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
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
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 6th 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.”
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
Thank You

Stay in touch: [www.gps.gov](http://www.gps.gov)

- “GPS Bulletin” published by NCO
- Anyone can subscribe or get back issues

Contact Information:
National Coordination Office for Space-Based PNT
1401 Constitution Ave, NW – Room 2518
Washington, DC 20230
Phone: (202) 482-5809
[www.gps.gov](http://www.gps.gov)

GPS: Accessible, Accurate, Interoperable