



International Committee on  
Global Navigation Satellite Systems

## ANNOUNCEMENT

### **ICG EXPERTS MEETING: GLOBAL NAVIGATION SATELLITE SYSTEMS SERVICES**

**14 - 18 December 2015  
Vienna International Centre, Vienna, Austria**

*Organized by  
International Committee on Global Navigation Satellite Systems (ICG)*

*Sponsored by  
United States of America and European Commission*

International Committee on Global Navigation Satellite Systems (ICG) has taken a leading role internationally to promote collaboration in the utilization of global navigation satellite systems (GNSS) services for a range of commercial, scientific and technological applications. Specific areas of interest to ICG and its working groups include compatibility and interoperability, GNSS services performance enhancement, timing and geodetic reference frames, education and training, and global applications. In order to increase knowledge and expertise relating to GNSS capabilities and its benefits to the GNSS user community worldwide, we invite you to join the ICG Experts Meeting on GNSS Services. In this meeting, ICG will introduce the scope of its work, aiming at contribution to international cooperation by providing an opportunity to exchange updated information on the use of GNSS technology and its applications. We draw your attention to a brief description of ICG and its Providers' Forum at the end of this announcement. The speakers in this Experts Meeting will come from a wide variety of professional backgrounds, and will form a highly knowledgeable team of experts.

One of the potential activities of the ICG is the advocacy of long-term protection of the spectrum reserved for GNSS. Since more and more nations of the world become dependent on GNSS signals, it is necessary to inform and educate national spectrum managers regarding the threat of unwanted interference and detrimental effect that natural and/or unintentional sources of interference can have on reliable use of these signals. Distinguishing the difference between sources of interference is presenting a challenge for user communities.

The ICG Experts Meeting will focus on identifying the needs of users with respect to the compatibility and interoperability of global systems, regional systems, and space-based augmentations providing and planning to provide GNSS services. The detailed information on each ICG Working Group, its activities and recommendations will be the major emphasis of the Experts Meeting. The goal will be to incorporate useful user and application sector views and inputs into the Working Groups work plans.

A one-day and half seminar will be held during the ICG Experts 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 Experts Meeting will provide ample time for discussion open to all participants, and networking opportunities, as well as to address in-depth questions and answers on specific topics unique to a particular region.

## PRELIMINARY PROGRAMME

### Monday, 14 December 2015

15:00 onwards Registration of Participants (Vienna International Centre)  
*ICG Informal meetings will be scheduled*

### Tuesday, 15 December 2015

#### OPENING SESSION

09:00 – 09:30	WELCOME REMARKS	<i>OOSA</i>
	OPENING ADDRESS	<i>United States, Co-sponsor</i> <i>European Commission, Co-sponsor</i>
09:30 – 10:30	<b>ICG Work Plan and Working Groups Overviews</b>	
	<i>The Co-chairs or designated participant (s) of each work group will give a brief description of the actions underway to accomplish the workplan of the ICG with a focus on activities to be carried out in 2016.</i>	
09:30 – 09:45	Working Group A: Compatibility and Interoperability, <i>Russian Federation and United States</i>	
09:45 – 10:00	Working Group B: Enhancement of Performance of GNSS Services, <i>India and European Space Agency</i>	
10:00 – 10:15	Working Group C: Information Dissemination and Capacity Building, <i>OOSA</i>	
10:15 – 10:30	Working Group D: Reference Frames, Timing and Applications, <i>FIG, IAG and IGS</i>	
10:30 – 10:50	Coffee Break	
	<b>SESSION 1– GNSS Providers</b>	
10:50 – 13:00	<b>Overview of Global Navigation Satellite Systems</b>	
	<i>All system and augmentation system providers will present reports on the technical characteristics of their systems and services provided to GNSS users</i>	
10:50 – 11:10	<i>China: BeiDou Navigation Satellite System (BNS)</i>	
11:10 – 11:30	<i>European Commission: Galileo and European Geostationary Navigation Overlay Service (EGNOS)</i>	

- 11:30 – 11:50 *India: GPS and GEO Augmented Navigation System (GAGAN) and Indian Regional Navigation Satellite System (IRNSS)*
- 11:50 – 12:10 *Japan: Quasi-Zenith Satellite System (QZSS) and Multi-functional Transport Satellite (MTSAT) Satellite-based Augmentation System (MSAS)*
- 12:10 – 12:30 *Russian Federation: Global Navigation Satellite System (GLONASS) and Wide-area System of Differential Corrections and Monitoring (SDCM)*
- 12:30 – 12:50 *United States: Global Positioning System (GPS) and Wide-area Augmentation System (WAAS)*
- 12:50 – 14:00 Lunch Break

### ***SESSION 2 – GNSS Applications and Value Added Services***

- 14:00 -16:00 *Leaders from industry, academia and organization representing users or producers will give a brief summary of their application sector with an emphasis on satellite systems compatibility and interoperability from their perspectives*
- 14:00 – 14:20 Aviation, Maritime and Public Transportation
- 14:20 – 14:40 Surveying, mapping, Earth science, space weather
- 14:40 – 15:00 Management of natural resources, the environment, and disasters
- 15:00 – 15:20 Timing applications
- 15:20 – 15:40 Agriculture, Mining and Machine Control
- 15:40 – 16:00 PNDs, Automobile Navigation, Cellular communications (Mass Market)
- 16:00 -16:20 Coffee Break

### ***DISCUSSION SESSION***

- 16:30 – 18:00 *A discussion between providers and users on the main topics and the development of a common strategy aimed at increasing the use of GNSS technology and contributing to the level of cooperation, including possible collaboration with industry leaders and linkages with current and planned system and augmentation system providers*
- 19:00 – 21:00 Adjourn

## **Wednesday, 16 December 2015**

- 09:00 – 18:00 ***SESSION 3 – Seminar on GNSS Spectrum Protection and Interference Detection and Mitigation***

*A seminar to educate national spectrum managers regarding international, regional and national regulations that affect GNSS (see Annex 1)*

18:00 Adjourn

**Thursday, 17 December 2015**

09:00 – 13:00 **SESSION 3 – Seminar on GNSS Spectrum Protection and Interference Detection and Mitigation (continues)**

13:00 – 14:00 Lunch Break

14:00 – 16:00 **DISCUSSION SESSION**

*To address in-depth questions and answers on specific topics unique to a particular region and/or participating country*

16:00 – 16:20 Coffee Break

16:20 – 18:00 **DISCUSSION SESSION (continues)**

18:00 Adjourn

**Friday, 18 December 2015**

09:00 -13:00 **CONCLUDING SESSION**

*Round table to finalize the recommendations/observations/proposals*

- Summary report of discussion sessions: presentation of proposals and recommendations consolidated at the discussion sessions

**Concluding Remarks**

- OOSA
- Co-sponsors

13:00 Adjourn

## **INTERNATIONAL COMMITTEE ON GLOBAL NAVIGATION SATELLITE SYSTEMS (ICG)**

**The International Committee on Global Navigation Satellite Systems (ICG)** was established in 2005.

Following the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in 1999, the United Nations General Assembly endorsed the “Vienna Declaration: Space Millennium for Human Development.” The Vienna Declaration called for action to improve the efficiency and security of transport, search and rescue, geodesy and other activities by promoting the enhancement of, universal access to and compatibility among, space-based navigation and positioning systems. In response to that call, in 2001 the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) established the Action Team on Global Navigation Satellite Systems (GNSS) to carry out those actions under the chairmanship of Italy and the United States of America.

The Action Team on GNSS, consisting of 38 member States and 15 inter-governmental and non-governmental organizations, recommended that an International Committee on GNSS (ICG) be established to promote the use of GNSS infrastructure on a global basis and to facilitate exchange of information. COPUOS included this recommendation in the Plan of Action proposed in its report to the United Nations General Assembly on the review of the implementation of the recommendations of UNISPACE III. In 2004, in its resolution 59/2, the General Assembly endorsed the Plan of Action, and in the same resolution, the General Assembly invited GNSS and augmentation system providers to consider establishing an ICG in order to maximize the benefits of the use and applications of GNSS to support sustainable development, in particular in developing nations.

The ICG held its first meeting in Vienna on 1- 2 November 2006 to review and discuss matters relating to Global Navigation Satellite Systems (GNSS) and their applications. The ICG adopted its terms of reference and work plan as developed in international meetings held since 2002. The current workplan included compatibility and interoperability; enhancement of performance of GNSS services; information dissemination and capacity building, and reference frames, timing and applications. All participants would cooperate, as appropriate, on matters of mutual interest related to civil satellite-based positioning, navigation, timing and value-added services. In particular, they would cooperate to the maximum extent practicable to maintain radio frequency compatibility in spectrum use between different GNSS systems in accordance with the International Telecommunication Union (ITU) Radio Regulations.

The ICG Terms of Reference also state that GNSS have evolved from an early period of limited programmes to a point where a number of systems and their augmentations are operating or planned. In the future, a number of international and national programmes will operate simultaneously and support a broad range of interdisciplinary and international activities. Discussions taking place at national, regional and international levels have underscored the value of GNSS for a variety of applications. The emergence of new GNSS and regional augmentations has focused attention on the need for the coordination of programme plans among current and future operators in order to enhance the utility of GNSS services.

Participation in ICG is open to all countries and entities that are either GNSS providers or users of GNSS services and are interested and willing to actively engage in ICG activities.

ICG is a high-level innovative international coordinating committee, which has the potential to have a broad overview on current and future developments in the navigation and positioning industry and is being a vital component of the industry as satellite positioning becomes more and more a genuine multinational cooperative venture. In this respect, various United Nations committees play a vital role in regulating radio and telephone communications, postal services or airlines. In fact, they make international commerce possible. ICG provides a forum where providers of space and ground-based radio

navigation systems can work together to address their differences, including protection of the GNSS spectrum and orbital debris/orbit de-confliction.

Currently, the work of the ICG is being supported by the Office for Outer Space Affairs, which has served as the Executive Secretariat for matters relating to organizing the ICG meetings. As such, the Executive Secretariat is responsible for preparation activities for the annual meetings of ICG in cooperation with the host country of the meeting. Additionally, the Executive Secretariat handles coordination for the planning meetings of ICG and the Providers' Forum in conjunction with sessions of COPUOS and its subsidiary bodies, and the implementation of a Programme on GNSS Applications as mandated by ICG and the Providers' Forum. The Executive Secretariat maintains a comprehensive information portal for ICG and users of GNSS services.

Tenth annual meetings have been held since the ICG's establishment:

- First Meeting, Vienna, Austria on 1 and 2 November 2006;
- Second Meeting, Bangalore, India, from 4 to 7 September 2007;
- Third Meeting, Pasadena, California, United States, from 8 to 12 December 2008;
- Fourth Meeting, Saint Petersburg, Russian Federation, from 14 to 18 September 2009;
- Fifth Meeting, Turin, Italy, from 18 to 22 October 2010;
- Sixth Meeting, Tokyo, Japan, from 5 to 9 September 2011;
- Seventh Meeting, Beijing, China, from 4 to 9 November 2012;
- Eighth Meeting, Dubai, United Arab Emirates, 9 – 14 November 2013;
- Ninth Meeting, Prague, Czech Republic on 10 – 14 November 2014 on behalf of the European Union;
- Tenth Meeting, Boulder, Colorado, United States, 2 – 6 November 2015.

The ICG will continue to meet regularly to address issues of common interest. The ICG future annual meetings will be held as the following:

- Eleventh Meeting, Sochi, Russian Federation, October 2016;
- Twelfth Meeting, Japan, 2017;

Detailed information about ICG, its Working Groups and summaries of the annual meetings is available at: <http://www.unoosa.org/oosa/en/ourwork/icg/icg.html>

## **THE PROVIDERS' FORUM**

**The Providers' Forum was established in 2007.**

A Providers Forum was established at the second meeting of the International Committee on Global Navigation Satellite Systems (ICG) in Bangalore, India, with the aim to promote greater compatibility and interoperability among current and future providers of the Global Navigation Satellite Systems (GNSS). The current members of the Providers Forum, including China, India, Japan, the European Union, the Russian Federation and the United States, address key issues such as ensuring protection of GNSS spectrum and matters related to orbital debris/orbit de-confliction.

## MEETING INFORMATION

The Experts Meeting will be held at the United Nations Office at Vienna, 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.

## REGISTRATION DEADLINE AND ONLINE REGISTRATION FORM

- Closing date for registration of participants requesting financial support is **Thursday, 10 September 2015**. For more information, please see the Financial Support Section below.
- Closing date for registration of participants, who do not need a financial support from co-organizers, is **4 December 2015**.

Online registration form is available at the Meeting website:

<https://register.unoosa.org/civcrm/event/info?id=49&reset=1>

## 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. The presentations may also include ideas on how to implement particular recommendations, or proposals for starting new initiatives or for further enhancing to ongoing or planned projects and programmes. Each speaker is allocated about 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 meeting. It is also necessary to submit an abstract of the 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 meeting and the abstracts of the presentations will be published on the ICG Information Portal approximately two weeks after the meeting.

Participants are also expected to actively contribute to the preparation of the meeting's conclusions and recommendations, which will be published by the ICG Executive Secretariat in the form of a report.

Participants are encouraged to bring along posters and other relevant information or materials. Kindly inform the organizers to ensure that all necessary arrangements are made well in advance.

## SPONSORSHIP OF THE MEETING

The Office for Outer Space Affairs, as the Executive Secretariat of the ICG and its Providers' Forum is responsible for organizing this Experts Meeting. The United States of America and the European Commission, through ICG, are co-organizers and co-sponsors of the meeting. **Co-sponsorship of the meeting is still open to the ICG membership and other interested entities.**

## EXPECTED PARTICIPANTS

The meeting is being planned for a total of 70 participants, including policymakers, decision makers, national spectrum managers/administrators and senior experts from the following groups:

international/regional/ national institutions, United Nations agencies, space agencies, intergovernmental and non-governmental organizations, research and development institutions, academia and industry representatives. **Equally qualified female applicants are particularly encouraged to participate.**

## **LANGUAGE OF THE MEETING**

Applicants must have a good working knowledge of English, which will be the working language of the meeting.

## **FINANCIAL SUPPORT**

Using funds made available by the co-sponsors, 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 ticket – most economic fare – between the airport of international departure in applicant’s home country and Vienna, Austria) and/or the room and board expenses for the duration of the Meeting.

The selection process will be based on the information provided in the registration form. Selected applicants will be notified within two weeks of the application closing date.

## **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.

## **FURTHER INFORMATION AND CONTACT DETAILS**

For information regarding the submission of nominations for attendance and funding, please contact Mr. Christopher STO DOMINGO, United Nations Office for Outer Space Affairs, at:  
[christopher.sto.domingo@unoosa.org](mailto:christopher.sto.domingo@unoosa.org)

For information regarding the programme, presentations/abstracts and speakers of the Meeting, please contact Ms. Sharafat Gadimova at [sharafat.gadimova@unoosa.org](mailto:sharafat.gadimova@unoosa.org)

The latest information on this Meeting and its relevant documentation, including the useful information for participants will be available at the ICG Information Portal at:

<http://www.unoosa.org/oosa/en/ourwork/icg/activities.html>

**PRELIMINARY AGENDA**  
**SEMINAR ON GNSS SPECTRUM PROTECTION AND INTERFERENCE DETECTION AND MITIGATION**

**I. Introduction**

The introduction will set forth the agenda to include: History, International Framework for RNSS spectrum protection, the role of the ITU, Spectrum allocations for RNSS, ITU-BR recommendations related to RNSS, and Interference Detection and Mitigation and laws related to GNSS jammers.

**II. History**

This section will focus on the early development of GPS/GNSS and the spectrum that was available for its use.

**III. International Organizations Involved in Spectrum**

International organizations involved in RNSS spectrum management, including regional groups, will be identified and defined.

**IV. International Telecommunication Union**

This portion will describe the ITU, its background, its organizations and its functions, with emphasis on its role in RNSS spectrum allocation and management.

**V. ITU Recommendations**

The content of the various ITU-R Recommendations, which deal with RNSS will be reviewed, including the process by which they are developed. Specific focus will be placed on those recommendations developed by the ITU working party focused on RNSS.

**VI. Spectrum Allocations**

National RNSS spectrum allocations will be discussed and compared to ITU allocations.

**VII. Non-Licensed Emissions**

National regulations regarding Non-Licensed emissions limits from RF emitters and non-emitters will be discussed.

**VIII. Future Developments**

The material in this section will cover various RNSS applications in development or being considered that could impact required levels of RNSS spectrum protection.

**IX. Interference Detection and Mitigation**

The responsibilities of national and/or regional governmental authorities for detecting and mitigating interference for the benefit of their users will be discussed.

**X. GNSS Jammers**

This section will cover a review of planned or existing laws and regulations related to the manufacture, sale, export, import, purchase, ownership, and use of GNSS jammers.

**XI. Summary**

The section will review the material covered in the previous sessions.