U.S. GPS International Activities Update

National Space-Based Positioning Navigation and Timing (PNT) Advisory Board: 23rd Meeting

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U.S. National Space Policy

Space-Based PNT Guideline: Maintain leadership in the service, provision, and use of GNSS

- Provide civil GPS services, free of direct user charges
  - Available on a continuous, worldwide basis
  - Maintain constellation consistent with published performance standards and interface specifications
  - Foreign PNT services may be used to augment and strengthen the resiliency of GPS
- Encourage global *compatibility* and *interoperability* with GPS
- Promote *transparency* in civil service provision
- Enable market access to industry
- Support international activities to detect and mitigate harmful interference

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 (2)
  - **Australia SBAS**

Bilateral Cooperation

Japan

- Comprehensive Dialogue held in Tokyo, July 2018
- Civil Space Dialogue held in Washington, May 2017
- Technical Working Group (TWG) discusses GPS and QZSS compatibility and interoperability
  - ITU coordination is ongoing

Europe

- GPS-Galileo Cooperation Agreement signed in 2004
- Working Group on Next Generation GPS/Galileo Civil Services meets twice per year
- EU waiver of FCC Part 25 rules discussed by Working Group on Trade & Civil Applications
- On-going PRS access negotiations

Potential Concerns with EU Regulations

- RED (Directive 2014/53/EU) regulates the requirements that products within its scope must meet to be sold in the EU market
- Receiver manufacturers claim conformance with the RED by applying the criteria in applicable Harmonised Standards (EN 303 413)
- Some EU regulatory documents have been created/updated which contain language that can be viewed as transferring the burden of interference avoidance to the incumbent receiver community

Potential Concerns with EU Regulations

Technical issues from ECC Report 263 are:

1) **receiver blocking**

"The minimum in-band blocking characteristic for land mobile earth stations receivers from a 5 MHz broadband signal interferer (LTE) operating below 1518 MHz shall be –30 dBm above 1520 MHz"

and

2) **unwanted emission**

"The base station unwanted emission limits e.i.r.p. for a broadband signal interferer (LTE) operating below 1518 MHz shall be –30dBm/MHz above 1520 MHz"

Bilateral Cooperation (continued)

China

- GNSS Plenary meeting held May 2018 in Harbin, China
- Three Working Groups Established
  - Meet as needed
- Public Joint Statement on Civil Signal Compatibility and Interoperability signed in November 2017

India

- U.S.–India Joint statement signed in 2007
- U.S.-India Civil Space Joint Working Group (CSJWG) met October 2017 in Washington
  - Agenda included GNSS discussions
- Next meeting scheduled to occur before the end of 2019

13th Meeting of the International Committee on GNSS (ICG)

Xi'an, China: 4-9 November 2018

- More than 200 participants
  - Representatives from 27 countries/organizations
  - Representation from all 6 GNSS Providers
- Agenda included:
  - Meeting of the Providers' Forum
  - System Provider Updates
  - Applications and Experts Session
  - Meeting of all four Working Groups
- New Membership approval: Australia

ICG International Committee on Global Navigation Satellite Systems

Xi'an 2018

ICG Important Activities

GNSS Interference and Spectrum Protection

- Core Area of Focus of the ICG
- IDM Workshops have been held since 2012 – organized by the ICG
  - 8th IDM Workshop took place May 2019 as part of Baska GNSS Conference in Croatia
- Spectrum Protection Educational Seminars organized by ICG Experts – Focused on the importance of protecting GNSS spectrum
  - 3rd Seminar held March 2018 in Argentina

Interoperability and Service Standards

- Interoperable Time
  - Timing Workshop held in 2018 focused on GNSS Time Offsets
- Performance Standard Template
  - "Guidelines" document being developed as a template for Providers
- International GNSS Monitoring and Assessment (IGMA)
  - Trial Project with IGS is in progress

Summary

- U.S. policy encourages the worldwide use of civil GPS services and cooperation with other GNSS providers
  - **Compatibility, interoperability, and transparency in civil service provision** are priorities
  - Pursued through bilateral and multilateral dialogues
- The ICG, with strong U.S. participation, continues to pursue a **Global Navigation Satellite System-of-Systems** to provide civil GNSS services that benefit users worldwide
- Potential Concerns with EU Radio Equipment Directive

THANK YOU !

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