U.S. GPS/GNSS International Activities Update

Civil GPS Service Interface Committee Meeting

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• 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
- 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
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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