAT-1 SATELLITE	
WEIGHT	5100 KG
PLATFORM	DFH-4
ORBIT POSITION	78° WEST
TRANSPONDERS	14 in band C/12 in band Ku/ 2 In band Ka
TYPE	GEOSTATIONARY
POWER	6100 WATT
STABILIZATION	3 AXES

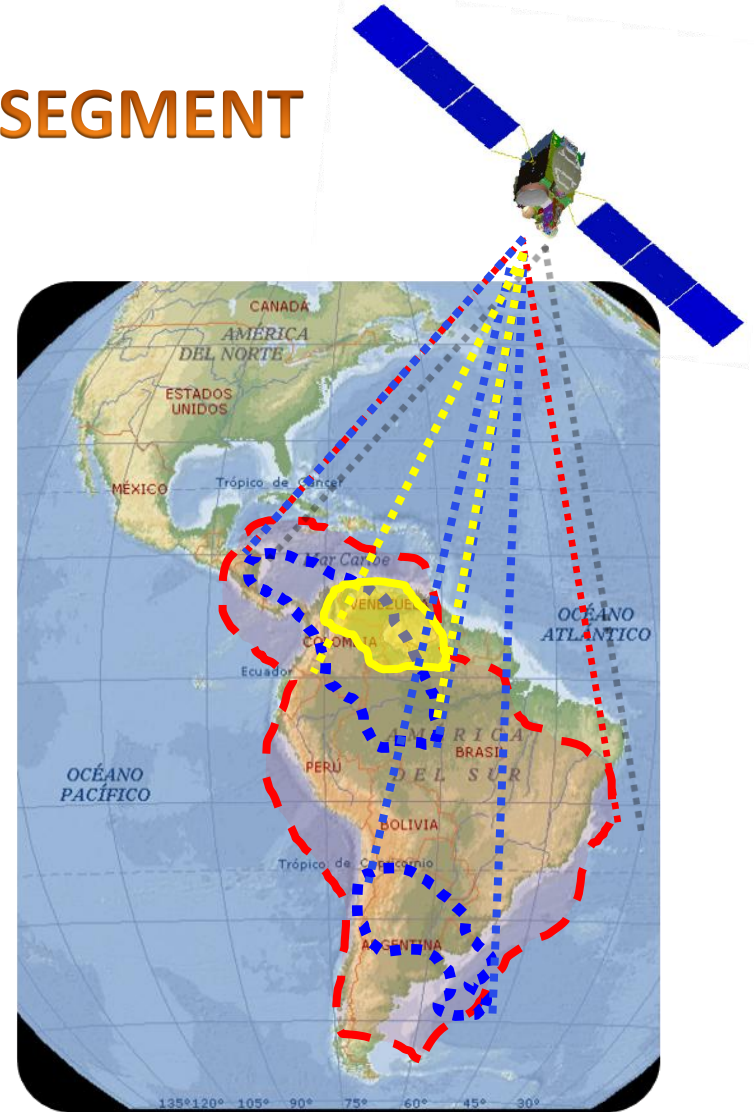


VENESAT-1



VENESAT-1: SPACE SEGMENT

- **C BAND:** VENEZUELA, CUBA, DOMINICAN REPUBLIC, HAITI, JAMAICA, CENTER AMERICA WITHOUT MEXICO, SOUTH AMERICA WITHOUT THE SOUTHEAST PART OF CHILE AND ARGENTINE.
- **Ku BAND:** VENEZUELA, HAITI, CUBA, DOMINICAN REPUBLIC, BOLIVIA, PARAGUAY AND URUGUAY.
- **Ka BAND:** VENEZUELA.





VENESAT-1 GROUND SEGMENT: MAIN STATION

Base Aérea Manuel Ríos (BAMARI). El Sombrero, Guárico State, Venezuela





VENESAT-1: CAPACITY BUILDING

**Highly qualified
education/national needs**
**TECHNOLOGICAL
INDEPENDANCE**

**Strengthening
technical capacity**

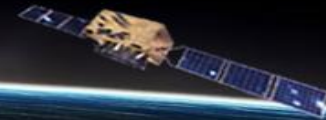
**30 doctor
candidates**

60 operators

**Education
I, R & D**

**Technical
Management**

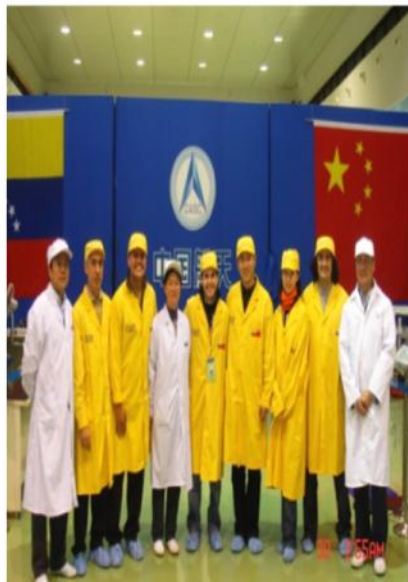
**Operation and
maintenance of the
VENESAT-1 Satellite**



March 2006



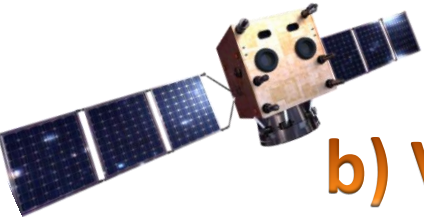
December 2007



September / October 2008

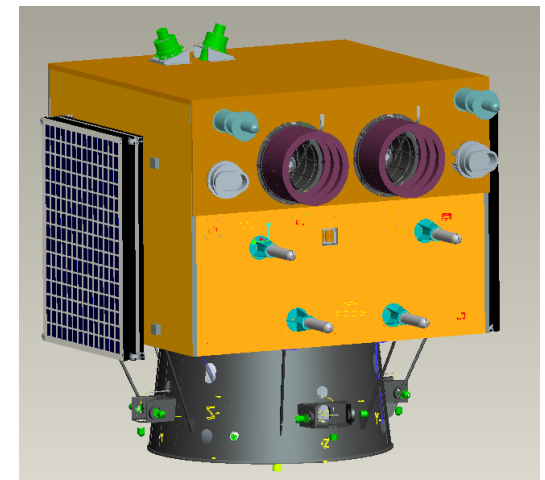


Launch campaign, October 2008



b) VRSS-1 PROGRAM (MIRANDA SATELLITE)

TECHNICAL FEATURES OF VRSS-1 SATELLITE	
WEIGHT	880 KG
SIZE	1,53 × 1,65 × 1,87 M
ORBIT	SUN SYNCHRONOUS ORBIT (SSO)
HEIGHT	639,54 KM
LTDN (LOCAL TIME DESCENDING NODE)	10:30
PERIOD (DAYS)	57
REVISIT TIME (DAYS)	4



VRSS-1 PRE-LAUNCH CONFIGURATION



Miranda Satellite (VRSS-1 Program)

House planning

Urban and rural areas
Municipal Management - Cadastre

Disaster management

Land slides, floods
Drought, Desertification
Fires

Productive systems

Basic information
Health

Security and defense

Illegal mining
Humanitarian help
Border surveillance
Control of illegal crops

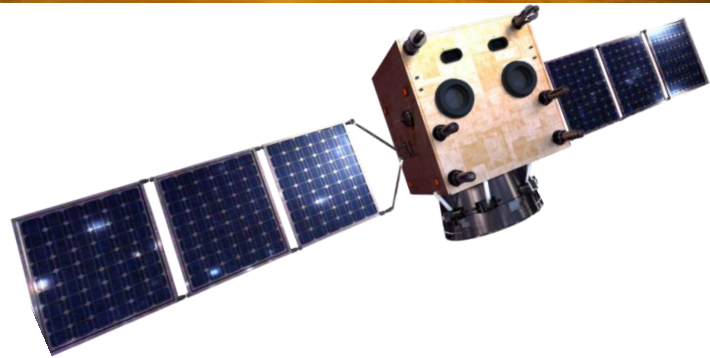
Natural resource management

Biodiversity
Maritime and coastal areas

Up to date, there are 209.705
cataloged images



Miranda Satellite (VRSS-1 Program)

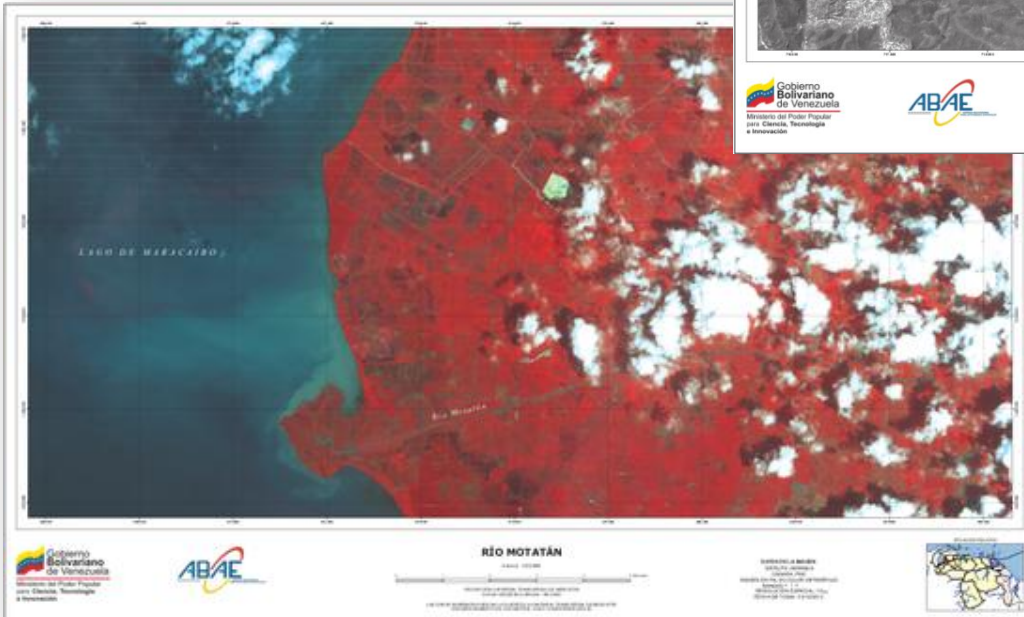
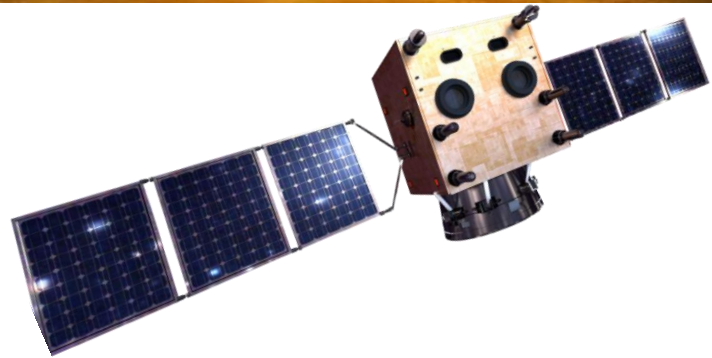


**GROUND CONTROL FACILITIES
LOCATED IN VENEZUELA**

TRAINING OF 54 PROFESSIONALS



The satellite is fully operated by local professionals, using the ground segment built in Venezuela for satellite control and applications



Images of Miranda Satellite (VRSS-1 Program)



c) CENTER FOR SPACE RESEARCH AND DEVELOPMENT



- Design, assembly, integration and verification of small satellites ($\leq 1000\text{kg}$)
- Earth observation and Scientific Missions
- To promote scientific networks integrated into the space sector, allowing research in strategic areas such as material science, electronics, chemistry, computer science, among others



CENTER FOR SPACE RESEARCH AND DEVELOPMENT

ASSEMBLY, INTEGRATION AND TEST FACILITIES (AITC):

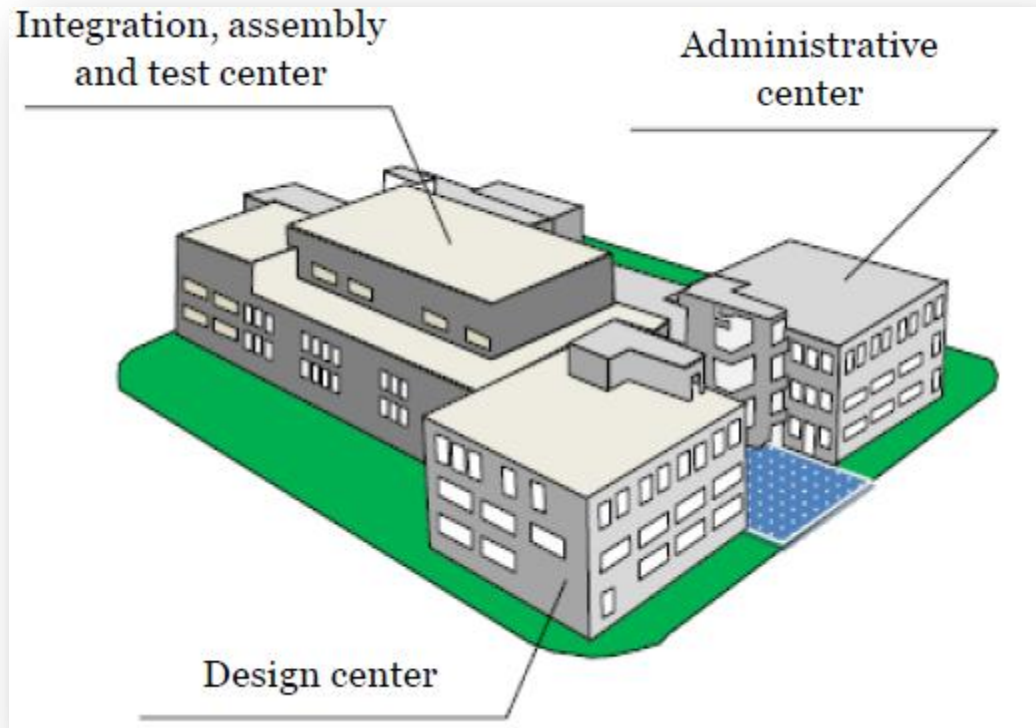
- Electromagnetic compatibility
- Checkout test
- Space environmental simulation
- Acoustic test
- Leakage detection
- Alignment test
- Mass properties

DESIGN FACILITIES (DC):

- System design
- Telemetry, tracking and command
- Attitude and orbit control subsystem
- Electric power subsystem
- Onboard data handling subsystem
- Propulsion subsystem
- Thermal control subsystem

ADMINISTRATIVE FACILITIES

- Administrative activities





d) VRSS-2 PROGRAM (SUCRE SATELLITE)



On **October 05th, 2014** was signed between Venezuela and China a new agreement to design and manufacture the **VRSS-2 satellite**, using the existing facilities in Venezuela for assembling, integration and testing of satellites up to 1 Ton. VRSS-2 will have 1 m resolution. It will be launch in 2017, before the End of Life (EOL) of VRSS-1 satellite.



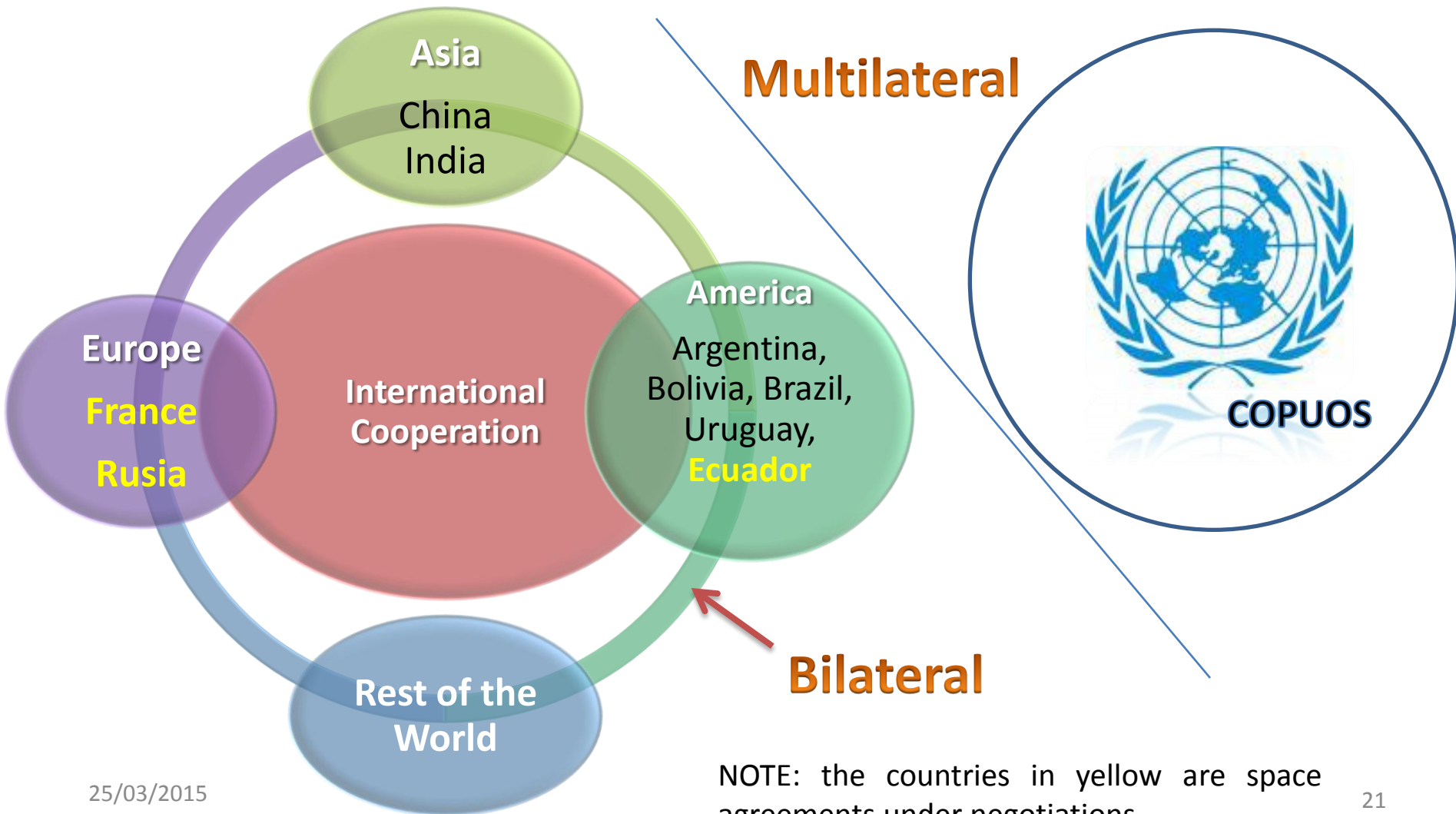
e) HUMAN TRAINING



Since 2007 up to date, there are **3010** professionals that have been trained in space science, technology and applications



4. INTERNATIONAL COOPERATION





5. FINAL CONSIDERATIONS. LTS (Ref. A/AC.105/2014/CRP.16)

- The role of States on decision-making processes.
- Inclusion of developing countries in research and development activities aimed to enhance and promote the LTS of space activities.
- General capacity building for developing countries in areas such as space weather modeling, debris monitoring, conjunction assessment, and data on space objects, including transfer of technology and management methodologies and techniques.
- Commitment to the International Space Law.
- Use of Outer Space for the benefit of mankind. Equitable and rational use of GEO.

THANKS...

A photograph of a satellite ground station at sunset. Two large parabolic satellite dishes are silhouetted against a bright orange and yellow sky. The sun is low on the horizon, creating a lens flare effect. In the foreground, there are some buildings and a fence.

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