SPACE-BASED POSITIONING
NAVIGATION & TIMING
NATIONAL COORDINATION OFFICE

Introduction to US PNT Policy

National Coordination Office
for Space Based
Positioning Navigation and Timing

April 2021

Overview

- National Space-Based PNT Organization
- U.S. Policy
  - SPD-7
  - National Space Policy
  - SPD-5
  - EO-13905
- International Discussion Venues

National Space-Based PNT Organization

- Defense
- Transportation
- State
- Treasury
- Justice
- Interior
- Agriculture
- Commerce
- Energy
- Homeland Security
- ODNI
- Joint Chiefs of Staff
- NASA

WHITE HOUSE
Assistant for National Security Affairs / National Space Council

NATIONAL EXECUTIVE COMMITTEE FOR SPACE-BASED PNT
Executive Steering Group
Co-Chairs: Defense, Transportation

ADVISORY BOARD
Sponsor: NASA

NATIONAL COORDINATION OFFICE
Host: Commerce

Civil GPS Service Interface Committee
Chair: Transportation
Deputy Chair: Coast Guard

GPS International Working Group
Chair: State

Engineering Forum
Co-Chairs: Defense, Transportation

Ad Hoc Working Groups

U.S. Policy

The goal of [SPD-7] is to maintain United States leadership in the service provision, and responsible use of global navigation satellite systems (GNSS), including GPS and foreign systems.

- Continuous, worldwide, free of direct user fees
- Encourage compatibility and interoperability with likeminded nations and promote transparency in civil service provisioning and enable market access for United States Industry
- Operate and maintain constellation to satisfy civil and national security needs and equip and train for the responsible use of GPS
  - Foreign PNT services may augment and strengthen the resiliency of GPS however the US Government does not assure the reliability or authenticity of foreign PNT services
- Invest in domestic capabilities and support international activities to detect, mitigate and increase resiliency to harmful interference
- Improve the cybersecurity of GPS, its augmentations, and United States Government owned GPS-enabled devices, and foster private sector adoption of cyber-secure GPS enabled systems

Space Policy Directive 7 (SPD-7)
of 15 January 2021

Updates and replaces U.S. Space-Based PNT Policy of 2004

- Increased focus on protecting GPS and denying hostile use
- Incorporated principles of Responsible Use of GPS
- New direction on adding cybersecurity protections for GPS and federal user equipment to
  - Increasing resilience against disruption and/or manipulation of GPS signals in order to maintain Mission Essential Functions (MEF)
- Expanded EXCOM Membership
  - Added Treasury, Justice, and Energy
- New direction to protect the GPS spectrum environment

SPD-7 Changes to Agency Responsibilities

- ***State***
  - New mention of cooperation with DoD in relations with Allies
- ***Defense***
  - Direction to work with DOT to maintain “safety-of-life backwards compatibility commitments”
  - Direction to provide cost estimates to the GPS program costs based on DOT’s strategy and future requirements to implement GPS data and signal authentication.
  - New mention of existing role as lead for International Spectrum Coordination
- ***Commerce***
  - Direction to Invest in R&D for enhancing commercial services
  - Direction to develop cybersecurity resilience guidelines

SPD-7 Changes to Agency Responsibilities

- ***Transportation***
  - Direction to ensure earliest availability of modernized civil signals
  - New Direction to implement Federal and facilitate State, local and commercial capabilities to monitor, identify, locate, and attribute space-based PNT service disruption and manipulations within the U.S.
  - Direction to develop international signal monitoring standards
  - New caution on the use of foreign GNSS
  - New Direction to pursue data and signal authentication
- ***Homeland Security***
  - Added reference to EO13905 on Responsible Use of PNT
  - Direction to develop procedures for notification of disrupted and/or unreliable PNT
  - Direction to assist DOT in implementing data and signal authentication

National Space Policy
9 December 2020

The U.S. must maintain its leadership in the service, provision, and responsible use of global navigation satellite systems (GNSS)

- Provide continuous worldwide access, for peaceful civil uses free of direct user fees;
- Engage with international GNSS providers to ensure compatibility, encourage interoperability with likeminded nations, promote transparency in civil service provision, and enable market access for United States industry;
- Operate and maintain the GPS constellation to satisfy civil and national security needs,
- Improve the cybersecurity of GPS, its augmentations, and federally owned GPS enabled devices,
- Allow for the continued use of allied and other trusted international PNT services in conjunction with GPS

National Space Policy
(cont.)

- Invest in domestic capabilities and support international activities to detect, analyze, mitigate, and increase resilience to harmful interference to GNSS;
- Identify and promote, as appropriate, multiple and diverse complementary PNT systems or approaches for critical infrastructure and mission-essential functions; and
- Promote the responsible use of United States space-based PNT services and capabilities in civil and commercial sectors at the Federal, State, and local levels, including the utilization of multiple and diverse complementary PNT systems or approaches for national critical functions.

Space Policy Directive 5 (SPD-5)
of 4 September 2020

Establishing space cybersecurity policy, standards, and risk management practices

"...the United States considers unfettered freedom to operate in space vital to advancing the security, economic prosperity, and scientific knowledge of the Nation...Therefore, it is essential to protect space systems from cyber incidents in order to prevent disruptions to their ability to provide reliable and efficient contributions to the operations of the Nation's critical infrastructure."

Executive Order 13905
of 12 February 2020

Strengthening National Resilience Through Responsible Use of Positioning, Navigation, and Timing Services

"Responsible use of PNT services" –
means the deliberate, risk-informed use of PNT services, including their acquisition, integration, and deployment, such that disruption or manipulation of PNT services minimally affects national security, the economy, public health, and the critical functions of the Federal Government

International Discussion Venues

- **Bilateral**
  - China - ITU coordination, Joint Statement 2015
  - EU - GPS-Galileo Agreement (2004)
  - Japan - Joint Statement on GPS cooperation (QZSS – 1998)
  - Russia - Joint Statements (2004, 2011, 2012)
  - India - Joint Statement on GNSS cooperation (2007)
  - Korea – Working towards Joint Statement (2020)
- **Multilateral**
  - International Committee on GNSS (ICG)
    - UN-sponsored – focus on PNT for developing world
    - Any nation and international organization may participate
  - Providers' Forum
    - Comprised of the space-based PNT service providers
    - Advance principles of compatibility, interoperability, and transparency (system operating parameters, timing standards, and geodetic reference frames)

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GPS: The Global Positioning System

A global public service brought to you by the U.S. government

INFORMATION FOR THE GENERAL PUBLIC

How to Correct Your Address in GPS Devices, Apps, & Online Maps

Do GPS devices show your home or business in the wrong place? **The problem is not GPS!** It's the mapping software.

Report your issue to the software providers

Common Questions →

- NEW Is the COVID-19 outbreak affecting GPS operations?
- How do I add or correct my address in GPS devices, apps, and maps?
- What can I do about trucks driving through my neighborhood?
- How do I report GPS service outages?
- Can GPS help me find my lost phone?
- How does GPS work?
- How accurate is GPS?
- How vulnerable is GPS to malicious jamming?

FOR GPS PROFESSIONALS

What's HOT for Pros

- Ligado Networks and GPS
  - FCC order denying motion for stay
- U.S. Space-Based PNT Policy of 2021
- National Space Policy of 2020
- DOT reports to Congress:
  - National Timing Resilience and Security Act
  - Complementary PNT and GPS backup tech demo
- Technical documentation
  - Interface specifications
  - SPS performance standard
  - Civil monitoring performance specification
- Recent presentations
- Funding & legislation
  - Final FY 2021 appropriations and NDAA provisions

News Items →

- *Jan 19:* FCC denies petition to stay Ligado order and authorization
- *Jan 15:* New U.S. space-based PNT policy released
- *Jan 15:* DOT report to Congress on National Timing Resilience and