



# International Committee on Global Navigation Satellite Systems

Sharafat Gadimova

ICG Executive Secretariat

United Nations Office for Outer Space Affairs

# GNSS: Global Navigation Satellite Systems

## *Global Constellations*

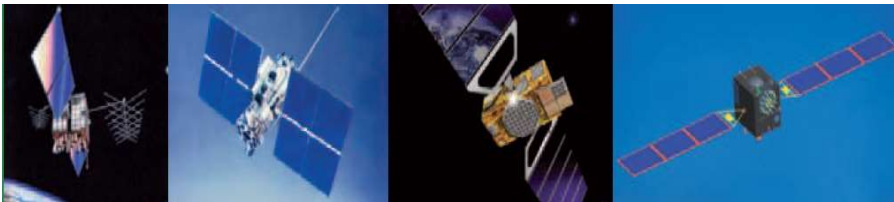
- Global Positioning System (GPS, 24+3) of the United States
- Global'naya Navigatsionnaya Sputnikovaya Sistema (GLONASS, 24+) of the Russian Federation
- GALILEO (24+3) of the European Union
- BeiDou Navigation Satellite System (BDS, 27+3IGSO+5GEO) of China

## *Regional Constellations*

- Indian Regional Navigation System/"Navigation with Indian constellation" (NavIC, 7) of India
- The Quasi-Zenith Satellite System (QZSS, 4+3) of Japan

## **ICG Providers' Forum**

A venue for **coordination and cooperation** to improve overall service provision

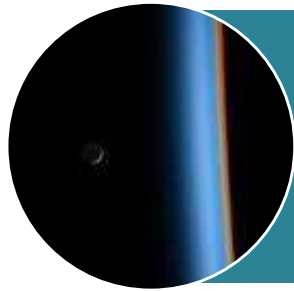




# ICG: International Committee on GNSS

- Established in 2005, ICG represents a unique combination of GNSS service providers and major user groups that seek to encourage **interoperability and compatibility** among the various satellite systems
- ICG is an **important vehicle** in the multi-lateral arena, as satellite-based positioning, navigation and timing becomes more and more a **genuine multinational cooperative venture**
- **UNOOSA** serves as the **Executive Secretariat** of ICG
- Membership: 13 Members and 21 International Organizations
- Annual meetings: ICG-15 meeting, Vienna (2021)

# UNOOSA: Supporting Member States



**Capacity Builder:** UNOOSA provides access to cutting edge space-data and information and builds capacity to use such data to accelerate sustainable development



**Convener:** UNOOSA facilitates international cooperation among UN Member States to develop new space policy



**Gateway:** UNOOSA - the sole UN agency dedicated to space affairs - coordinates UN activities using space-related technology to support sustainable development





# ICG: Working Groups

**Systems, Signals and Services (*USA & RF*):** Compatibility and interoperability, encouraging development of complimentary systems; and Exchange information on systems and service provision plans, spectrum protection

**Enhancement of GNSS Performance, New Services and Capabilities (*India, China & ESA*):** System enhancements (multipath, integrity, interference, etc.) to meet future needs, interoperable GNSS Space Service Volume, space weather

**Information Dissemination and Capacity Building (*UNOOSA*):** training/workshops, promoting scientific applications, outreach

**Reference Frames, Timing and Applications (*IAG, IGS & FIG*):** Monitoring and reference station networks, timing issues



# ICG: Working Groups Activities

## GNSS Interference and Spectrum Protection

- Interference Detection and Mitigation (IDM) Workshops
- Closely monitoring ITU/WRC proposals and regulations related to RNSS spectrum
- Spectrum Protection Educational Seminars: Focusing on the importance of protecting GNSS spectrum
  - Recommendation adopted at ICG-14 (2019) to develop a booklet – in progress



# ICG: Working Groups Activities (cont.)

## Interoperability and Service Standards

- Performance Standard Template
  - An updated version 2.0 of the Performance Standard Guidelines document:  
<https://www.unoosa.org/oosa/en/ourwork/icg/working-groups/s/PSindex.html>
- International GNSS Monitoring and Assessment (IGMA)
  - Joint Trial Project with IGS: to demonstrate the benefits of consolidated system products
- Interoperable Time – Focus on System Time Offsets



# ICG: Working Groups Activities (cont.)

## Space Service Volume: *Earth's Next Navigation Utility*

- Technical discussions and outreach efforts continue - focused on benefits of an interoperable SSV & development of space-based user equipment:  
<https://www.unoosa.org/oosa/en/ourwork/icg/working-groups/s/PSindex.html>
- Video (*Co-sponsored by NASA and National Coordination Office for PNT*)  
<https://www.unoosa.org/oosa/en/ourwork/icg/documents/videos.html>

## Orbital Debris and Orbital De-confliction

- Report from IADC provided to ICG on debris guidelines for MEO/IGSO satellites

## Precise Point Positioning (PPP) Interoperability task force

- A template for collecting information from service providers on the characteristics of their PPP services





# Capacity Building

## Regional Workshops/training courses on GNSS applications

- Reinforce the exchange of information between countries and scale up the capacities in the regions for pursuing the application of GNSS solutions
- **Expert meeting, 5 – 9 December 2022, Vienna**
  - Provide updated knowledge of how GNSS operate and their applications
  - GNSS in geodesy and reference frames
  - Describe the science of Space Weather
  - How to perform ionospheric and Space Weather research with GNSS data
- ***Space weather monitoring using low-cost GNSS receiver systems***
  - Develop prototype systems in order to explore the possibilities of using low-cost receiver systems for space weather monitoring



ICG-16  
9 – 14 October 2022  
Abu Dhabi, United Arab Emirates

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