

SUMMARY
of the Fifteenth Meeting of the Providers' Forum
held in conjunction with the Tenth Meeting of the International Committee
on Global Navigation Satellite Systems (ICG)
1 and 5 November 2015
Boulder, Colorado, United States

The Fifteenth Meeting of the Providers' Forum, co-chaired by the United States and the European Union, was held in conjunction with the Tenth Meeting of the International Committee on Global Navigation Satellite Systems (ICG), on the 1st and 5th of November 2015, in Boulder, Colorado, United States. The meeting agenda is attached as an annex to this report. China, the European Union, India, Japan, the Russian Federation, and the United States, were represented at the meeting.

Report on a multi-GNSS demonstration project in the Asia/Oceania region

Japan provided an update on the multi-GNSS demonstration project in the Asia/Oceania region. The presentation noted that there are currently 89 Multi-GNSS Monitoring Network (MGM-Net) stations in operation. It was also explained that 24 proposals have been endorsed by the Multi-GNSS Asia (MGA) and are in work. The 7th MGA Conference will be held 7-10 December 2015 in Brunei.

ICG Information Centres and Information Portal

The ICG Executive Secretariat provided an update on recent and future activities:

- **ICG Regional Workshops**

The Russian Federation hosted a regional workshop in Krasnoyarsk, 18-22 May 2015. The Workshop focused on the use of GNSS for various applications that provide sustainable social and economic benefits, in particular for developing countries.

- **ICG Website**

The ICG website has been redesigned by the United Nations and can be found at:
www.unoosa.org/oosa/en/ourwork/icg/icg.html

- **ICG 10 Year Anniversary Booklet**

Updates from the GNSS Providers have been received and the booklet is scheduled to be completed by the end of 2015.

Other Items

The following presentations were provided:

- **Orbital Debris**

The United States presented on the National and International Disposal Requirements and Guidelines Applicable to GPS. The presentation discussed the United States guidelines on orbital debris, which include the United States Government Orbital Debris Mitigation Standard Practices (ODMSP), DoD Instruction 3100.12 and Air Force Instruction 91-217, as well as the Inter-Agency Space Debris Coordination Committee (IADC) Space Debris Mitigation Guidelines, which defines three disposal options and is applicable to United States Government missions. Six restrictions on disposal orbits that are contained in these documents were discussed. It was noted that the United States conducted a study on the GPS IIF satellites, and determined that the collision probability over 500 years for each of the 12 GPS IIF satellites was less than 0.001. The United States is also in the process of conducting another study looking at the effects on the future medium earth orbit (MEO) debris environment of two different strategies: delaying eccentricity growth, which is the current GPS practice, or accelerating eccentricity growth, the results of which will be briefed to the IADC. A question was asked about whether other countries/Providers are conducting additional related work. It was noted that both the Italian Space Agency (ASI) and the European Space Agency (ESA) are doing work in this area and conducting additional studies, and the co-chair suggested that this topic could be further discussed at future Providers' Forum meetings.

- **GNSS Space Service Volume**

The United States presented an update to the Global Navigation Satellite System (GNSS) Space Service Volume (SSV) concept. The objective from the United States perspective is to expand the GPS SSV into a multi-GNSS SSV; further improvements can be obtained by increasing availability of satellite signals in the SSV, in most cases by utilizing the side lobes. There is great interest in maturing the definitions so that they are common across all Providers, which will help to create a unified analysis. The presentation explained that SSV specifications are crucial for providing navigation

solutions in low earth orbit (LEO), MEO and highly elliptical orbit (HEO). The United States National Aeronautics and Space Administration (NASA) issued a Request for Information (RFI) for Spaceborne Receivers, in order to better understand receiver technology currently available. Public input is welcome through the end of December 2015.

- **iGMAS Status and Updates**

China presented an update on their International GNSS Monitoring and Assessment project (iGMAS), and explained that the objectives are to establish a global tracking network and to monitor operational status and key indicators for all GNSS. The project has been operational on a trial basis since July 2014, providing users with raw observation data, basic products, and monitoring and assessment information. The schedule includes three stages through 2020. There are currently eight completed monitor stations within China, as well as four international stations outside of China. Three data centers and eight analysis centers have also been completed, and the operations and control center is located in Beijing.

- **U.S. Space Weather Strategy**

The United States provided a presentation describing aspects of the United States National Space Weather Strategy that was released to the public on 29 October 2015. The Strategy was developed to address societal and economic impacts in the event of a severe space weather event. The Space Weather Operations Research and Mitigation (SWORM) Task Force, consisting of 20 United States Government departments and agencies, has responsibility for carrying out the six high level goals outlined in the strategy. The presentation noted that Goal 6 calls for increased international cooperation on space weather. Following the presentation, the European Union commented that they are looking at space situational awareness, which includes both debris mitigation and space weather, and they may report on this in a future Providers' Forum meeting.

The ICG Secretariat provided the following update:

- **ICG Experts Meeting, Vienna, December 2015**

The ICG Secretariat reported that the ICG Experts Meeting will take place 14 - 18 December 2015 in Vienna, Austria. ICG working group co-chairs and/or representatives from the working groups, are encouraged to participate and present on the status of their working group activities. Session 3 of the meeting will consist of a seminar on GNSS Spectrum Protection and interference detection and mitigation. The United States

commented that the history for this session goes back to 2005 and will be a trial for the regional workshops. This was an ICG recommendation adopted in 2014, which originated in Working Group A.

Next Meeting of the Providers' Forum

The Providers agreed that the 16th Meeting of the Providers' Forum will take place on 6 June 2016 in Vienna, in conjunction with the fifty-ninth session of the Committee on the Peaceful Uses of Outer Space (COPUOS). The agenda will be further discussed during a Providers' Forum Planning Meeting to be held in conjunction with the Scientific and Technical Subcommittee of COPUOS on 22 February 2016. In the meantime members of the Providers' Forum are encouraged to contact the co-chairs with suggestions for the agenda of the 16th Meeting of the Providers' Forum.

FIFTEENTH MEETING OF THE PROVIDERS' FORUM

Boulder, Colorado, United States

1 – 6 November 2015

PROVISIONAL AGENDA

*(based on the Workplan of the Providers' Forum¹ and
the summary of the Fourteenth Meeting of the Providers' Forum)*

Co-Chair: Mr. Kenneth HODGKINS, United States of America

Co-Chair: Mr. Pieter DE-SMET, European Commission

Sunday, 1 November 2015

12:00 – 18:00 On-site Registration

13:00 – 16:00 First Session of Providers' Forum

Attended by only the Providers. The primary purpose is: (i) to discuss the agenda and meeting procedures for ICG-10 and the 15th Meeting of Providers' Forum; (ii) to develop response or suggest amendments to the draft recommendations; (iii) to address any other matters; (iv) to compose a temporary drafting group on the preparation of the PF report

Opening Remarks

Review of Providers' Forum Agenda

Open service information dissemination

Service performance monitoring

Spectrum protection: interference detection and mitigation

Report on a multi-GNSS demonstration project in the Asia/Oceania region

¹ ICG/PF/WP/SEP2009, amended (available at the ICG Information Portal at <http://www.unoosa.org/pdf/icg/2009/icg-4/ICG.PF.WP.SEP2009.pdf>)

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Comments on the Agenda of the Tenth Meeting of the ICG

Other Matters:

- **Next Meeting of the Providers' Forum**
 - *Date, Place and Agenda*
- **Speakers:**
 - *Orbital Debris, United States*
 - *Space Service Volume, United States*
 - *iGMAS Status and Updates, China*
 - *United States Space Weather Strategy, United States*
 - *ICG Experts Meeting, Vienna, December 2015, ICG Executive Secretariat*

16:00 – 18:00 Meeting with the Working Groups Co-Chairs and Working Groups reports

Attended by only the Providers and the co-chairs of the Working Group. The primary purpose is: (i) to identify issues for discussion in the working groups; and (ii) to consider their reports on the status of the implementation of the agreed recommendations from the previous ICG meetings

Thursday, 05 November 2015

16:10 – 18:00 Second Session of Providers' Forum

Attended by only the Providers and the co-chairs of the Working Group (as needed). *The primary purpose is: (i) to discuss any draft recommendations to the ICG from the working groups; (ii) to develop response or suggest amendments to the draft recommendations if needed.*

Adoption of the Providers' Forum report

² See the OOSA website: <http://www.unoosa.org>