U.S. GPS/GNSS International Activities Update

Civil GPS Service Interface Committee International Meeting

Jeffrey Auerbach
Office of Space Affairs
U.S. Department of State

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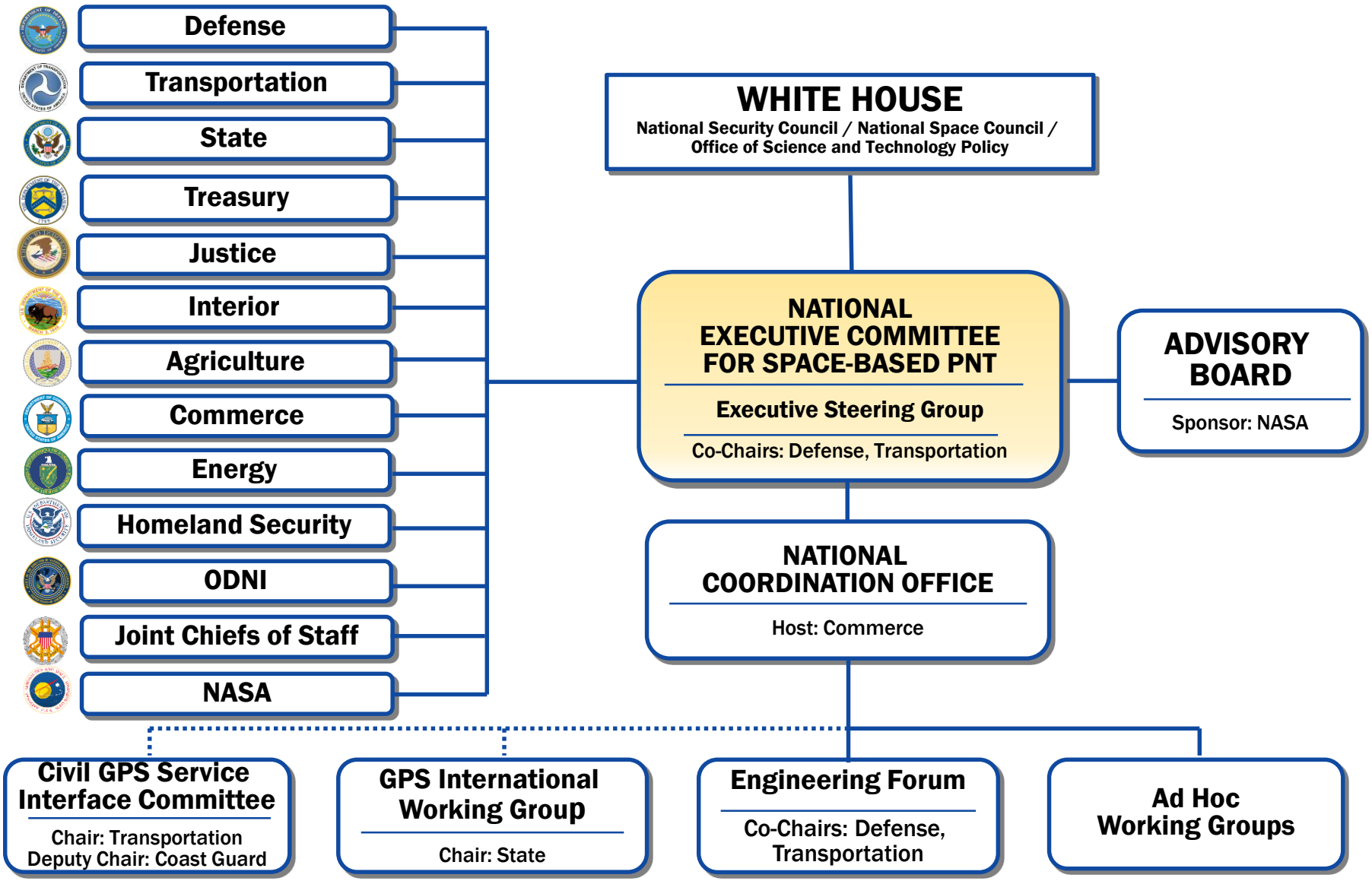
U.S. PNT Policy

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)
  - 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

Europe

- GPS-Galileo Agreement (2004) guides cooperation
- U.S.-EU Space Dialogue – Met June 2023
  - PNT a core element
- Working Group on Next Generation GPS/Galileo Civil Services
  - Subgroups and Plenary met in April 2023, next meeting October 2023
- Working Group on Compatibility and Interoperability
  - Planning to meet later this year

China

- Joint Statement on GPS/Beidou Compatibility and Interoperability - 2017
- Working level discussions through working groups as needed

Bilateral Cooperation (continued)

Japan

- Comprehensive Space Dialogue – Co-chaired by NSpC/NSC
  - Met in Tokyo in March 2023
  - Included GNSS discussions
- Technical Working Group (TWG) established for working level collaboration/coordination
  - Last meeting March 2023

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

Bilateral Cooperation (continued)

Korea

- Civil Space Dialogue held in December 2022
- Joint Statement of Cooperation on KPS signed May 2021
- Technical Working Group (TWG) established for working level collaboration/coordination
  - Met in March 2023

Other Bilateral PNT Engagements

- Canada – Bilateral PNT discussions on cross border issues
- Australia – Bilateral discussions related SPAN (SBAS) and other relevant issues
- UK – Bilateral discussions on PNT, including resiliency
- Thailand – Workshops on space issues including PNT

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

16th 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 International Committee on Global Navigation Satellite Systems

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) – 10th 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" 2nd edition published by the ICG
- 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

Low Earth Orbit (LEO) PNT Systems

- Workshop with providers held in December 2022

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
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