



***Current Developments in
Global Navigation Satellite Systems
- The United Nations Perspective -***

7th Central European Radiocommunication Days

10 February 2011

Bratislava, Slovak Republic



***Third United Nations Conference on the Exploration
and Peaceful Uses of Outer Space (UNISPACE III), 1999***

**“The Space Millennium: Vienna Declaration on Space
and Human Development” (Vienna Declaration)**

Global Navigation Satellite Systems (GNSS) related recommendation:

***“...to improve the efficiency and security of transport,
search and rescue, geodesy and other activities
by promoting the enhancement of, universal access to
and compatibility of space-based navigation and positioning systems”***



UNISPACE III: Action Team on GNSS

GNSS Action Team co-chaired by the United States and Italy

Membership: 38 nations & 15 organizations

Regional Workshops:

- ◆ **2001: Malaysia, ESCAP and Austria, ECE**
- ◆ **2002: Chile, ECLAC and Zambia, ECA**
- ◆ **International Meetings, Vienna: 2003-2004**

Action Team concluded its work in 2004

Main Recommendation:

Establishment of an International Committee on GNSS (ICG)



International Committee on Global Navigation Satellite Systems (ICG)

***A forum to discuss Global Navigation Satellite Systems (GNSS)
to benefit people around the world***

- ◆ Established in 2005
- ◆ Membership: Members, Associate Members and Observers
 - ◆ 9 nations & the European Union
 - ◆ 15 organizations (UN system entities, IGOs, NGOs)

***ICG participation is open to all countries and entities
that are either GNSS providers or users of GNSS services,
and are interested and willing to actively engage in ICG activities***



International Committee on Global Navigation Satellite Systems (ICG)

ICG WORK PLAN:

◆ Compatibility and Interoperability

- ◆ to identify and encourage use of existing guidelines and standards to enhance compatibility and interoperability;
- ◆ open service information sharing;
- ◆ service performance monitoring;
- ◆ spectrum protection: interference detection and mitigation.

(Led by USA and Russia)

◆ Enhancement of performance of GNSS services

- ◆ to promote and coordinate activities aimed at enhancing GNSS performance, recommending system enhancements and meeting future user needs.

(Led by India and ESA)

◆ Information dissemination and capacity building

- ◆ training/technical workshops for capacity building in developing countries

(Led by UNOOSA)

◆ Reference Frame, Timing and Applications

- ◆ to consider geodetic and time references

(Led by IAG, IGS, FIG)



International Committee on Global Navigation Satellite Systems (ICG)

MILESTONES:

2006: First Meeting, UNOV, Vienna, Austria

- ◆ **Work Plan and Terms of Reference of ICG**

2007: Second Meeting, hosted by ISRO, Bangalore, India

- ◆ **Establishment of the Providers' Forum, consisting of those countries operating GNSS systems or with plans to develop one (USA, Russian Federation, European Union, China, India and Japan)**
- ◆ **A vehicle for coordination and cooperation to improve overall service provision**

2008: Third Meeting, hosted by JPL, Pasadena, USA

- ◆ **Work Plan and Terms of Reference of the Providers' Forum**
- ◆ **UN-affiliated Regional Centres for Space Science and Technology Education (India, Morocco, Nigeria, Mexico/Brazil) to act as the ICG Information Centres**

2009: Fourth Meeting, hosted by Roscosmos, Saint-Petersburg, Russia

- ◆ **Monitoring of the ionosphere during the next solar maximum and its effects on GNSS receivers;**
- ◆ **Adopted new principle on transparency: Every provider should publish documentation that describes signal and system information, policies of provision and minimum levels of performance for its open services;**
- ◆ **Endorsed a proposal for a multi-GNSS demonstration project in the Asia/Oceania region**



International Committee on Global Navigation Satellite Systems (ICG)

MILESTONES:

2010: Fifth Meeting, hosted by Italy and the European Union, Turin, Italy

- ◆ Reviewed and discussed developments in GNSS, as well as the promotion of the use of GNSS and their integration into national infrastructure, particularly in developing countries
- ◆ Addressed aspects of spectrum protection, and interference detection and mitigation
- ◆ Considered the issue of integrity for all users where a particular effort is needed to make them aware of the benefits arising from future multi-GNSS scenarios
- ◆ Considered a programme on GNSS applications, including deploying instruments for the international space weather initiative (ISWI), as well as the applications of GNSS in various areas to support sustainable development
- ◆ Focused on standard descriptions of geodetic and timing references for existing and planned systems
- ◆ Reiterated its support for multi-GNSS campaigns

2011: Sixth Meeting, hosted by Japan, 5-9 September



UNOOSA Programme on GNSS Applications

International Space Weather Initiative: *Develop the scientific insight necessary to understand the science, and to forecast near-Earth space weather*

- ◆ **COPUOS agenda item**
- ◆ **Instrumentation and data analysis**
 - ◆ **Expand and continue deployment of new and existing instrument arrays**
 - ◆ **Expand data analysis effort for instrument arrays and existing data bases**
- ◆ **Network of AWESOME (Atmospheric Weather Educational System for Observation and Modeling of Effects)/SIDs (Sudden Ionospheric Disturbance) monitors, USA**

2010: **Egypt (Western Asia), Helwan University, 6 – 10 November**

2011: **Nigeria (Africa), Abuja, 17 – 21 October**

2012: **Ecuador (Latin America and the Caribbean)**



UNOOSA Programme on GNSS Applications

Regional Workshops on the Applications of GNSS: *Increase awareness among decision and policy makers of the benefits of GNSS and develop regional and national pilot projects on GNSS applications*

- ◆ Identify the specific needs of individual plans and projects on GNSS at the regional and international levels, including specific training and capacity-building needs GNSS
 - ◆ Develop a regional plan of action that would contribute to wider use of GNSS technology and applications and scientific exploration perspectives
 - ◆ UN/UAE/USA Workshop on GNSS, 16 – 20 January 2011, Dubai, UAE



UNOOSA Programme on GNSS Applications

Training for capacity building in developing countries: *Provide support to the regional centres for space science and technology education, affiliated to the United Nations, which would also act as the ICG Information Centres*

- ◆ **ICG Information Centres:** Work further towards fostering a more structured approach to information exchange in order to fulfill the reciprocal expectations of a network between ICG and Regional Centres: Morocco and Nigeria for Africa, Brazil and Mexico for Latin America and the Caribbean, and India for Asia and the Pacific
- ◆ **Development of the GNSS Education Curriculum**
- ◆ **United Nations/Italy Long-term Fellowship Programme on GNSS and Related Applications:**
<http://www.unoosa.org/oosa/en/SAP/gnss/fellowships.html>



UNOOSA Programme on GNSS Applications

Promoting the use of GNSS technologies as tools for scientific applications in developing countries: *Development and implementation of a training programme for end users in various disciplines, such as a geodesy, geophysics, space weather and meteorology*

- ◆ **Provide a forum for exchanges among scientists and organizers of networks of instruments**
 - **Standards, communication of data policies to maximize the benefits of the networks**



UNOOSA: ICG Executive Secretariat

Role: to promote existing and planned opportunities proffered by ICG

- ◆ **plans and organizes ICG activities**
- ◆ **maintains information website**
- ◆ **distributes brochures**
- ◆ **organizes technical workshops and expert meetings**

**OPEN FOR COLLABORATION
AND COOPERATION**

**WELCOMES YOUR
PARTICIPATION IN AND
CONTRIBUTION TO
ICG ACTIVITIES**



Vienna International Centre



United Nations Office for Outer Space Affairs
PO Box 500, 1400 Vienna, Austria

Phone: +43 1 26060-0

Fax: +43 1 26060 5830

E-mail: osa@unvienna.org

Web: <http://www.icgsecretariat.org>