A Global Service Provision Perspective

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OUTLINE

Evolving Organization
- Global Service Center
- Organization and Management
- Outreach
- Mapping
- Finance
- Timing
- Search and Rescue
- Service Center Cooperation

Common Challenges
A Global Service Center

- NAVCEN has U.S. government designation as civil service center for GPS

- Website, RSS feeds and e-mail list servers distribute all operational GPS data products and interface documents

- 24/7/365 customer service watch

- Answer inquiries and disruption reports from around the world

- Represent user communities and advocate for civilian use of GPS at meetings of the GPS Program

- Coordinate operations with other Provider service centers
Dual-Service Management Activities

- Space-Based PNT Executive Committee - Governance
- National Coordination Office - Policy
- National Space-Based PNT Engineering Forum (NPEF) - Analysis
- Space-Based PNT Advisory Board - Independent Review
- Civil Program Management Review (PMR)
- Interagency Forum for Operational Requirements (IFOR)
- CGSIC – User Forum
CGSIC Organization for Outreach

- Organization established in 1989 to brief users on status of programs and solicit feedback on changing user requirements

- CGSIC Plenary Committee and Subcommittees
  - International Information Subcommittee
  - Timing Subcommittee
  - State and Local Government Subcommittee
  - Survey, Mapping and Geo-Sciences Subcommittee
Users reporting mapping problems

• “My Grandmother’s address is wrong in GPS and I am worried about emergency services getting to her. You need to fix it.”

• “My customers cannot find my business location in GPS, please fix it.”

• “GPS is directing customers to a competitor’s location instead of mine. The address is wrong and needs to be corrected.”

• “GPS is sending trucks down our road that cannot fit. You have to stop them.”

• “If you send one more car down my driveway in the middle of the night, I don’t care, I’m putting out a spike strip.”
Easy to dismiss but....

- These are your users and system as a whole is blamed
- Some are economically important business users: Grocery Stores, Hotels, Dealerships, Tech industry, Gas Station, Government Services, Financial services
- Unless the address has been accurately recorded by the Google StreetMap car or other GIS data mapper, it may, in fact, not be in the correct location.
- Education is important and necessary
International Finance

• Machine assisted trading dominates
  • Requirement for precision timing
  • Soon requiring time stamping of ALL financial transactions
  • One US bank alone transacts over $35 Trillion dollars a day
  • NYSE averages over $15B in the first 2 minutes after the opening

• Challenges:
  • Developing a timing solution accurate to 1μS per transaction across a data center
  • Developing the ability to time stamp every transaction
  • Developing analytics to measure the performance of the transaction environment at 100’s of millions of transaction per second.

• Market transparency
  • Did all market participants have fair and equal access?
  • Are all the markets seeing information at nearly the same time?
Timing compatibility

• Much of the world’s precise timing comes from our GNSS satellites.

• Need to work towards compatible time in a system of systems

• One issue in the user community is the insertion of Leap Seconds

• CGSIC Timing Subcommittee has looked at the issue and issued an opinion which they have forwarded to the ITU
  • Leap seconds should cease to be inserted in the near future
  • UTC should become a unique and continuous reference time scale
  • A period of at least 5 years be allowed so that operators of navigational systems can make adequate preparations.
48 beacon manufacturers participated in 2014 survey

Over 1,411,000 beacons were in use at the end of 2013

156,100 beacons were produced in 2013 worldwide, including:

- 68,900 EPIRBs
- 23,200 ELTs
- 64,000 PLBs
COSPAS-SARSAT

5 Low Earth Polar Orbiting Search And Rescue (LEOSAR)

7 Geostationary Orbiting Search And Rescue (GEOSAR) with 2 under test

3 Medium Earth Orbiting Search and Rescue (MEOSAR)

30 mission control centers

MEOSAR will replace the LEO SAR portion of the program when the LEO satellites reach end-of-life.
MEOSAR

The COSPAS-SARSAT Program uses some MEOSAR constellation already. Includes 3 satellites with an operational L-band downlink repeater: 1 Glonass-K1 and 2 Galileo IOV satellites (IOV-3 and IOV-4)

- Experimental Distress Alerting Satellite System (DASS) repeaters with S-band downlink aboard all IIR-M and IIF GPS satellites
- 16 active now
- DASS scheduled for all GPS-III satellites to #8
- #11 and beyond planned to have the new GPS-SAR L-band payload.
Cooperation between Global Service Centers

• Work on interoperability, compatibility and transparency in our systems through the International Committee on GNSS

• Work country-to-country through official bi-lateral GNSS talks to improve communications between centers

• Connect our service centers together for day-to-day operations to benefit user communities of the world

• Improve processes for Information sharing to respond to the needs of equipment manufacturers and user communities.
Civil GPS Service Interface Committee (CGSIC)  
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