



**The Abdus Salam
International Centre for Theoretical Physics**



2135-2

**Second Workshop on Satellite Navigation Science and Technology for
Africa**

6 - 23 April 2010

ICG Development and its activities

Ms. Gadimova Sharafat

*UNOOSA
Vienna
Austria*



Office for Outer Space Affairs
United Nations Office at Vienna



International Committee on
Global Navigation Satellite Systems

ICG Development and its activities

Sharafat Gadimova
Office for Outer Space Affairs
United Nations Office at Vienna

***Second Satellite Navigation Science and Technology for Africa,
6 – 24 April 2010,***

Trieste, Italy



Outline

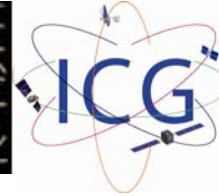
- ◆ **United Nations Office for Outer Space Affairs (UNOOSA)**
- ◆ **UNISPACE III: Action Team on Global Navigation Satellite Systems**
- ◆ **International Committee on Global Navigation Satellite Systems (ICG)**
- ◆ **Programme on GNSS Applications: Information Dissemination and Capacity Building**
- ◆ **ICG Executive Secretariat**



United Nations Office for Outer Space Affairs (UNOOSA)

- ◆ **Mandated by the Fourth Committee of the UN General Assembly (UN GA) and the Committee on the Peaceful Uses of Outer Space (UN COPUOS), and its subsidiary bodies:**
 - ◆ **Scientific and Technical Subcommittee**
 - ◆ **Legal Subcommittee**

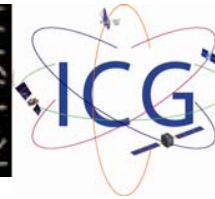
- ◆ **UN COPUOS reports annually to the Fourth Committee of the UN GA, which annually adopts a **GA resolution on****
“International cooperation in the peaceful uses of outer space”



UNISPACE III

- ◆ **Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), July, 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”



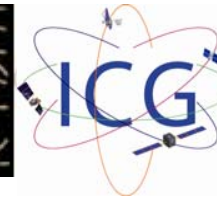
UNISPACE III: Action Team on GNSS

- ◆ **12 Action Teams established by UN COPUOS under voluntary leadership by Member States**
 - ◆ *Recommendations that have been assigned highest priority by Member States of the United Nations*
- ◆ **GNSS Action Team** co-chaired by the United States and Italy
 - ◆ **Membership: 38 nations & 15 organizations**

Regional Workshops: 2001 – 2002

- ◆ **2001: Malaysia, ESCAP and Austria, ECE**
- ◆ **2002: Chile, ECLAC and Zambia, ECA**
- ◆ **2003 – 2004: International Meetings, Vienna**
 - ◆ **2004: Action Team concluded its work**

Main Recommendation: Establishment of an International Committee on GNSS (ICG)



International Committee on Global Navigation Satellite Systems (ICG)

Objectives – to be accomplished by indicative ICG Work Plan:

- ◆ ***to benefit users of GNSS services through consultations among members of ICG;***
- ◆ ***to encourage coordination among providers of GNSS core systems and augmentations to ensure greater compatibility and interoperability;***
- ◆ ***to encourage and promote the introduction and utilization of satellite PNT services, particularly developing countries, through assistance with the integration of GNSS services in their infrastructure;***
- ◆ ***to assist both the members of ICG and the international user community by, inter alia, serving as the focal point for the international exchange of information related to GNSS activities;***
- ◆ ***to better address future user needs in the GNSS development plans and applications***



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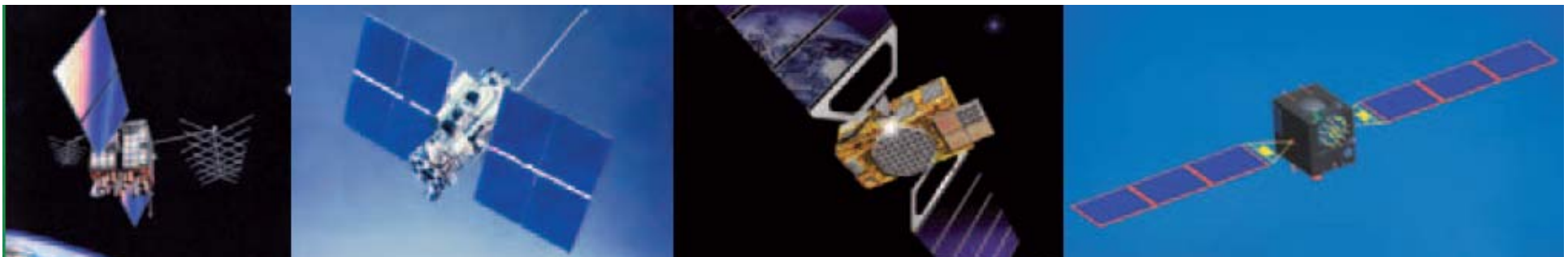
International Committee on
Global Navigation Satellite Systems

International Committee on Global Navigation Satellite Systems (ICG)

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

- ◆ **2005: Establishment of ICG**
 - ◆ **ICG 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 (USA and Russia)***
 - ◆ ***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.***
- ◆ ***Enhancement of performance of GNSS services (India and ESA)***
 - ◆ ***to promote and coordinate activities aimed at enhancing GNSS performance, recommending system enhancements and meeting future user needs.***
- ◆ ***Information dissemination and capacity building (UNOOSA)***
 - ◆ ***training/technical workshops for capacity building in developing countries***
- ◆ ***Interaction with international organizations, national, and regional authorities (IAG, IGS, FIG)***
 - ◆ ***to consider geodetic and time references***



International Committee on Global Navigation Satellite Systems (ICG)

2006: First Meeting of the ICG, UNOV, Vienna, Austria

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

2007: Second Meeting of the ICG, ISRO, Bangalore, India

- ◆ **Within the ICG is the **Providers' Forum**, consisting of those countries operating GNSS systems or with plans to develop one**
- ◆ **Providers' Forum provides a venue for coordination and cooperation to improve overall service provision**
- ◆ **Providers' Forum: U.S., Russian Federation, European Union, China, India and Japan**



International Committee on Global Navigation Satellite Systems (ICG)

2008: Third Meeting of the ICG, JPL, Pasadena, USA

- ◆ **Focused discussions on compatibility and interoperability**
- ◆ **Exchange detailed information on systems/service provision plans**
- ◆ **Exchange views on ICG work plan and activities**
- ◆ **UN-affiliated Regional Centres for Space Science and Technology Education (India, Morocco, Nigeria, Mexico/Brazil) will act as the ICG Information Centres**

2009: Fourth Meeting of the ICG, Roscosmos, Saint-Petersburg, Russia

- ◆ **Further elaboration and implementation of compatibility and interoperability;**
- ◆ **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**

2010: Italy and European Union to jointly host the Fifth meeting of the ICG



***Programme on GNSS Applications:
Information Dissemination and Capacity Building***

- I. International Space Weather Initiative: *Develop the scientific insight necessary to understand the science, and to forecast near-Earth space weather***
- ◆ **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
 - ◆ **Coordinate data products to provide input for physical modelling**
 - ◆ Input instrument array data into physical models of heliospheric processes
 - ◆ **Coordinate data products to allow predictive relationships to be developed**
 - ◆ Develop data products to allow predictive relationships that enable the forecasting of Space Weather to be established
 - ◆ **AWESOME (Atmospheric Weather Educational System for Observation and Modeling of Effects)/SIDs (Sudden Ionospheric Disturbance) monitors, USA**
 - ◆ **UN/ESA/JAXA/NASA Workshop on International Space Weather Initiative (ISWI), Luxor, Egypt, 6 – 10 November, 2010**



Programme on GNSS Applications: Information Dissemination and Capacity Building

II. 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*

- ◆ **Strengthen regional information and data exchange networks on the use of GNSS technology**
 - ◆ **Regional Reference Frames: AFREF, APREF, EUPOS/EUREF, SIRGAS**
- ◆ **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/Moldova Workshop on GNSS, 17 – 21 May 2010, Chisinau, Moldova**
- ◆ **UN/Saudi Arabia Workshop on GNSS, 4 – 8 December 2010, Riyadh, Saudi Arabia**



Programme on GNSS Applications: Information Dissemination and Capacity Building

III. 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**
 - ◆ **Regional Centres are located in: Morocco and Nigeria for Africa, Brazil and Mexico for Latin America and the Caribbean, and India for Asia and the Pacific**
- ◆ **Further development of the GNSS Education Curriculum**
- ◆ **UN/Italy Long Term Fellowship Programme on GNSS and Related Applications, Master in GNSS and Related Applications (MNA), Politecnico di Torino, Italy**
 - ◆ **UN Training Course on Satellite Navigation and Location Based Services, at the African Regional Centre for Space Science and Technology Education in English language (ARCSSTE-E), Ile-Ife, Nigeria, 4 – 29 October 2010**



***Programme on GNSS Applications:
Information Dissemination and Capacity Building***

UN/Italy Long Term Fellowship Programme on GNSS and Related Applications (MNA), Politecnico di Torino, Italy

- ◆ **12 months, including a period ranging from 4 to 6 months for hands-on pilot project**

- ◆ **Extensive background knowledge in navigation/localization systems as well as a detailed analysis on NAV/COM integration and environmental monitoring applications**
 - ◆ **Master Navigation and Related Applications (MNA) Programme, 27 September 2010**

Fellowship Website: <http://www.unoosa.org/oosa/en/SAP/gnss/fellowships.html>



Programme on GNSS Applications: Information Dissemination and Capacity Building

IV. Promoting the use of GNSS technologies as tools for scientific applications in developing countries: *development and implementation of a training programme for the 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**
- ◆ **Second Workshop on Satellite Navigation Science and Technology for Africa, 6 – 23 April 2010, the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy**



UNOOSA: ICG Executive Secretariat

...to enhance the utilization of existing and planned opportunities

International Committee on Global Navigation Satellite Systems provides...

- ◆ ***web-based information***
- ◆ ***information brochures***
- ◆ ***technical workshops and expert meetings***



International Committee on Global Navigation Satellite Systems is also...

- ***open for collaboration and cooperation***
- ***would welcome your participation in and contribution to the ICG activities***

ICG Website: <http://www.icgsecretariat.org>



Office for Outer Space Affairs
United Nations Office at Vienna



International Committee on
Global Navigation Satellite Systems

**Secretariat of the
International Committee on
Global Navigation Satellite Systems**

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

Phone: +43 1 26060 5479

Fax: +43 1 26060 5830

E-mail: ooa@unvienna.org

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