



# ***U.S. GPS/GNSS International Activities Update***

## **Civil GPS Service Interface Committee Meeting**

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# *U.S. National Space Policy*

## ***Space-Based PNT Guideline: Maintain leadership in the service, provision, and use of GNSS***

- Provide civil GPS services, free of direct user charges
  - Available on a continuous, worldwide basis
  - Maintain constellation consistent with published performance standards and interface specifications
  - Foreign PNT services may be used to augment and strengthen the resiliency of GPS
- Encourage global *compatibility* and *interoperability* with GPS
- Promote *transparency* in civil service provision
- Enable market access to industry
- Support international activities to detect and mitigate harmful interference



# Global Perspective

- Global Constellations

- **GPS (24+3)**
- GLONASS (24+)
- GALILEO (24+3)
- BDS/BEIDOU (27+3 IGSO + 5 GEO)

- Regional Constellations

- QZSS (4+3)
- IRNSS/NAVIC (7)
- Korea – KPS (7)

- Satellite-Based Augmentations

- **WAAS (3)**
- MSAS (2)
- EGNOS (3)
- GAGAN (3)
- SDCM (3)
- BDSBAS (3)
- KASS (2)
- Australian SBAS (2)





# *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 hosted by Japan in August 2020
- Discussions underway for QZSS to host U.S. space situational awareness payloads
- Technical Working Group (TWG) discusses GPS and QZSS compatibility and interoperability



## **Europe**

- GPS-Galileo Cooperation Agreement signed in 2004
- U.S.-EU Space Dialogue held June 2019 in Prague – Next Meeting later in 2020
- Working Group on Next Generation GPS/Galileo Civil Services meets twice per year – Last Meeting May 2020 (virtual)
- Working Groups on Compatibility and Interoperability, and Trade & Civil Applications meet as needed



# *Bilateral Cooperation (continued)*

## **India**

- U.S.–India Joint statement signed in 2007
- U.S.-India Civil Space Joint Working Group (CSJWG) met November 2019 in Bangalore
  - Agenda included GNSS discussions
- Technical Working Group established in 2019 to discuss compatibility and interoperability issues and coordination

## **China**

- GNSS Plenary meeting held May 2018 in Harbin, China
- Three Working Groups Established
  - Meet as needed
- Public Joint Statement on Civil Signal Compatibility and Interoperability signed in November 2017



# *Additional Bilateral Dialogues*

- ***Australia:*** Joint Delegation Statement on Cooperation in the Civil Use of GPS in 2007
  - Regular discussions about Australia’s plans for SBAS
  - U.S.-Australia Civil Space Dialogue held in November 2018
- ***Canada:*** Civil GNSS bilateral meeting March 2020
  - Focused on resiliency and cross border issues
- ***Republic of Korea:*** Discussion about Korea’s development of KASS and KPS
- ***UK:*** Bilateral PNT discussions as needed
  - Focus on areas of mutual interest including PNT resiliency



# *International Committee on Global Navigation Satellite Systems (ICG)*

- Emerged from 3rd UN Conference on the Exploration and Peaceful Uses of Outer Space July 1999
  - Promote the use of GNSS and its integration into infrastructures, particularly in developing countries
  - Encourage compatibility and interoperability among global and regional systems
- Members include:
  - **GNSS Providers:** (U.S., EU, Russia, China, India, Japan)
  - Other Member States of the United Nations
  - International organizations/associations



<http://www.unoosa.org/oosa/en/ourwork/icg/icg.html>





# ***14<sup>h</sup> Meeting of the International Committee on GNSS (ICG)***

Welcome to ICG-14



## ***Bangalore, India: 8-13 December 2019***

- More than 250 participants
  - Representatives from 19 countries/organizations
  - Representation from all 6 GNSS Providers
- Agenda included:
  - Meeting of the Providers' Forum
  - System Provider Updates
  - Applications and Experts Session
  - Meeting of all four Working Groups
- New Membership approval: New Zealand



International Committee on  
Global Navigation Satellite Systems

***ICG-15 Meeting Postponed to 2021 at UN Vienna***



# *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 - 2021**



# *ICG Important Activities*

## GNSS Interference and Spectrum Protection

- Core Area of Focus of the ICG
- Closely monitoring ITU/WRC proposals and regulations related to RNSS spectrum
- IDM Workshops have been held since 2012 – organized by the ICG
- 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

## Interoperability and Service Standards

- Interoperable Time
  - Timing Workshops focused on GNSS Time Offsets
- Performance Standard Template
  - “Guidelines” document developed as a template for Providers
- International GNSS Monitoring and Assessment (IGMA)
  - Trial Project with IGS is in progress



# *Other Important ICG Activities*

## Space Service Volume

- UN booklet "The Interoperable GNSS SSV" – prepared by GNSS Providers through WG-B – published in early 2018
- 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

- ICG working with IADC to review debris guidelines for MEO/IGSO satellites

## Precise Point Positioning (PPP)

- ICG-14 recommendation adopted to form a Task Force on PPP interoperability – co-chaired by Australia, Japan and EU
- Virtual meeting scheduled for late September



# *Summary*

- U.S. policy encourages the worldwide use of civil GPS services and cooperation with other GNSS providers
  - **Compatibility, interoperability, and transparency in civil service provision** are priorities
  - Pursued through bilateral and multilateral dialogues
- The ICG, with strong U.S. participation, continues to pursue a **Global Navigation Satellite System-of-Systems** to provide civil GNSS services that benefit users worldwide
  - U.S. priorities within the ICG include spectrum protection, system interoperability and information dissemination



***THANK YOU!***

*Office of Space and Advanced Technology  
U.S. Department of State*

