

Registration of Space Objects

Requirements and Procedures

Natercia Rodrigues
Chief,
Office of the Director, UNOOSA



UNITED NATIONS
Office for Outer Space Affairs

KiboCUBE Regulatory Webinar
- What You Need to Know to Deploy a 1U CubeSat into Space -
11 September 2023

Context



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International Obligations

United Nations Treaties on Outer Space

- Outer Space Treaty, 1967 (114/23)
- Rescue Agreement, 1968 (99/23)
- Liability Convention, 1972 (99/19)
- **Registration Convention, 1975** (75/3)
- Moon Agreement, 1979 (18/4)

Other

- **Registration 1721B (XVI) (1961)**
- Concept of 'launching State' 59/115 (2004)
- Registration Practices 62/101 (2007)
- National Legislation 68/74 (2013)
- LTS Guidelines (2019)





UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE

A commemorative edition

Outer Space Treaty (1967)

- **International responsibility** for national activities in outer space
(Article VI)
- International **liability** for damage
(Article VII)
- National registry, jurisdiction and **control**
(Article VIII)
- Cooperation and mutual assistance, due regard, harmful contamination, harmful interference
(Article IX)
- Information and notification
(Article XI)

Outer Space Treaty

Article VI

State Parties to the Treaty shall **bear international responsibility for national activities** in outer space, including the Moon and other celestial bodies, whether such activities **are carried on by governmental agencies or by non-governmental entities**, and for assuring that national activities are **carried out in conformity** with the provisions set forth in the present Treaty. The **activities of non-governmental entities** in outer space, including the Moon and other celestial bodies, shall **require authorization and continuing supervision** by the **appropriate State Party** to the Treaty."



International responsibility

Constitutes an obligation to respond to other States Parties on your national activities in outer space

National activities

Includes those undertaken by governmental agencies and non-governmental entities

Conformity

Ensure that national activities are carried out in accordance with the Treaty

Authorization + Continuing Supervision

Required for activities conducted by non-governmental entities

Outer Space Treaty

Article VI: Authorization



How

- ✓ National regulatory frameworks
- ✓ Regulatory Authority
- ✓ Licences



Scope

- ✓ Determined by States



Outer Space Treaty


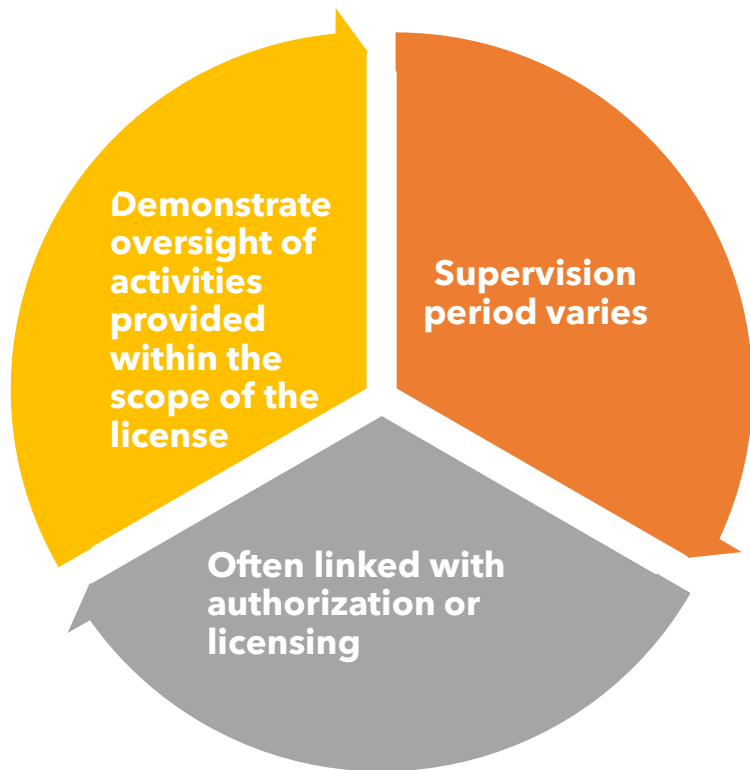
Article VI: Authorization

Licensing conditions


Entity		
Appropriate Financial resources	A track record/reliability in similar activities	Technical knowledge/expertise <ul style="list-style-type: none">• qualifications and experience of its staff
Activity		
Insurance coverage (objective risk)		Meets public safety standards, including environmental considerations
Compliant with the State's international binding and non-binding obligations <ul style="list-style-type: none">• Spectrum allocation and frequency management under ITU Regulations,• Space debris mitigation and/or planetary protection, as appropriate		In line with national policies, eg <ul style="list-style-type: none">• national security• promotes commercial space and private sector activities

Outer Space Treaty

Article VI: Supervision



Supervision of a launch service provider typically ceases once the launch services are completed



Supervision of a satellite operator could continue through post mission satellite disposal, could last more than 25 years.

Long-term supervision

Periodic filings (quarterly/annually)

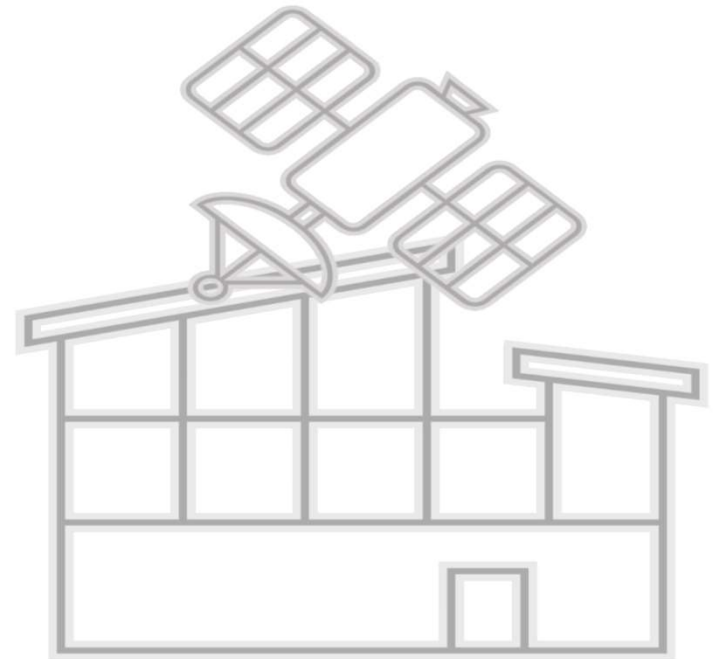
Provision of verifiable orbital telemetry info

In-situ inspections

Outer Space Treaty

Article VII: Liability

“**Each State Party** to the Treaty that launches **or procures** the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is **internationally liable for the damage** to another States Party to the Treaty or to its natural or juridical persons **by such object or its component parts on the Earth, in air space, or outer space**, including the Moon and other celestial bodies”.



Outer Space Treaty

Article VIII Registration

A State Party to the Treaty on whose registry an object launched into outer space **is carried shall retain jurisdiction and control** over such object, and over any **personnel** thereof, while in outer space or on a celestial body...

Such **objects** or component parts **found beyond the limits of a State party** to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return.

Retains jurisdiction and control

States retain ownership rights in space objects

Gain the right for the object's return

Objects entered in National Registry

Registration 101



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Registration Convention (1974)



- Definitions
 - **"launching State"**
 - **"space object"**
 - **"State of registry"**(Article I)
- Launching State shall register the space object by means of **an entry in an appropriate registry.** Only **1 State of Registry**
(Article II)
- Information to be provided as soon as practicable
(Article IV)

Objective

- Identification of object
- State responsible

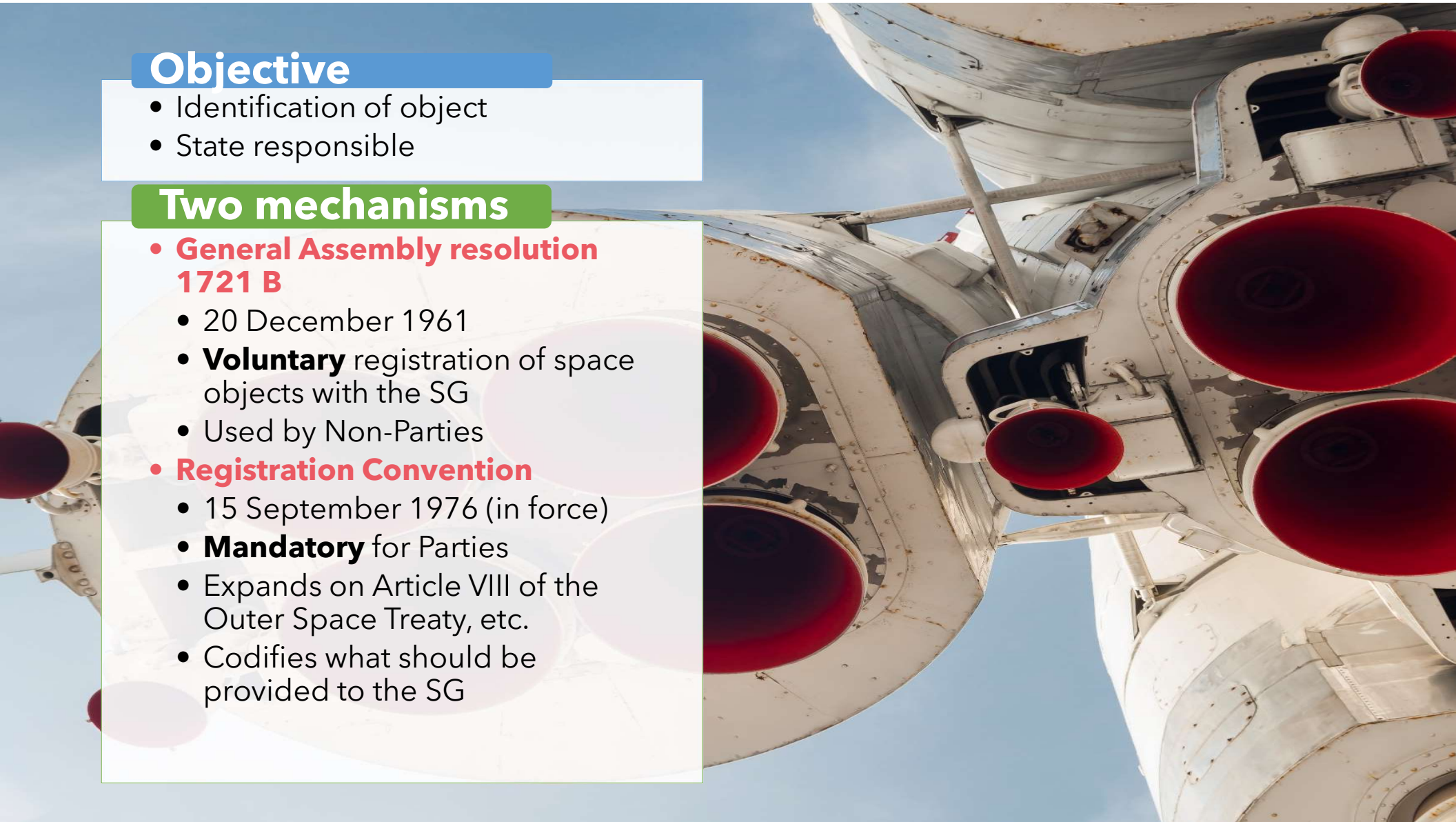
Two mechanisms

- **General Assembly resolution 1721 B**

- 20 December 1961
- **Voluntary** registration of space objects with the SG
- Used by Non-Parties

- **Registration Convention**

- 15 September 1976 (in force)
- **Mandatory** for Parties
- Expands on Article VIII of the Outer Space Treaty, etc.
- Codifies what should be provided to the SG



Who registers?

A space object is registered by a **launching State** who carries the **object on their national space object registry**

“Launching State”

- A State which launches or **procures the launching** of a space object
- A State from whose territory or facility a space object is launched

“State of Registry”

- A launching State on whose registry a space object is carried
- An entry in an appropriate registry
- Jointly determine which launching State shall register the object

Who registers?

State of registry

- Many launching States; one State of registry ✓
- Article II, para 2, Registration Convention
 - “jointly determine which one of them shall register the object”
 - “jurisdiction and control” (Article VIII, Outer Space Treaty)
- In practice, a State may register a space object that is not under its jurisdiction and control (owner but foreign operator).
- A State may also register a space object even though it may not meet the definition of “launching State” (i.e. transfer of ownership)

UNOOSA maintains a list of national registration focal points for States use





When to register?

Article IV

"as soon as practicable"

Final operational orbit/orbital slot reached months after launch: when to register?

State practice: generally intended operational orbits

Special case

Deployed satellites (i.e. cubesat deployed from the ISS)

State practice: many provide the date of deployment from the ISS as date of launch

UNOOSA recommendation: as soon as possible after launch with the intended operational orbit; and later update the information. For objects deployed at later stage, provide both date of launch and date of deployment

What to register

Article IV

Specific information

- Appropriate designator of the space object/registration number ✓
 - COSPAR International Designator
 - NPS Principles
 - National Designator
 - Common name
- Date of launch ✓
 - Lift off from earth
 - and/or Space-based deployment
- Location of launch ✓
 - Terrestrial locations
 - Space-based locations
- Time of launch
 - UTC
 - national time zone ✓
- Basic orbital parameters ✓
 - geo-centric, helio-centric or objects orbiting other celestial bodies
- General function of the space object ✓
 - Generic
 - Specific, including uplink/downlink frequencies, imager resolution, etc.
- Date of re-entry into the Earth's atmosphere ✓

Additional information (resolution 62/101)

- Changes in orbital position of satellites in the geostationary orbit ✓
- Changes in the operational status of a satellite ✓
 - e.g. failure or decommissioning
- Changes in the supervision of the space object ✓
 - e.g. identity of the new owner or operator
- Focal point contact details (national registries) ✓

Practice of launch service providers

- Do not usually register foreign payloads
- Some launch provider States provide comparable information
- Not considered a registration
- Facilitates identification of satellites launched and on the State of registry
- Promotes transparency

'Space Object'

- A "space object" includes component parts of a space object as well as its launch vehicle and parts thereof (Article I, Liability Convention; Article I, Registration Convention)
- Operational satellites ✓
- Failed satellites ✓
- Rocket stages, boosters, payload adapters, fairings ✓
- Space debris ✓



Submission Form

- Available in all six languages of the United Nations through UNOOSA's website.
- Excel, Word and PDF formats.
- Used by over 30 States of registry since its introduction.
- Some States have used the form as a guidance on what to include in their national registries.
- Excel format developed for use by States registering multiple satellites (i.e. large or mega-constellation launches, updates on all objects in a national registry).

<https://www.unoosa.org/oosa/en/spaceobjectregister/resources/index.html>



UNITED NATIONS REGISTER OF OBJECTS LAUNCHED INTO OUTER SPACE

Registration Information Submission Form (as at 1 January 2010)

Note: This form is available from <http://www.unoosa.org/oosa/SORegister/resources.html>. Please see annex for instructions and definitions. Completed forms should be sent by hardcopy through Permanent Missions to UNOOSA and electronically to soregister@unoosa.org.

Part A: Information provided in conformity with the Registration Convention or General Assembly resolution 1721 B (XVI)			
New registration of space object	Yes <input type="checkbox"/>	Check box	
Additional information for previously registered space object (see below for reference sources)	Submitted under the Convention: ST/SG/SER/E/ _____	UN document number in which previous registration data was distributed to Member States	
	Submitted under resolution 1721B: A/AC.105/INF. _____		
Launching State/States/International intergovernmental organization		Under the Registration Convention, only one State of registry can exist for a space object. Please see annex.	
State of registry or international intergovernmental organization			
Other launching States (where applicable. Please see attached notes.)			
Designator			
Name			
COSPAR international designator (see below for reference sources)			
National designator/registration number as used by State of registry			
Date and territory or location of launch			
Date of launch (hours, minutes, seconds optional)	dd/mm/yyyy	hrs min sec	Coordinated Universal Time (UTC)
Territory or location of launch (see below for reference sources)			
Basic orbital parameters			
Nodal period		minutes	
Inclination		degrees	
Apogee		kilometres	
Perigee		kilometres	
General function			
General function of space object (if more space is required, please include text in a separate MSWord document)			
Change of status			
Date of decay/reentry/deorbit (hours, minutes, seconds optional)	dd/mm/yyyy	hrs min sec	Coordinated Universal Time (UTC)
Sources of information			
UN registration documents	http://www.unoosa.org/oosa/SORegister/docastatidx.html		
COSPAR international designators	http://nssdc.gsfc.nasa.gov/spacewarn/		
Global launch locations	http://www.unoosa.org/oosa/SORegister/resources.html		
Online Index of Objects Launched into Outer Space	http://www.unoosa.org/oosa/losindex.html		

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National Registration Focal Points

- Argentina
- Armenia
- Australia
- Austria
- Bahrain
- Belarus
- Belgium
- Brazil
- Cambodia
- Canada
- Chad
- Chile
- China
- Congo
- Colombia
- Côte d'Ivoire
- Democratic People's Republic of Korea
- Djibouti
- Finland
- Germany
- Greece
- Italy
- Japan
- Jordan
- Kenya
- Kuwait
- Lao People's Democratic Republic
- Lebanon
- Luxembourg
- Madagascar
- Malaysia
- Monaco
- Myanmar
- Netherlands (Kingdom of the)
- New Zealand
- Pakistan
- Philippines
- Portugal
- Qatar
- Republic of Korea
- Russian Federation
- Senegal
- Singapore
- Slovakia
- Slovenia
- Spain
- Sudan
- Sweden
- Tanzania
- Thailand
- Türkiye
- Uganda
- Ukraine
- United Arab Emirates
- United Kingdom of Great Britain and Northern Ireland
- Uruguay
- Zimbabwe

[United Nations Register of Objects Launched into Outer Space: National Focal Points \(unoosa.org\)](http://unoosa.org)

COPUOS member States

Algeria, Angola, Benin, Burkina Faso, Cameroon, Chad, Egypt, Ethiopia, Ghana, Kenya, Libya, Mauritius, Morocco, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tunisia

Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela

Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Israel, Italy, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Türkiye, United Kingdom, United States

Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Czech Republic, Hungary, Poland, Romania, Russian Federation, Slovakia, Slovenia, Ukraine, Uzbekistan

States Bahrain, Bangladesh, China, Cyprus, India, Indonesia, Iran, Iraq, Japan, Jordan, Kazakhstan, Kuwait, Lebanon, Malaysia, Mongolia, Oman, Pakistan, Philippines, Qatar, Republic of Korea, Saudi Arabia, Singapore, Sri Lanka, Syrian Arab Republic, Thailand, United Arab Emirates, Viet Nam

Conclusion

- 🤔 Applicable national space laws/rules/regulations
- 🤔 Licence and its requirements
- 🤔 Registration and information need to collect
- 🤔 Who national space authority

Always contact your Government long before launch of space object; they need to know that you will be launching a space object and would have to register it if they are Party to the Treaty.



Online registration resources

- Registration submissions by Parties to the Registration Convention and by States under General Assembly resolution 1721 B (XVI).
- Online Index of Objects Launched into Outer Space.
- Registration Information Submission Form.
- Texts of United Nations Treaties, Principles and Resolutions relating to outer space.
- Annual updates of the status of International Agreements relating to activities in outer space.
- Collection of national space legislation from Member States.
- UNOOSA/ITU Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites

[United Nations Register of Objects Launched into Outer Space \(unoosa.org\)](http://unoosa.org)



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