



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

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

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Seoul, Republic of Korea**



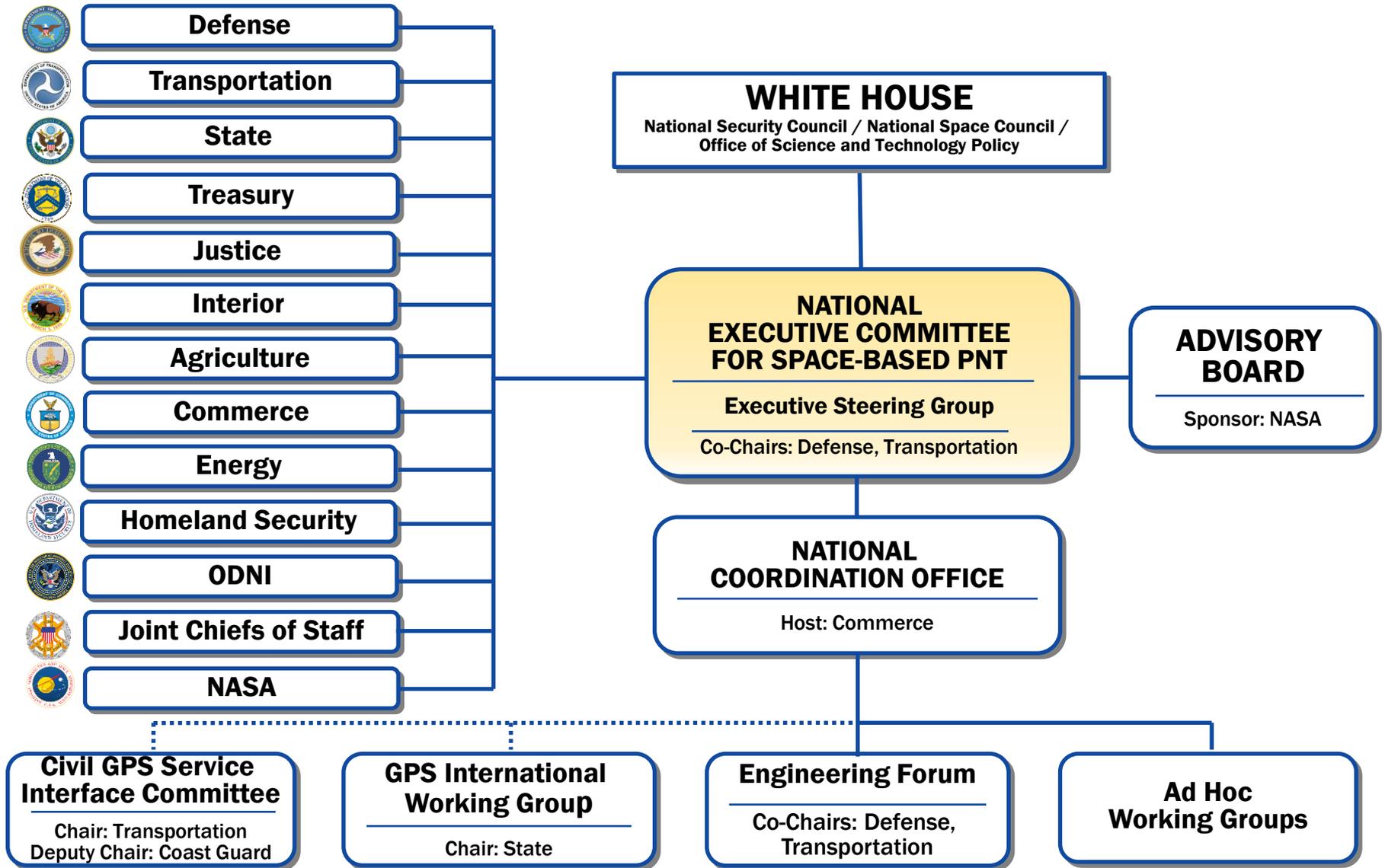
# *U.S. PNT Policy*

*Maintain U.S. leadership in the service provision, and responsible use of GNSS, including GPS and foreign systems*

- 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
- Encourage **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
- Promote **transparency** in civil service provision and enable **market access** for U.S. industry
- Promote and support the **responsible use of GPS** as the pre-eminent space-based PNT service
- 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
- Encourage foreign development of PNT services and systems based on GPS
- Support international activities to **detect, mitigate, and increase resilience** to harmful disruption or manipulation of GPS



# National Space-Based PNT Organizations





# 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 - Korea (2)
- SPAN – Australia/NZ (2)





# *Bilateral Cooperation*

## **Korea**

- Civil Space Dialogue held in December 2022
- Joint Statement of Cooperation on KPS signed May 2021
- Technical meeting on KPS held 20 March 2023

## **Europe**

- GPS-Galileo Agreement (2004) guides cooperation
- U.S.-EU Space Dialogue – next meeting June 2023
  - PNT “Experts” meeting being planned
- Working Group on Next Generation GPS/Galileo Civil Services (WG-C)
  - Subgroups and Plenary met in October 2022, next meeting April 2023

## **China**

- Working Groups established – have not met since 2018



# *Bilateral Cooperation (continued)*

## **India**

- U.S.-India Civil Space Joint Working Group (CSJWG)
  - Met in January 2023
  - Included GNSS discussions
- Technical Working Group established for working level collaboration/coordination

## **Japan**

- Comprehensive Space Dialogue – Co-chaired by NSpC/NSC
  - Next meeting March 2023
- Technical Working Group (TWG) established for working level collaboration/coordination

## **Other Bilateral Engagements**

- Canada, Australia, UK, Thailand



# *Multilateral Cooperation*

## **International Committee on GNSS (ICG)**

- Pursuing a Global Navigation Satellite System-of-Systems to provide civil GNSS services that benefit users worldwide
  - Promote the use of GNSS and its integration into infrastructures, particularly in developing countries
  - Encourage compatibility and interoperability among global and regional systems
- U.S. priorities include:
  - Spectrum protection
  - System interoperability
  - Information dissemination
  - Space Service Volume (SSV) interoperability
  - Search and Rescue (SAR) interoperability



# *ICG Meetings*

## **Past ICG Meetings**

- ICG-1: UN Vienna, Austria – 2006
- ICG-2: Bangalore, India – 2007
- **ICG-3: Pasadena, CA, USA – 2008**
- ICG-4: St Petersburg, Russia – 2009
- ICG-5: Turin, Italy – 2010
- ICG-6: Tokyo, Japan – 2011
- ICG-7: Beijing, China – 2012
- ICG-8: Dubai, UAE – 2013
- ICG-9: Prague, Czech Republic – 2014
- **ICG-10: Boulder, CO, USA – 2015**
- ICG-11: Sochi, Russia – 2016
- ICG-12: Kyoto, Japan – 2017
- ICG-13: Xi'an, China – 2018
- ICG-14: Bangalore, India – 2019
- ICG-15: Vienna, Austria – 2021
- ICG-16: Abu Dhabi, UAE – 2022

## **Next Meeting**

- **ICG-17: Madrid, Spain – October 2023**



# 16<sup>th</sup> Meeting of the International Committee on GNSS (ICG)



- Held in hybrid format with both in-person and virtual participation
  - More than 200 people participated
  - All 6 GNSS Providers, as well as other members and observers
- Agenda included:
  - 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

- WG-S: Systems, Signals and Services
- WG-B: Enhancement of GNSS Performance, New Services and Capabilities
- WG-C: Information Dissemination and Capacity Building
- WG-D: Reference Frames, Timing and Applications



# *ICG Important Activities*

## GNSS Interference and Spectrum Protection

- Interference Detection and Mitigation (IDM) – 10<sup>th</sup> Workshop held December 2022
  - focused on AIS and ADS-B for interference detection
- Closely monitoring ITU/WRC proposals and regulations related to RNSS spectrum in preparation for WRC-23
- Spectrum Protection Educational outreach – Focused on the importance of protecting GNSS spectrum
  - Seminar held December 2022 in Vienna

## Interoperability and Service Standards

- Performance Standard Template
  - “Guidelines” document developed as a template for Providers
- 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

- UN booklet "The Interoperable GNSS SSV" 2<sup>nd</sup> edition published by the ICG
  - Prepared by GNSS Providers through WG-B Space Use Subgroup
  - On-going work to develop 3rd edition of booklet, to include expansion of multi-GNSS SSV coverage throughout Cislunar space
- Technical discussions and outreach efforts continue under U.S. leadership – focused on benefits of an interoperable space service volume and development of space-based user equipment

## Search and Rescue (SAR)

- Discussion on interoperability for GNSS-based SAR and development of capabilities for users throughout Cislunar space

## Geodetic Reference Frames

- Focus on improving interoperability through alignment of reference frames



# *Summary*

- U.S. Policy continues to focus on maintaining **leadership in the service provision**
  - **Compatibility, interoperability, and transparency** remain priorities
  - Pursued through bilateral and multilateral dialogues
- Bilateral cooperation forms the basis for carrying out U.S. policy
- U.S. support for the ICG continues with a focus on civil GNSS services that benefit users worldwide
  - U.S. priorities include **spectrum protection, system interoperability and information dissemination**



***THANK YOU!***

*Office of Space Affairs  
U.S. Department of State*

