REPORT ON THE SIXTH MEETING OF THE INTERNATIONAL COMMITTEE ON GLOBAL NAVIGATION SATELLITE SYSTEMS (ICG-6)

Tokyo, Japan, September 2011

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Tokyo, a wonderful city

INTRODUCTION

The Sixth Meeting of the International Committee on Global Navigation Satellite Systems (ICG) was held in Tokyo, Japan from 5 to 9 September 2011. The ICG has been formed as a result of recommendations of the UN Committee on the Peaceful Use of Outer Space (COPUOS), as ratified by the General Assembly of the UN. The International Federation of Surveyors (FIG) is an Associate Member of the ICG. Mikael was there as the FIG representative to UNOOSA and Matt was there as FIGs co-chair for Working Group D. More than 200 people attended the meeting with representatives from all GNSS providers as well as many others.

JOINT STATEMENT FROM ICG-6

At the end of each meeting, the ICG issues a Joint Statement outlining the highlights of the broad scope of work across the ICG and the most recent developments in Tokyo. Various presentations were made at the plenary sessions and working group sessions of the meeting and they form a very useful snap shot of the state of the art with the various GNSS and also with issues across key user groups. The Joint Statement from ICG-6 and all presentations are now available on the ICG Information portal. Working Group Reports will also be available in due course.
(see www.oosa.unvienna.org/oosa/en/SAP/gnss/icg/meetings.html).

REPORTS ON THE STATUS OF ALL OF THE MAJOR GNSS SUB-SYSTEMS

The system providers are at the core of the overall work of the ICG and a feature of the first Plenary Session of the ICG is a series of presentations on the status of all of the major GNSS sub-systems. Presentations also outline the views of each of the system provider nations on the issues of Compatibility and Interoperability. System developments to note at ICG-6 include:

- Japan presented their progress featuring experiences of their first **QZSS** satellite, Michibiki.

- QZSS project is assigned the highest priority level in the FY2014 budget for Space Development by the Special Committee for Space Policy
- Experiences from the usage of Michibiki showed a significant improvement in access to satellites in areas where GPS-alone is difficult to track. Using QZSS also improves the position accuracy. Testing in central Tokyo improved positioning availability from 40% to 69% by adding one QZSS satellite to GPS.
- As well as normal ranging signals, QZSS also has so-called reinforcement signals. L1-SAIF is an SBAS like signal while LEX signal enables real time PPP.
- Both signals were demonstrated during the field trip attached to ICG-6 with the LEX signals for PPP being used to demonstrate a "robotic" tractor.
- Web site: qz-vision.jaxa.jp

Robotic tractor

- US presented the status of GPS
  - 30 healthy satellites are currently operational. Next IIF launch is planned to 2012.
  - A new National Space Policy in 2010 provides high –level PNT guidance stating continuous world-wide access for peaceful uses, free of charge.
  - Encouraging compatibility and interoperability with foreign GNSS services.
  - Web site: pnt.gov

- The Russian Federation continues on track to complete the Glonass constellation in coming months:
  - 23 satellites are currently operational, 5 more during 2011.
  - In February the first Glonass-k satellite was launched.
  - A new Glonass programme concept is under development and will cover 2012-2020. The important message is that Glonass is now here to stay and that the Russians are working towards having a system that is more availability, more accuracy, more reliability and more robustness.
  - Web site: www.glonass-center.ru

- European Community presented progress with EGNOS (its SBAS) and Galileo:
  - EGNOS now have two services available; a free open service and a safety-of-life. A commercial service will be available in 2012
  - Galileo moving from IOV to deployment phase. Two IOV satellites to be launched in October.
  - Galileo talking about Open Service, Public Regulated Service, Search and Rescue Service, Commercial Service and Safety-of-life service.
  - Web site: ec.europa.eu/galileo

- China presented the planned phases of Beidou including:
    - Nine satellites are already available, three of which are GEOs and there is already significant coverage in the Asia Pacific region.
    - China announced that they will release the Interface Control Document (ICD) for Beidou in October. It will be published in Chinese and in English. The ICD will enable manufacturers to ensure their Multi-GNSS receivers are capable of tracking Beidou. Release of the ICD also demonstrates a level of transparency that will give international users further confidence in Beidou.
    - Web site: beidou.gov.cn

- India presented an update on its space based augmentation to GPS known as GAGAN and the planned independent Indian Regional Navigation Satellite System (IRNSS)
    - GAGAN (GPS Aided Geo Augmented Navigation) will have 3 GEO Satellites; 2 operational and 1 in-orbit spare navigation payload;
    - GSAT-8 was launched in May and initial testing has been completed. Signal-in-space expected by end 2011. GSAT-10 is expected to be launched by March 2012.
    - IRNSS refers to Indian Regional Navigation Satellite System.
    - IRNSS will consist of seven satellites with three of them in Geo-Stationary orbit and the others in so-called Inclined Geo-Stationary orbit. The first satellite will be launched by second quarter 2012 with full constellation operational by 2015.

OTHER ISSUES TO NOTE FROM THE MEETING

There were many other interesting presentations, discussions and decisions at the meeting and the following is an outline of some that the authors found particularly interesting:

- Applications concerned agriculture, mining, fishing, mapping and transportation. There seems to be a world-wide development of applications within these areas using all available GNSS. Using GNSS in an efficient way was reported to save both costs as well as human life.
- Applications related to disaster management are also growing in interest and usefulness.
- Interference Detection and Mitigation was discussed in detail during the meeting, fuelled in part by the Lightsquared situation in the USA. It was decided to organise a two day work shop during spring 2012 by the providers to discuss mainly technical aspects on IDM but also touch on policy issues.
- Javad has delivered 65 3G (GPS, Glonass, Galileo) + QZSS receivers to JAXA to be used in Multi-GNSS campaign.
- IGS discussed the goal of the new Multi-GNSS Global Experiment, which begins in February 2012 with first results to be presented at an IGS workshop from 23-27 July in Poland.

MEETINGS OF WORKING GROUP D AND ITS TASK FORCES ON GEODETIC AND TIMING REFERENCES

The working group had two meetings during the week. The official report from Working Group D and other Working Groups will be available form the ICG web portal in due course. The main outcomes from the Working Group D were:

- The first key outcome from the meeting was that all System Providers that have not already submitted templates on their Geodetic and/or Timing References agreed to do so by the end of 2011.
- The second key outcome from the meeting was a series of recommendations which were later accepted by the ICG and its Provider's Forum on the following topics:

- WG-D Recommendation #11 – Finalization and Publication of templates on Geodetic and Timing References
- WG-D Recommendation #12 – Achieving interoperability of geodetic references among the different GNSS systems
- WG-D Recommendation #11 – Multi-GNSS Experiment of the IGS

Satisfied officers of ICG Working Group D. From left; Chris Rizos, Matt Higgins, Mikael Lilje and Ruth Neilan

MEETING OF MEMBERS, ASSOCIATE MEMBERS AND OBSERVERS

The co-chairs of Working Group D took the initiative for a meeting of members, associate members and observers. The main issues discussed were:

- How ICG should react regarding the Lightsquared situation in the USA where the proposed mobile wireless broadband service has been shown to interfere with GPS. There was discussion among the Associate Members within the ICG that represent significant user groups about the possibility of sending a joint letter to the US FCC regarding the impact Lightsquared will have on GPS in the US and the potential for impacts globally. It was decided that the Associate Members prepare a letter that the ICG secretariat will send to US.
- The ICG includes a Providers Forum and a question that has arose was whether there is a need for a Users Forum as well to give some more formal structure to user group participation in the ICG. It was decided not to make a formal recommendation to ICG at this time but the idea was presented to the ICG Plenary Session and was considered favourably there and in the Providers Forum. It is likely that the idea of a Users Forum will be considered as part of an already planned review of the structure and functioning of the ICG..

NEXT MEETINGS OF THE ICG

China will host ICG-7 in Beijing at the Beijing International Conference Centre (BICC) on the 4-9 November, 2012. UAE expressed interest in hosting ICG-8 in Dubai in December 2013.