



UNITED NATIONS
Office for Outer Space Affairs

INFORMATION NOTE

(Hybrid format) United Nations International Meeting on the Applications of Global Navigation Satellite Systems

Hosted by the United Nations Office for Outer Space Affairs

**Co-organized and co-sponsored by the
International Committee on Global Navigation Satellite Systems (ICG)**

Vienna International Centre

Vienna, Austria

5 - 9 December 2022

1. Background Information

Global navigation satellite system (GNSS) is a general term describing any satellite constellation that provides positioning, navigation and timing services on a global and regional basis and whose data are used for a broad range of applications. Current GNSS include the following global and regional constellations: the Global Positioning System (GPS) of the United States of America, the Global Navigation Satellite System (GLONASS) of the Russian Federation, the BeiDou Navigation Satellite System (BDS) of China, the European satellite navigation system, Galileo, of the European Union, the Navigation with Indian Constellation (NavIC) system of India and the Quasi-Zenith Satellite System (QZSS) of Japan. The performance of GNSS can be improved through satellite-based augmentation systems to provide greater accuracy, integrity and availability for professional use and applications in critical sectors involving safety of life, for example, the aviation sector, which requires high-performance integrity verification.

The International Committee on Global Navigation Satellite Systems (ICG) is an important platform for communication and cooperation in the field of GNSS. The United Nations Office for Outer Space Affairs, in its capacity as the executive secretariat of ICG, supports progress in achieving compatibility and interoperability between all satellite navigation systems. As new systems emerge, signal compatibility and interoperability among GNSS systems and transparency in the provision of open civil services are key factors for ensuring that civil users around the world receive the maximum benefit from GNSS and its applications.

The Office for Outer Space Affairs and ICG work together to raise awareness of the important role of GNSS in our societies and to promote international collaboration in this field. To focus on GNSS technology and its applications, the **United Nations International Meeting on the applications of GNSS** will be held at the Vienna International Centre, Vienna from 5 to 9 December 2022. This meeting will be

an opportunity to build upon the results of the regional workshops and training courses contributing to defining a plan of action and the definition of functional partnerships in the long- term while also strengthening existing strategies at the regional levels. It will also be an opportunity to build upon a number of on-going initiatives such as the International Space Weather Initiative (ISWI), multi-GNSS demonstration project, the realization of the regional reference frames and systems, the activities of the United Nations-affiliated Regional Centres for space science and technology education also acting as the ICG Information Centres, and also discuss proposals to be forwarded to the ICG.

A seminar on ***GNSS spectrum protection and interference detection and mitigation*** will be held during the meeting. This seminar will introduce spectrum management and the mitigation of radio frequency interference, collectively referred to here as spectrum protection, for radionavigation satellite services (RNSS). The seminar will be conducted in coordination with the ICG Working Group on Compatibility and Interoperability and in cooperation with the International Telecommunication Union (ITU). The topics of the seminar will be built from the spectrum experience gained from the development, operation, and use of RNSS. The aspects of RNSS spectrum protection to be addressed include regulatory, technical, operational, and policy.

The discussions at the meeting will also be linked to the 2030 Agenda for Sustainable Development and to its targets set out for Sustainable Development Goals, such as, *SDG3 - Good health and wellbeing* (GNSS positioning enables individual patients, staff or equipment to be monitored, and response teams directed more efficiently); *SDG 7 – Affordable and clean energy* (GNSS reflectometry techniques can produce scatterometry models to assist in the optimum positioning of off-shore wind farms); *SDG 9 – Industry, Innovation and Infrastructure* (GNSS signals can be used for navigation and positioning of in-orbit space operations particularly from low-Earth orbit to cis-Lunar); and *SDG 11 - Sustainable Cities and Communities* (GNSS is widely used for urban planning in order to pinpoint structures and reference points for cadastral and urban planning purposes).

2. Venue and date

The **United Nations International Meeting on the Applications of GNSS** will be held in Vienna, Austria from 5 to 9 December 2022. The venue of the meeting will be the Vienna International Centre. All invited participants will receive an information package with details on board and lodging and other arrangements by electronic mail in due course.

3. Objectives and Expected Outcomes

The meeting will contribute to international cooperation by providing opportunity to exchange updated information on the use of GNSS technology and its applications.

The specific objectives of this meeting and the expected outcomes are:

- Increase awareness among decision makers and representatives of research and academic community about on-going activities and trends in the use of GNSS technology, applications and services.
- Review of on-going and planned initiatives as well as case studies that could contribute to the wider use of GNSS technology and its applications, including the possibility of one or more national, regional and international pilot projects, in which interested institutions could incorporate the use of GNSS technology.
- Identify a functional partnership that could be established in order to promote the use of GNSS and its applications, as well as recommend how such a partnership could be established through voluntary actions that could include Governments, international organizations and other relevant stakeholders.
- Define recommendations and findings to be forwarded as a contribution to the ICG.

4. Preliminary programme

The meeting programme will include plenary sessions and sufficient time for discussions among participants to identify the priority areas where pilot projects should be launched and examine possible partnerships that could be established. As a preliminary suggestion the following sessions will be organised:

Thematic Sessions

Session 1: Current and planned GNSS and satellite-based augmentation systems

- Programme updates on GNSS and satellite-based augmentation systems: GPS, GLONASS, GALILEO, BDS, NavIC and QZSS.

Session 2: GNSS-based applications focusing on, but not limited to

- Advances and performance benefits due to multi-sensor integration of GNSS applications in surveying and geodesy;
- The use of GNSS for aviation, including integration of satellite navigation technology into air traffic management and airport surface navigation and guidance;
- The use of navigation and timing systems for road, rail, and engineering applications, including vehicle guidance, geographic information system (GIS) mapping, and precision farming;
- Navigation systems operation in marine environment, including waterway navigation, harbour entrance/approach, marine archaeology, fishing, and recreation;
- Commercial applications of GNSS;
- The use of GNSS signals for navigation and positioning of in-orbit space operations, particularly from low-Earth orbit to cis-Lunar.

Session 3 (*Seminar*): GNSS spectrum protection and interference detection and mitigation

- ICG activities and its role in spectrum protection and interference detection and mitigation.

Session 4: GNSS data processing

- Understanding GNSS data types, GNSS errors, coordinate systems and applications;
- Example case studies of low-cost receiver systems;
- Introduction to data processing tools for high-accuracy;

Session 5: GNSS and space/atmospheric weather monitoring

- Atmospheric monitoring (troposphere) to improve numerical weather predictions;
- Space weather monitoring (ionosphere) for space situation awareness.

Session 6: GNSS reference frames/systems and reference station networks

- Programme updates on regional and national reference frames/systems and perspectives for a regional cooperative mechanism.

Session 7: Capacity building, training and education in the field of GNSS

- GNSS education opportunities at different levels/needs;
- The strengthening of a specialized master's programmes for long-term professional education and support to PhD training and networking in GNSS;
- GNSS education tools/open source software related to GNSS.

Discussion Session

- Issues, concerns and approaches for pilot projects/initiatives, requirements of implementing, mechanisms and resources of implementing;
- Possible follow-up projects and initiatives and proposals for future workshops/training courses/technical seminars.

5. Working Methods

Participants of the meeting are requested to deliver a presentation paper and materials covering information on the use of GNSS technology, case studies/projects in GNSS applications in their respective countries. It is also necessary to submit an abstract of presentation with a maximum of 600 words including the following details: *Paper Title, Author (s) Name(s), Affiliation(s), and e-mail address* for the presenting author. **Applicants are requested to use the template to present an abstract in the required format.**

Presentations made at the meeting will be published on the website of the Office for Outer Space Affairs (www.unoosa.org).

6. Expected participants

The meeting is being planned for a total of 75 participants including scientists, engineers, university educators, and policy-and-decision makers and senior experts from the following groups: international, regional, national and local institutions, United Nations agencies, intergovernmental and non-governmental organizations, research and development institutions, and also from industry. **Equally qualified female applicants are particularly encouraged.**

7. Language of the meeting

The working language of the meeting will be English.

8. Financial support

Within the limited financial resources available, a limited number of selected participants will be offered financial support to attend the meeting. This financial support will defray the cost of travel (a round trip airticket – most economic fare – between the airport of international departure in their home country and Vienna) and/or the room and board expenses for the duration of the meeting. The co-sponsors of the meeting will jointly select participants on a competitive basis. Successful applicants will be notified of the outcome within one week after the deadline.

9. Deadline for submission of applications and abstracts

The completed application form together with the presentation abstract should be submitted on-line, to the Office for Outer Space Affairs, **no later than Sunday, 30 October 2022**. Only complete applications with all the requested information and signatures will be considered by the organizing committee. Please note that on-line application form is available on the web site of the Office for Outer Space Affairs at the following address: <https://www.unoosa.org/oosa/en/ourwork/psa/schedule/2022/un-international-meeting-gnss.html>

10. Life and Health Insurance

Life/major health insurance for each of the selected participants is necessary and **is the responsibility of the candidate or his/her institution or Government**. The organizers and co-sponsors will not assume any responsibility for life and major health insurance, nor for expenses related to medical treatment or accidents.

11. Further information and contact details

For information regarding the submission of nominations for attendance and funding, please contact Mr. Patrick GINDLER, United Nations Office for Outer Space Affairs, at the following e-mail address: (patrick.gindler@un.org).

For information regarding the programme, please contact Ms. Sharafat GADIMOVA, United Nations Office for Outer Space Affairs, at: (sharafat.gadimova@un.org).