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ICG International Committee on Global Navigation Satellite Systems

EUROPEAN COMMISSION

Fifth Meeting of the International Committee on Global Navigation Satellite Systems (ICG)

Turin, 17-22 October 2010

ACHIEVEMENTS & RESULTS

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ICG
Fifth Meeting of the International Committee on Global Navigation Satellite Systems (ICG)
Turin, 18-22 October 2010

The Fifth Meeting of the International Committee on Global Navigation Satellite Systems (ICG) was held in Turin, Italy from 18 to 22 October 2010.

The Meeting was jointly hosted by Italy and the European Commission on behalf of the European Union who chaired the ICG.

ICG continued reviewing and discussing developments in global navigation satellite systems (GNSS), and also addressed **GNSS technology in the era of multi-systems receivers** and the impact of GNSS **interoperability** on timing and other user applications.

Representatives from industry, academia and Governments shared views on GNSS compatibility and interoperability.

In conjunction with the ICG5 it was held the sixth meeting of the Providers' Forum, co-chaired by the European Union and the United States of America.

GNSS Compatibility and Interoperability

The fundamental questions about achieving GNSS compatibility, which refers to the use of multiple civil satellite navigation systems without causing harmful interference with use of individual services or signals, was addressed in the ICG discussions.

Ways to use multiple GNSS systems interchangeably while minimizing the harmful effects on one another were working out.

The ICG has agreed that the use of two or more space-based positioning, navigation, and timing systems should provide better service than can be achieved by relying solely on any one system. Nevertheless too many satellite signals may do more harm increasing the RF noise floor with which receivers have to deal.

At the multilateral level, the ICG has made an important contribution by bringing all the players together in a roundtable setting that encourages open exchange of information about the systems.

Two scientific sessions, respectively entitled

"**GNSS technology in the era of multi-systems receivers**"

and

"**GNSS technology in the era of multi-systems: the impact of GNSS interoperability on timing and other user applications**"

were held as part of the Meeting on 18 and 20 October 2010. Representatives of industrial entities and academic institutions made presentations outlining opportunities in user applications and GNSS technology for consideration by ICG and its working groups.

The **ICG WORKING GROUPS** focused on the following issues:

- compatibility and interoperability;
- enhancement of the performance of GNSS services;
- information dissemination and capacity-building;
- reference frames, timing and applications.

The ICG Working Group A on compatibility and interoperability:

had continued to explore further the issue of GNSS interoperability from users' perspectives. ICG also noted the results of a workshop focused on compatibility involving system providers.

The Working Group A also addressed the remaining aspects of its work plan as revised at the fourth meeting of the ICG, including **spectrum protection** and **interference detection and mitigation**.
The Working Group A recommended that interested members focus on proposals to address interference detection and mitigation, and draft a study plan for consideration by the ICG.

The ICG Working Group B on enhancement of the performance on GNSS services:

discussed aspects of user position integrity with a briefing on the outcomes of a special meeting of the working group on this topic and a presentation on the plans on this matter on the GNSS systems and augmentations.

Several recommendations were elaborated to proceed further on the issue of integrity for aviation and non aviation users where a particular effort was needed to make them aware of the benefits arising from the coming multi-GNSS scenarios.

A new work item was added to the work plan dealing with techniques for radiofrequency interference mitigation and detection in the GNSS bands.

The ICG Working Group C on information dissemination and capacity-building:

had continued to develop a programme on GNSS applications and reiterated the importance of deploying instruments for the international space weather initiative (ISWI), developing a **GNSS education curriculum**, as well as the application of GNSS in various areas to support sustainable development.

In that respect, the ICG Information Centres established in the Regional Centres for Space Science and Technology Education affiliated to the United Nations would play a relevant role.

The ICG Working Group D on reference frames, timing and applications:

noted excellent progress in the work of its two Task Forces focused on **standard descriptions of geodetic and timing references** for existing and planned systems.

The Working Group agreed on an updated work plan.

Recommendations were proposed and adopted by the ICG on several matters of relevance to the coordination of geodetic and time references.

The Working Group reiterated its support for Multi-GNSS campaigns.
An important new development was the agreement of the System Providers to liaise with relevant international bodies to ensure that receiver output formats for future GNSS signals are unambiguously defined.

PROVIDER FORUM discussions and **recommendations** achievements are:

1. Promotion of compatibility and interoperability

It was agreed to assess the principles on compatibility and interoperability and their definitions.

The Provider Forum agreed to continue to pursue the work in favouring the systems compatibility and interoperability, which is the major aim on WG A.

2. Spectrum protection: Interference detection and mitigation

A discussion on spectrum protection was initiated with a presentation on the United States Patriot Watch Program entitled “GPS Interference Detection and Mitigation (IDM)”.
The presentation provided information on the actions the United States is taking to mitigate and detect signal interference through the IDM program.

It was noted that this topic is in the ICG Work Plan and progress on this topic within the ICG has been limited and it was suggested that a Workshop or multi-disciplinary ICG Task Force be established to progress this topic.

3. Open service information dissemination

It was discussed the ARAIM concept for civil aviation application. The **ARAIM** (Advanced Receiver Autonomous Integrity Monitoring) enabling multiconstellation was introduced by USA. It was noted that a GNSS Evolutionary Architecture Study (GEAS) recommended utilizing dual frequency and ARAIM for advanced aviation benefits.

Some important performance parameters are being investigated for possible inclusion in future performance standards. It was recommended that other service providers consider including these parameters in developing their performance standards, when their definitions are finalized.

A "**Template for GNSS Service Performance Commitments**" was discussed on the basis of US proposal. It was concluded that other system providers consider using the GPS Standard Positioning Service Performance Standard as a starting point for template for their own performance standard.

4. Multi-GNSS demonstration project in the Asia/Oceania region

"A multi-GNSS demonstration project in the Asia/Oceania region" was presented by Japan.
It was proposed that the ICG works more closely with this project by establishing frequent reports, extending an invitation to be members of the steering committee in the multi-GNSS project.

A request was also made for other providers to contribute to this project.

5. ICG Information Centres

The Providers' Forum took note of a programme on GNSS applications focusing on building capacity, specifically in deploying instruments for the International Space Weather Initiative (ISWI), developing a GNSS education curriculum, utilizing regional reference frames and the application of GNSS in various areas to support sustainable development.

It was also noted that the ICG Information Centres established in the Regional Centres for Space Science and Technology Education affiliated to the United Nations could play a relevant role.

6. Glossary of terms related to the work of the ICG and the Providers' Forum

A glossary of GNSS terms was set up with an initial contribution of USA.

This document would serve both as a consolidated report on GNSS and as a resource for use within and outside the ICG.

A proposal was made that each member provides a point of contact and participate in a working group to complete this document before the next ICG meeting.

7. Joint GNSS Outreach events

First event is the International Satellite Navigation Forum to be held on 1 -2 June 2011 in Moscow, Russian Federation;

second event is the Providers' Forum Panel at the Institute of Navigation (ION) Conference to be held on 20 – 23 September 2011, in Portland, United States of America.

Third event is the China Satellite Navigation Conference 2011

The ICG Providers' Forum issued the **publication** entitled

"**Current and planned global and regional navigation satellite systems and satellite-based augmentation systems**" (ST/SPACE/50).

Providers' Forum Chair and Next Meeting

The Provider's Forum agreed that **Japan** and the **United States** would co-chair its next meeting to take place at the United Nations Office at Vienna on **31 May 2011** immediately preceding the 54th session of the Committee on the Peaceful Uses of Outer Space, from 1 to 10 June 2011, Vienna International Centre, Vienna, Austria.

On 21 October 2010, the Italian Space Agency organized a **Round Table of those industries involved in satellite navigation activities** to discuss the wide range of benefits that GNSS would bring to society.

The following topics were discussed:

- effective use of energy and other resources, including time; support to disaster management through warning and rapid response mechanisms;
- protection of natural resources; improvements in emergency, search and rescue operations;
- improvements in maritime situational awareness;
- seamless transportation systems.

ICG06 in 2011

ICG has accepted the invitation of Japan to host its Sixth Meeting in Tokyo, from **5 to 9 September 2011**.

The Office for Outer Space Affairs, as the Executive Secretariat of ICG and its Providers' Forum, will assist in the preparations for the meeting and for interim planning meetings and working group activities.

ICG noted the expression of interest by **China** to host the Seventh Meeting of **ICG in 2012**.

Thank You

International Committee on
Global Navigation Satellite Systems