

UNITED NATIONS Office for Outer Space Affairs

# **INFORMATION NOTE**

## United Nations/Spain Workshop on Global Navigation Satellite Systems and Related Space Technologies in Support of Urban Sustainability Challenges

Organized jointly by The United Nations Office for Outer Space Affairs and The Kingdom of Spain

> Hosted by Ayuntamiento de Málaga

## Co-organized and co-sponsored by The International Committee on Global Navigation Satellite Systems, The European Space Agency

Málaga, Spain

18 - 22 November 2024

## 1. Introduction

Global navigation satellite systems (GNSS) and related technologies can contribute in a wide-reaching fashion to the 2030 Agenda for Sustainable Development. GNSS and Earth Observation data are now used in a wide range of areas, including mapping and surveying, monitoring of the environment, precision agriculture and management of natural resources, disaster warning and emergency response, aviation, maritime and land transportation, and research areas, such as climate change and ionospheric studies. GNSS applications offer a cost-effective way of pursuing sustainable economic growth while protecting environment.

Current GNSS include the Global Positioning System (GPS), the Global Navigation Satellite System (GLONASS), the BeiDou Navigation Satellite System (BDS) and the European Satellite Navigation System (Galileo). There are also two regional systems, the Navigation with Indian Constellation (NavIC) system and the Quasi-Zenith Satellite System (QZSS), as well as various augmentation systems designed to improve one or more GNSS qualities, such as accuracy, robustness, and signal availability.

In addition to GNSS, other space technologies such as Earth Observation satellites or communication satellites play a pivotal role creating socioeconomic benefits. Earth Observation satellites enable continuous and detailed monitoring of Earth's surface, providing valuable data for environmental protection, resource management, and disaster response. They assist in tracking deforestation, urban sprawl, and changes in agricultural lands, and offer crucial insights for managing water resources and mitigating climate change

impacts. Communication satellites, on the other hand, facilitate global connectivity, bridging the digital divide by providing internet access to remote and underserved areas, thus supporting education, telemedicine, and economic development. These technologies, together with GNSS, create a comprehensive toolkit to address various challenges related to sustainable development, ensuring a coordinated and efficient approach towards achieving the 2030 Agenda for Sustainable Development.

To address a wide array of GNSS and related technologies applications for socioeconomic benefits and to focus on initiating pilot projects and strengthening the networking of GNSS-related institutions in the region, a Workshop on GNSS and related space technologies in support of urban sustainability challenges will be held in Málaga, Spain from 18 to 22 November 2024. This workshop is being organized by the United Nations Office for Outer Space Affairs in cooperation with Spain. The workshop will be hosted by Ayuntamiento de Málaga.

## 2. Objectives and Expected Outcomes

The **main objectives** of the workshop will be to reinforce the exchange of information between countries and scale up the capacities in the region pursuing the application of GNSS/Galileo and related space technologies solutions; share information on national, regional, and global projects and initiatives, which could benefit regions; and enhance cross-fertilization among those projects and initiatives.

The **specific objectives** of the workshop will be to introduce GNSS-based technology and other space technologies in support of urban sustainability challenges; promote the greater exchange of actual experiences with specific applications; focus on appropriate GNSS applications projects at the national and/or regional levels; and define recommendations and findings to be forwarded as a contribution to the Office for Outer Space Affairs and the International Committee on Global Navigation Satellite Systems (ICG), particularly, in forging partnerships to strengthen and deliver capacity-building on satellite navigation science and related technologies.

The **expected outcomes** of the workshop will be recommendations and findings on discussed topics to be adopted by the workshop participants; preliminary agreement of cooperation between countries in the region and action plan addressing identified issues/concerns.

The discussions at the workshop will also be linked to the 2030 Agenda for Sustainable Development and to its targets set out for Sustainable Development Goals, such as,

- *SDG 3: 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.

## **3.** Preliminary programme of the workshop

The workshop 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. A half-day technical tour will be arranged by the Local Organizing Committee during the workshop. As a preliminary suggestion the following sessions will be organized:

<ul> <li>Session 1: Current and planned GNSS and satellite-based augmentation systems</li> <li>Programme updates on the worldwide global, regional and augmentation satellite navigation systems in operation and under development</li> <li>Session 2: GNSS and other space-based technologies: Urban Resilience and Smart Cities</li> <li>Enhancing urban resilience by monitoring and management urban infrastructure</li> <li>Use of GNSS and EO for urban planning and disaster risk reduction</li> <li>Integration of GNSS and space-based data for smart transportation and traffic management</li> <li>Adoption of IoT via satellite communications for scalable smart city solutions</li> <li>Optimization of energy consumption, supporting renewable energy and smart grids using GNSS and space-based technologies: Environmental impact and elimate change (Change indicators.)</li> <li>Utilizing Earth Observation satellites for long-term climate monitoring and tracking climate change indicators.</li> <li>Monitoring deforestation, land cover changes, and biodiversity using satellite imagery.</li> <li>Tracking pollution levels in air and water bodies through Earth Observation data.</li> <li>Detection and analysis of urban heat island and implementing urban planning and green infrastructure solutions based on satellite data insights</li> <li>Monitoring sea-level changes and coastal erosion using GNSS and satellite altimetry.</li> <li>Implementing coastal zone management and protection strategies with space-based data.</li> <li>Session 4: GNSS and other space-based technologies: Food Security</li> <li>Utilizing GNSS for precision farming to enhance crop yields and improve resource use efficiency</li> <li>Role of remote sensing and Earth observation satellites in monitoring soil moisture, crop health, and growth pattern</li> <li>Use of SNS and beard boservation for land degradation, erosion, and desertification monitoring</li> <li>Use of SNS and Earth observation for so</li></ul>	Thematic Sessions			
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•	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
Technical	Tour
4. Workiı	ng Methods

Participants of the workshop are requested to deliver a presentation paper and materials covering information on the thematic sessions subject in their respective countries. Each speaker is allocated 20 minutes for the presentation. 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 that will be sent out after submission of application.

#### 5. Sponsorship of the Workshop

The United Nations Office for Outer Space Affairs and Ayuntamiento de Málaga, as hosting entity, are responsible for organizing the workshop. ICG and the European Space Agency are co-sponsors of the workshop. **Sponsorship of the workshop is still open to interested entities.** 

#### 6. Expected participants

The workshop is being planned for a total of 100 participants including scientists, engineers, university educators, and policy-and-decision makers and senior subject-matter experts from the following groups: international, regional, national and local research and development institutions, United Nations agencies, intergovernmental and non-governmental organizations or industry, academia, think tanks and educational institutions. The Office for Outer Space Affairs is committed to achieving 50/50 gender balance in its programs and ensuring a balanced representation from different perspectives. Women are encouraged to apply.

#### 7. Language of the Workshop

The working language of the workshop 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 workshop. This financial support will defray the cost of travel (a round trip air ticket – most economic fare – between the airport of international departure in their home country and Málaga) and/or the room and board expenses for the duration of the workshop. The co-sponsors of the workshop will jointly select participants on a competitive basis. Successful applicants will be notified of the outcome within three weeks after the deadline.

#### 9. Deadline for Submission of Applications and Abstracts

The completed application form should be submitted on-line, to the Office for Outer Space Affairs, **no later than Sunday**, **18 August 2024.** Only complete applications with all the requested information and signatures will be considered by the workshop 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: <u>https://forms.office.com/e/LiuvUkWsWt</u>

## 10. Life and Health Insurance

Life/major health insurance for each of the selected participants is necessary and <u>is the responsibility of</u> <u>the candidate or his/her institution or Government</u>. The 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 additional information about the workshop, please contact Mr. Jorge Del Rio Vera, United Nations Office for Outer Space Affairs, at the following e-mail address: (Jorge.delriovera@un.org).

For the latest information on the workshop, please frequently check the website: <u>https://www.unoosa.org/oosa/en/ourwork/psa/schedule/2024/un\_spain-workshop-gnss-and-spacetechnologies-urbansustainability.html</u>