



U.S. GPS/GNSS International Activities Update

Civil GPS Service Interface Committee Meeting

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U.S. Policy Updates (2020 NSP & SPD-7)

- Maintain U.S. leadership in the service provision, and responsible use of GNSS, including GPS and foreign systems
- Promote and support the responsible use of GPS as the pre-eminent space-based PNT service
- Encourage foreign development of PNT services and systems based on GPS and the inclusion of GPS as an essential element in systems that integrate multiple PNT services.
- Support international activities to detect, mitigate, and increase resilience to harmful disruption or manipulation of GPS
- Foreign space-based PNT services may be used to complement civil GPS service
 - Receiver manufacturers should continue to improve security, integrity, and resilience in the face of growing cyber threats
 - No assurance of reliability or authenticity of foreign PNT services
 - Incorporation of foreign PNT in multi-constellation devices should be designed in a manner that precludes potential degradation of essential user capabilities resulting from possible foreign GNSS origins
 - Maintain awareness of the risks and potential benefits associated with the use of foreign space-based PNT service



U.S. Objectives in Working with Other GNSS Service Providers

- Ensure **compatibility** — ability of U.S. and non-U.S. space-based PNT services to be used separately or together without interfering with each individual service or signal
 - Radio frequency compatibility
 - Spectral separation between M-code and other signals
- Achieve **interoperability** – ability of civil U.S. and non-U.S. space-based PNT services to be used together to provide the user better capabilities than would be achieved by relying solely on one service or signal
- Promote fair competition in the global marketplace

Pursue through Bilateral and Multilateral Cooperation



Bilateral Cooperation

Japan

- Comprehensive Space Dialogue – Co-chaired by NSpC/NSC
 - Last met in August 2020 in Tokyo, next meeting TBD (U.S. to host)
- Planning/discussion underway about next Civil Space Dialogue – to include GNSS Cooperation

Europe

- GPS-Galileo Agreement (2004) guides cooperation
- U.S.-EU Space Dialogue – Discussion underway about potential meeting in late 2021
- Working Group on Next Generation GPS/Galileo Civil Services (WG-C)
 - Subgroups and Plenary met in February 2021, next meeting late 2021
- Compatibility and Interoperability Working Group met in late 2020

China

- Working Groups established – have not met since 2018



Bilateral Cooperation (continued)

India

- Discussions underway for U.S.-India Civil Space Joint Working Group (CSJWG) in late 2021
 - Includes GNSS discussions

Canada

- 4th U.S.-Canada GNSS Bilateral Meeting held in March 2020
- Virtual Bilateral Meeting focused on PNT resilience – September 2021

Korea

- Joint Statement of Cooperation on KPS signed May 2021
- Discussions underway about future bilateral dialogue

UK

- PNT bilateral discussions ongoing



ICG Meetings

Past ICG Meetings

- ICG-1: UN Vienna, Austria – November 2006
- ICG-2: Bangalore, India – September 2007
- **ICG-3: Pasadena, CA, USA – December 2008**
- ICG-4: St Petersburg, Russia – September 2009
- ICG-5: Turin, Italy – October 2010
- ICG-6: Tokyo, Japan – September 2011
- ICG-7: Beijing, China – November 2012
- ICG-8: Dubai, UAE – November 2013
- ICG-9: Prague, Czech Republic – November 2014
- **ICG-10: Boulder, CO, USA – November 2015**
- ICG-11: Sochi, Russia – November 2016
- ICG-12: Kyoto, Japan – December 2017
- ICG-13: Xi'an, China – November 2018
- ICG-14: Bangalore, India – December 2019

Future Meetings

- **ICG-15: UN Vienna, Austria – September 2021**



15th Meeting of the International Committee on GNSS (ICG)



- Hybrid format with both in-person and virtual participation
 - Anticipating more than 300 people will participate
 - All 6 GNSS Providers expected, as well as other members and observers
- Agenda includes:
 - Meeting of the Providers' Forum
 - System Provider Updates
 - Applications and Experts Session
 - Meeting of all four Working Groups





ICG Working Groups

2006 Terms of Reference and Work plan:

4 Working Groups Established

- A. **WG-S: Systems, Signals and Services (Co-Chairs: U.S. & Russia)**
 - Focus on compatibility and interoperability, encouraging development of complimentary systems
 - Exchange information on systems and service provision plans, spectrum protection
- B. **WG-B: Enhancement of GNSS Performance, New Services and Capabilities (Co-Chairs: China, India & European Space Agency)**
 - Focus on system enhancements (multipath, integrity, interference, etc.) to meet future needs, interoperable GNSS Space Service Volume, space weather
- C. **WG-C: Information Dissemination and Capacity Building (Chair: UN Office for Outer Space Affairs)**
 - Focus on training/workshops, promoting scientific applications, outreach
- D. **WG-D: Reference Frames, Timing and Applications (Co-Chairs: IAG, IGS & FIG)**
 - Focus on monitoring and reference station networks, timing issues



ICG Important Activities

GNSS Interference and Spectrum Protection

- Interference Detection and Mitigation (IDM) Workshop held virtually on August 24 – organized by U.S. led ICG Task Force
- Closely monitoring ITU/WRC proposals and regulations related to RNSS spectrum
- Spectrum Protection Educational Seminars organized by ICG Experts – Focused on the importance of protecting GNSS spectrum
 - Recommendation adopted at ICG-14 to develop a booklet – in work

Interoperability and Service Standards

- Performance Standard Template
 - “Guidelines” document developed as a template for Providers – updated version 2 produced
- International GNSS Monitoring and Assessment (IGMA)
 - Trial Project with IGS continues
- Interoperable Time – Focus on System Time Offsets



Other Important ICG Activities

Space Service Volume

- Updated UN booklet "The Interoperable GNSS SSV" – being prepared by GNSS Providers through WG-B – expected to be published at ICG-15
- Technical discussions and outreach efforts continue – focused on benefits of an interoperable space service volume and development of space-based user equipment

Orbital Debris and Orbital De-confliction

- Report from IADC provided to ICG on debris guidelines for MEO/IGSO satellites – Currently being reviewed

Precise Point Positioning (PPP) – New topic for ICG

- Task Force on PPP interoperability formed in 2019 – co-chaired by Australia, Japan and EU
- Potential workshop being discussed



Summary

- New U.S. Policy continues to focus on maintaining **leadership in the service provision**
 - Includes the addition of **responsible use of GPS/GNSS**
 - **Compatibility, interoperability, and transparency** remain priorities
 - Pursued through bilateral and multilateral dialogues
- Bilateral cooperation continues with partners
- The work of the ICG, with strong U.S. participation, continues its focus on civil GNSS services that benefit users worldwide
 - U.S. priorities include **spectrum protection, system interoperability and information dissemination**



THANK YOU!

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