

**Proposal for Accomplishing ICG Recommendation:  
Workshop on GNSS Spectrum Protection and Interference Detection and  
Mitigation for ICG Providers Forum Member Consideration**

The Terms of Reference of the International Committee on Global Navigation Satellite Systems (ICG) includes in its work plan the means to “establish, as mutually agreed and on an ad hoc basis, working groups to investigate specific areas of interest, cooperation and coordination.”

This proposal sets forth the description of a workshop focused on radio frequency Interference Detection and Mitigation (IDM), for Global Navigation Satellite Systems (GNSS)<sup>1</sup>.

A proposed agenda for the Workshop has been developed based on experience and concerns related to GNSS IDM, with input from ICG Providers Forum members. The aspects to be addressed include regulatory, policy, operational, and technical. A description of the proposed agenda and topics is provided in the attached Annex B.

It is estimated that two days would be required to cover the agenda topics for this workshop, with an additional one half day to finalize the Workshop views and recommendations. Additionally, follow up meetings or workshops may be discussed and agreed upon as an outcome of this workshop.

The proposed location and dates of the workshop are addressed in the attached Annex A. Recommendations for appropriate workshop attendees will be sought from all ICG participants, and government and non-government invitees will be selected from around the world based on the agenda and the need for relevant expertise. The number of attendees will be limited in number in order to facilitate a productive work environment. As such, each Provider will be asked to identify 5-6 people to attend, based upon the following categories:

1. Regulatory
2. Timing
3. Law Enforcement
4. Geo-spacial: Reference Systems
5. Aviation

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<sup>1</sup> For the purposes of this Workshop, all references to GNSS will refer collectively to the worldwide civil positioning, navigation, and timing (PNT) determination capabilities available from one or more satellite constellations, along with complementary regional systems and augmentations.

# Annex A

## **Proposed Workshop Venue and Dates** **Interference Detection and Mitigation (IDM) for** **Global Navigation Satellite Systems (GNSS)<sup>2</sup>**

The United States has volunteered to host the first workshop, in conjunction with the Institute of Navigation (ION) annual GNSS Conference, which will take place 19-21 September 2012 in Nashville, Tennessee. One full day of the workshop will be devoted to industry, and will be an opportunity for those participants to present concepts related to IDM programs they are working on. To ensure an appropriate environment for discussing sensitive topics, the participation in the rest of the workshop will be limited to government and invited organizations.

There are 2 possible scenarios for workshop dates associated with the ION Conference. These are outlined below:

### SCENARIO 1:

Friday, 14 September 2012 – All day workshop, open to everyone (industry presentations)

Sunday, 16 September 2012 – Afternoon half day workshop (limited participation)

Monday, 17 September 2012 – All day workshop (limited participation)

### SCENARIO 2:

Saturday, 15 September 2012 – All day workshop, open to everyone (industry presentations)

Sunday, 16 September 2012 – Afternoon half day workshop (limited participation)

Monday, 17 September 2012 – All day workshop (limited participation)

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<sup>2</sup> For the purposes of this Workshop, all references to GNSS will refer collectively to the worldwide civil positioning, navigation, and timing (PNT) determination capabilities available from one or more satellite constellations, along with complementary regional systems and augmentations.

# Annex B

## **Proposed Workshop Agenda** **Interference Detection and Mitigation (IDM) for** **Global Navigation Satellite Systems (GNSS)<sup>3</sup>**

### **Industry Day**

#### **Industry Presentations**

- Schedule interested industry presentations of capabilities available or being developed for IDM

Goal: Expose membership to IDM capabilities available in the commercial marketplace

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### **Half Day Workshop**

#### **Radionavigation Satellite Service (RNSS) Spectrum Protection Overview**

- Focus on existing RNSS spectrum management regime relevant to GNSS interference and spectrum protection.
- Review of the International Telecommunications Union (ITU) provisions for global navigation satellite systems (GNSS) spectrum protection.
- Review domestic spectrum protection laws and regulations related to GNSS.

Goal: Share existing laws that address interference and identify shortfalls for improvement of current policies and regulations

#### **Sources of interference**

- Examine types of interference sources affecting GNSS.
- Focus on detection and mitigation.
- Unintentional emitters: Electronic devices operating at or near GNSS
- Intentional emitters: Non-malicious: Planned/coordinated events, testing.
- Malicious: Deliberate disruptions, purposeful transmission to disrupt GNSS Natural Disturbances.

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<sup>3</sup> For the purposes of this Workshop, all references to GNSS will refer collectively to the worldwide civil positioning, navigation, and timing (PNT) determination capabilities available from one or more satellite constellations, along with complementary regional systems and augmentations.

Goal: Gain a broader understanding of the different types of interference and terminology. Consider developing a definition of interference.

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## **Full Day Workshop**

### **Morning**

#### **Update from current Providers**

- Allow each Providers Forum member opportunity to share current and proposed methods of addressing IDM: Responsibilities of national/regional authorities.
- Identifying and/or detecting interference.
- Coordinating interference information.
- Identifying and locating interference source.
- Mitigating interference for benefit of users.

Goal: Share concepts for current IDM projects underway or being considered

#### **Current and future information sharing, dissemination, collaboration and standardization**

- Discuss framework for multi-GNSS IDM sharing, dissemination collaboration and standardization.
- Organizational information sharing.
- Current and future collaboration.
- Integration of natural/non-natural interference information.
- Consideration for use of established GNSS monitoring systems.
- Basic function and output parameters of natural/ non-natural interference detection devices.

Goal: Identify opportunities for international collaboration/cooperation. Identify specific communities to recommend for future collaboration workshops

### **Afternoon**

#### **Case Studies**

- Providers' Forum members cite case studies of relevant interference events and resolution.
- Unintentional (i.e. VHF-TV antenna) Intentional (i.e. "Privacy Jammers") Natural phenomenon (i.e. Ionospheric storm)

Goal: Provide an opportunity for Providers' Forum members to discuss lessons learned based on actual experiences.

### **Concepts and Techniques for Interference Detection**

- Discussion about different concepts and techniques used for interference detection and monitoring
- Forecast and observation of space weather that affects GNSS performance
- Possibility for future cooperation at the technical level

Goal: Examine the different techniques for interference detection and monitoring, and explore the possibility of further cooperation in this area.

### **Workshop views and recommendations**

- Providers' Forum members will develop consensus list of agreed-upon views and recommendations for future actions resulting from discussions of workshop.
- Opportunity for comments on how beneficial the workshop was
- Next steps and potential future workshops will be discussed.

Goal: Develop recommendation statement for Providers' Forum consideration. Discuss next steps and potential future related workshops or meetings.