



UNITED NATIONS  
Office for Outer Space Affairs

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## INFORMATION NOTE

### **United Nations/Latvia Workshop on the Applications of Global Navigation Satellite Systems**

Organised jointly by  
**The United Nations Office for Outer Space Affairs and the  
Latvian Geospatial Information Agency on behalf of the Government of Latvia**

Co-organized by  
**The European Space Agency and the  
International Committee on Global Navigation Satellite Systems**

Hosted by  
**The Latvian Geospatial Information Agency**

**Riga, Latvia**

**14 – 18 May 2012**

#### **1. Introduction**

A five-day workshop on global navigation satellite systems (GNSS) technology and its applications in Riga, Latvia, from 14 to 18 May 2012 is being organized by the United Nations Office for Outer Space Affairs (OOSA) in cooperation with the Government of Latvia, the United States of America through the International Committee on Global Navigation Satellite Systems (ICG) and the European Space Agency (ESA), as part of the activities of the United Nations Programme on Space Applications, for the benefit of the countries in Europe. The Workshop will be hosted by the Latvian Geospatial Information Agency on behalf of the Government of Latvia.

Workshop participants will discuss how GNSS-enabling technology can strengthen a network of national reference stations and promote the interoperability of navigation, positioning and timing systems in the region. An overview of a wide range of GNSS applications existing today and prospects for the future, in areas such as surveying, mapping and asset management, precision agriculture, engineering and construction, aviation and maritime, as well as space weather monitoring will be provided.

#### **2. Background**

GNSS consists of constellations of satellites that provide continuously optimized location and time information, transmitting a variety of signals on multiple frequencies available at all locations on planet Earth. The GNSS are the Global Positioning System (GPS) of the United States, the Global Navigation Satellite System (GLONASS) of the Russian Federation, GALILEO of the European Union and the COMPASS/BeiDou of China. India and Japan have developed regional GNSS capability by launching a number of satellites into space that augment the capabilities that are already supplied by the global systems to provide additional regional coverage. As providers of GNSS services, the six global and regional system

providers have grouped together in a Providers' Forum in order to conduct discussions of mutual interest focused on improving coordinated service provision to benefit humankind.

In an attempt to build a system of systems in the coming decade, the ICG was established in December 2005 in an international meeting at the United Nations Office at Vienna as an informal, voluntary forum to promote cooperation, as appropriate, on matters of mutual interest related to civil satellite based positioning, navigation, timing and value-added services, as well as the compatibility and interoperability of GNSS, while increasing their use to support sustainable development, particularly in developing countries. The details on the ICG are available at the ICG Information Portal at [www.icgsecretariat.org](http://www.icgsecretariat.org)

To support the work of ICG, the Office for Outer Space Affairs, as the ICG Executive Secretariat, is focusing on promoting the use of GNSS technologies as tools for scientific applications, including space weather effects on GNSS, education and training on GNSS, and utilizing regional reference systems and frames. Additional information is available at: [www.unoosa.org](http://www.unoosa.org)

Globally there is growing interest in better understanding solar-terrestrial interactions, particularly patterns and trends in space weather. This is not only for scientific reasons, but also because the reliable operation of ground-based and space-based assets and infrastructures is increasingly dependent on their robustness against the detrimental effects of space weather. Currently, more than 1,000 instruments are operational in 14 ground-based world-wide instrument arrays (GPS receivers, radio antennas, magnetometers, cosmic ray detectors) for research on climate change, space weather, and ionospheric phenomena. These instrument arrays are utilized to constitute the International Space Weather Initiative (ISWI) in the period of time from 2010 to 2012. The details on the ISWI are available at: <http://www.iswi-secretariat.org/>

Efforts to build capacity in space science and technology are considered a major focus of the Office for Outer Space Affairs and are of specific interest to ICG with particular reference to GNSS. In the coming year, the Office for Outer Space Affairs will assist the process of the establishment of the ICG information centres for training and information dissemination on global applications of GNSS and their socio-economic benefits for humanity based on existing educational and research institutions, and hence to connect the institutions involved or interested in GNSS applications with GNSS providers.

Through regional workshops, expert meetings, pilot projects and training opportunities, the Office for Outer Space Affairs, as part of the United Nations Programme on Space Applications, is implementing a global navigation, timing and positioning satellite systems thematic area so that GNSS could be used more widely to support sustainable development, in particular in developing countries.

### **3. Objectives and Expected Outcomes**

The main objective focuses on the importance and need of cooperation to apply GNSS solutions through the exchange of information and the scaling up of capacities among countries in the region.

The specific objectives of the workshop are to: (a) update on-going activities related to the use of GNSS technology in participating countries; (b) enhance institutional and human capacity on utilizing GNSS technology using case studies, lessons learned, and experiences from other countries; (c) identify the specific needs of individual plans and projects on GNSS at the regional and international levels for near-, medium-, and long-term applications, taking into consideration the local institutional settings, including specific training and capacity-building needs; (d) develop a regional plan of action that would contribute to the wider use of GNSS technology and its applications, including the possibility of one or more national or regional pilot projects, or both, in which interested institutions could incorporate the use of GNSS technology; (e) define recommendations and findings to be forwarded as a contribution to the ICG.

The expected outcomes of the workshop are: (a) recommendations and findings on discussed topics; (b) preliminary agreement of cooperation between countries in the region and the GNSS continuously operating reference station (CORS) networks, such as the European Position Determination System (EUPOS)

and the International Association of Geodesy (IAG) Subcommittee for Europe (EEUREF); (c) action plan addressing identified issues/concerns.

#### **4. 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. As a preliminary suggestion the following sessions will be organised:

##### **Thematic Sessions**

##### **Session 1: Current and planned global and regional navigation satellite systems and satellite-based augmentation systems**

- Programme updates-GNSS: Global Positioning System (GPS), GLObal NAVigation Satellite System (GLONASS), European Satellite Navigation System (GALILEO), COMPASS/BeiDou Navigation Satellite Systems (CNSS), Indian Regional Navigation System (IRNSS), Quasi-Zenith Satellite System (QZSS)
- GNSS space-based augmentation systems: Wide-Area Augmentation System (WAAS), System of Differential Correction and Monitoring (SDCM), the European Geostationary Navigation Overlay Service (EGNOS), GPS Aided Geo-Augmented Navigation (GAGAN), the Multi-functional Transport Satellite Satellite-based Augmentation System (MSAS)

##### **Session 2: Initiatives/experiences in GNSS user applications: Case studies and opportunities for collaboration**

- New capabilities in efficiency and safety across all modes of transportation: aviation, maritime, rail and highway
- Applications in surveying and mapping, geodesy, science and timing, environment, agriculture, and remote sensing with GNSS and integrated sensors
- Observation of space weather phenomena through the deployment of ground-based world-wide instrument arrays such as GPS receivers, magnetometers, solar telescopes, very low frequency (VLF) monitors, solar particle detectors, and data analysis and the sharing of recorded data

##### **Session 3: GNSS reference station networks and services**

- Regional and national reference frames/systems implementation
- International GNSS Service (IGS) and other initiatives, multi-GNSS environment

##### **Session 4: Capacity building, training and education in the field of GNSS**

- Education and training programmes
- GNSS education tools

##### **Discussion Sessions**

- 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

## 5. Working Methods

Participants of the workshop 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. Each speaker is allocated 20 minutes for the presentation and is requested to submit a copy of the presentation in Microsoft PowerPoint format at least two weeks before the commencement of the workshop. It is also necessary to submit an abstract of presentation with a maximum of 300 words including the following details: Paper Title, Author (s) Name(s), Affiliation(s), and e-mail address for the presenting author.

Presentations made at the workshop will be published on the website of the Office for Outer Space Affairs ([www.unoosa.org](http://www.unoosa.org)) approximately two weeks after the workshop.

## 6. Sponsorship of the workshop

The Office for Outer Space Affairs of the United Nations, the Latvian Geospatial Information Agency on behalf of the Government of the Republic of Latvia are responsible for organizing the workshop. The United State of America through the ICG and the European Space Agency are co-organisers and co-sponsors of the workshop. **Sponsorship of the workshop still open to the ICG membership and interested entities.**

## 7. Expected participants

The Workshop is being planned for a total of 80 participants including policymakers, decision makers and senior experts from the following groups: international, regional, national and local institutions, United Nations agencies, non-governmental organizations, research and development institutions, and also from industry.

## 8. Participation requirements

Participants should be in senior managerial or decision-making responsibility at governmental agencies, national and regional institutions, non-governmental organizations or industry. **Equally qualified female applicants are particularly encouraged.**

## 9. Language of the Workshop

The working language of the Workshop will be English.

## 10. 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 ticket – most economic fare – between the airport of international departure in their home country and Riga, Latvia) and/or the room and board expenses during the duration of the Workshop.

## 11. Deadline for Submission of Applications and Abstracts

The completed application form together with the presentation abstract, properly endorsed by the applicant's Government/institution, should be submitted to the Office for Outer Space Affairs, United Nations Office at Vienna, Vienna International Centre, P.O. Box 500, A-1400, Vienna, Austria, **no later than Friday, 16 March 2012**. Please note that on-line application form is available on the web site of the Office for Outer Space Affairs at the following address:

<http://www.oosa.unvienna.org/oosa/en/SAP/act2012/riga-gnss/index.html>

All candidates are strongly encouraged to apply for the workshop online, as it helps to streamline the processing of applications as well as helps applicants to save their time.

## **12. 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 co-sponsors will not assume any responsibility for life and major health insurance, nor for expenses related to medical treatment or accidents.

## **13. Further Information and Contact Details**

For information regarding the submission of nominations for attendance and funding, please contact **Ms. Ayoni Oyeneyin**, United Nations Office for Outer Space Affairs, at the following e-mail address: [ayoni.oyeneyin@unvienna.org](mailto:ayoni.oyeneyin@unvienna.org)

For information regarding the programme, presentations/abstracts and speakers of the Workshop, please contact **Ms. Sharafat Gadimova**, United Nations Office for Outer Space Affairs at the following e-mail address: [sharafat.gadimova@unvienna.org](mailto:sharafat.gadimova@unvienna.org)

The focal point for Latvia will be **Mr. Janis Zvirgzds**, the Latvian Geospatial Information Agency of the Republic of Latvia, who can be contacted at the following e-mail address: [janis.zvirgzds@lgia.gov.lv](mailto:janis.zvirgzds@lgia.gov.lv)