



SPACE-BASED POSITIONING  
NAVIGATION & TIMING

NATIONAL COORDINATION OFFICE

# ***U.S. Space-Based Positioning, Navigation and Timing (PNT)***

***59th Meeting of the Civil GPS Service Interface Committee  
Miami, Florida***

***17 September 2019***

**Harold W. Martin III  
Director  
National Coordination Office**



# U.S. Policy

*The U.S. must maintain its leadership in the service, provision, and use of Global Navigation Satellite Systems (GNSS)*

- **Continuous, worldwide, free of direct user fees**
- **Encourage compatibility and interoperability** with foreign GNSS services and **promote transparency** in civil service provisioning
- **Operate and maintain constellation to satisfy civil and national security needs**
  - Foreign PNT services may be used to augment and strengthen the resiliency of GPS
- **Invest in domestic capabilities and support international activities to detect, mitigate and increase resiliency** to harmful interference



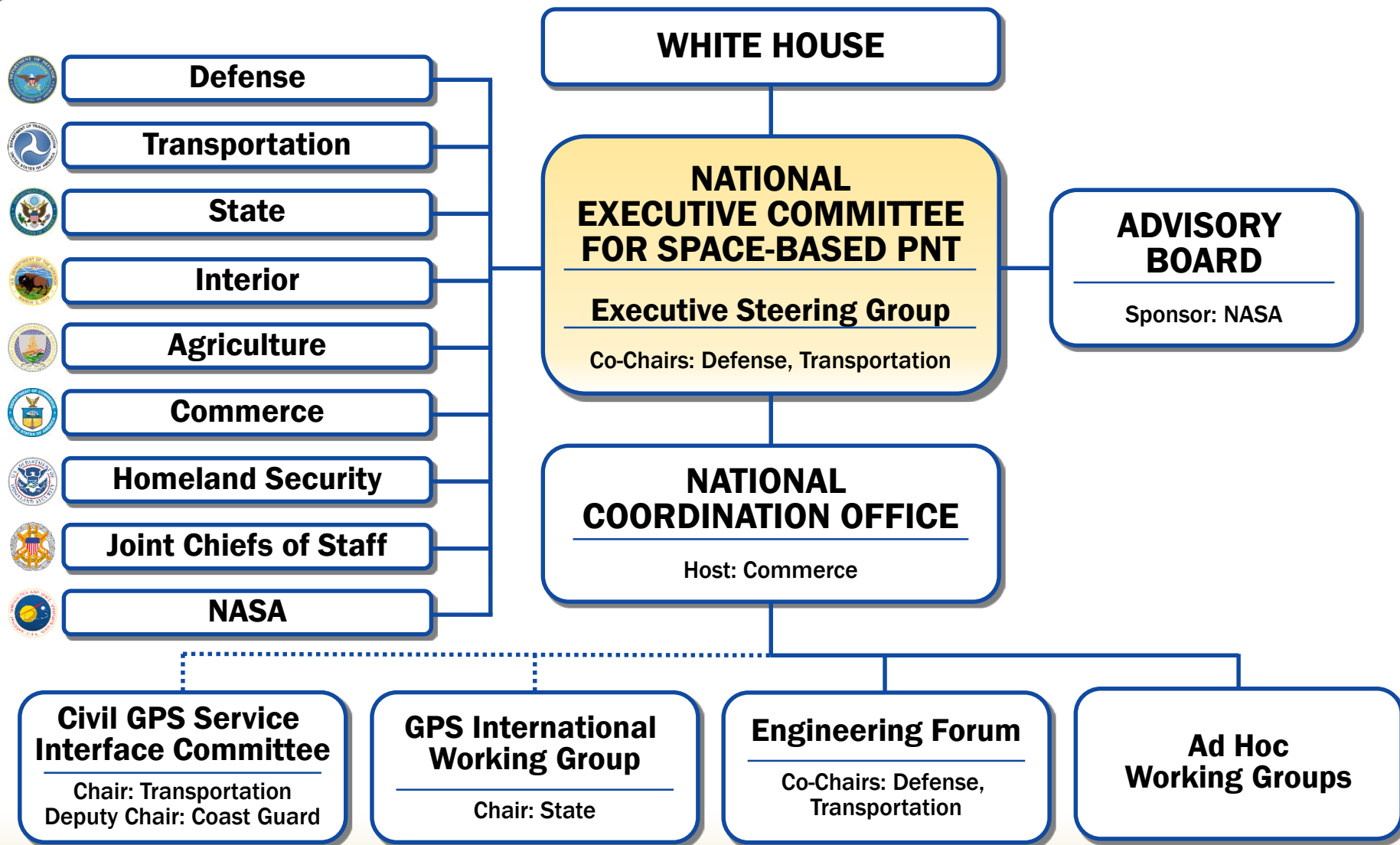
# U.S. Policy



- **NSPD-39, the Space-Based Positioning, Navigation, and Timing Policy from 2004, is in the process of being updated by the National Space Council**
- **Remarks by DOT General Counsel at the 6<sup>th</sup> Meeting of the National Space Council:**
  - **Under National Security Presidential Directive 39, issued in December 2004, the United States is committed to developing, maintaining and a modernizing the global positioning system, or GPS, and other satellite-based navigation systems, including backup capability in the event of a disruption of GPS.**
  - **...”Working closely with the Commerce Department, NTIA, and the FCC,” DOT’s adjacent band compatibility study “shows we need strong, consistent policies to ensure protection for satellite-based navigation.”**



# National Space-Based PNT Organization





# Economic Benefits of GPS



**The Department of Commerce, due in part to a request from the EXCOM, sponsored a study of the economic benefits of Global Positioning System (GPS)**

- The two year study by RTI International shows 10 key industries generated \$1.4 trillion since GPS was made available for private-sector use in 1983. About 90 percent of this figure accrued after 2010**
- In addition to discovering economic impacts, the study presents an analysis of the potential economic damages from a GPS outage. Though rare, a GPS outage could potentially have an economic impact of \$1 billion a day**



# The Airwaves Are Not Safe



- **Computers and the Internet: Once Upon a Time...**
  - **A GPS receiver is more computer than radio...**
- **GPS relies on spectrum – no longer a safe haven**
- **GPS receivers require Cybersecurity**
- **U.S. Policy directs PNT resiliency (NSPD-39, PPD-4, PPD-21, EO 13800, National Cyber Strategy)**

***“Known but unmitigated vulnerabilities are among the highest cybersecurity risks...”***

***(EO 13800: Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure)***



# What Can You Do Now?



- **CIOs: Include GPS enabled devices in Cybersecurity plans**
  - **Be a demanding customer - toughen GPS devices:**
    - **Incorporate valid range checking and other elements of latest GPS Interface Specification (IS-GPS-200K \*)**
    - **Incorporate DHS Best Practices (*Improving the Operation and Development of Global Positioning System (GPS) Equipment Used by Critical Infrastructure, Jan 2017* \*)**
- \* Documents available on [www.gps.gov](http://www.gps.gov)

***Protect GPS and Critical Infrastructure that Relies on GPS***



# Thank You



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