

**Report on the Second Meeting of the
International Committee on Global Navigation Satellite Systems (ICG)**
Hosted by the Indian Space Research Organisation
Bangalore, India, 4 to 7 September, 2007

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Introduction

The International Committee on Global Navigation Satellite Systems (ICG), met in Bangalore, India, from 4 to 7 September, 2007. Vice President Matt Higgins attended representing the International Federation of Surveyors (FIG).

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 United Nations Office for Outer Space Affairs (UN OOSA) acts as the secretariat for the ICG. It should be noted that FIG has an MoU with UN OOSA.

A feature of the overall ICG meeting was the first gathering of the so-called “Provider’s Forum”, which involves the providers of all of the major GNSS sub-systems, including:

- China: Compass/BeiDou Navigation Satellite System (CNSS)
- European Community: European Satellite Navigation System (Galileo) and European Geostationary Navigation Overlay Service (EGNOS)
- India: GPS and GEO Augmented Navigation System (GAGAN) and Indian Regional Navigation Satellite System (IRNSS)
- Japan: Quasi-Zenith Satellite System (QZSS) and MTSAT (Multi-functional Transport Satellite) Satellite-based Augmentation System (MSAS)
- Russian Federation: Global Navigation Satellite System (GLONASS) and Wide-area System of Differential Corrections and Monitoring (SDCM)
- United States: Global Positioning System (GPS) and Wide-area Augmentation System (WAAS)

All of the major providers gave presentations on the status and plans for their GNSS sub-systems.

The global user community for Global Navigation Satellite Systems (GNSS) was also represented with major players from many application areas. As well as FIG, international organizations represented in Bangalore included:

- Bureau international des poids et mesures (BIPM);
- IAG Reference Frame Sub-Commission for Europe (EUREF);
- International Association of Geodesy (IAG);
- International Association of Institutes of Navigation (IAIN);
- International GNSS Service (IGS, formerly International GPS Service);
- Office for Outer Space Affairs of the United Nations Secretariat, and;
- Union radio-scientifique internationale (URSI).

At the end of the week the ICG compiled a Joint Statement from the meeting, which included a report from the Provider's forum. That report has for the first time set out principles agreed amongst the providers about ensuring compatibility and interoperability between the various GNSS sub-systems.

Compatibility, is about ensuring that one GNSS sub-system does not cause radio interference to another. For example a surveyor using a combined GPS/GLONASS receiver does not want a new system such as Compass or Galileo to interfere with the signals from GPS and/or GLONASS.

Interoperability is about being able to use multiple GNSS sub-systems to achieve better performance than with a single system. As the report states, *ideal interoperability allows navigation with signals from at least four different systems with no additional receiver cost or complexity*. Such principles are very important for the global surveying community because we are becoming more and more reliant on GNSS for our daily business at the same time as current and emerging GNSS sub-systems are offering greater and greater accuracy and reliability.

The meeting being held in Bangalore, also allowed the international participants to gain a better understanding of the rapidly developing GNSS industry in India. Several companies and government organisations were represented in an exhibition attached to the meeting and also gave very interesting presentations in the open sessions of the ICG meeting.

The Joint Statement from the meeting, the report from the Provider's forum and all of the presentations made at the Bangalore Meeting of the ICG are posted on the ICG Information portal at:

<http://www.unoosa.org/oosa/en/SAP/gnss/icg/meetings.html>

The next full meeting of the ICG will be held in December 2008 and hosted by the USA at NASA's Jet Propulsion Lab in Pasadena, California.