SPACE-BASED POSITIONING
NAVIGATION & TIMING
NATIONAL COORDINATION OFFICE

U.S. Space-Based PNT:
Policy Review

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Overview

Policy

Interoperability

Role for APEC GIT

U.S. Policy History

- 1978: First GPS satellite launched
- 1983: U.S. President offers free civilian access to GPS
- 1996: U.S. policy establishes joint civil/military GPS management
- 1997: U.S. Congress passes law that civil GPS shall be provided free of direct user fees
- 2000: U.S. President set Selective Availability to “Zero”
- 2004: U.S. President issues U.S. Policy on Space-Based PNT
- 2007: U.S. President announces Selective Availability will no longer be built into modernized GPS III satellites

U.S. Space-Based PNT Policy Overview

- No direct user fees for civil GPS services
- Open public signal structures for all civil services
  - Promotes equal access for user equipment manufacture, applications development and value-added services
  - Facilitates open market-driven competition
- Encourage use of GPS time, geodesy and signal standards
- Promote global compatibility and interoperability of future systems with GPS
- Protect the current radionavigation spectrum from disruption and interference
- Recognition of national and international security issues and protect against misuse

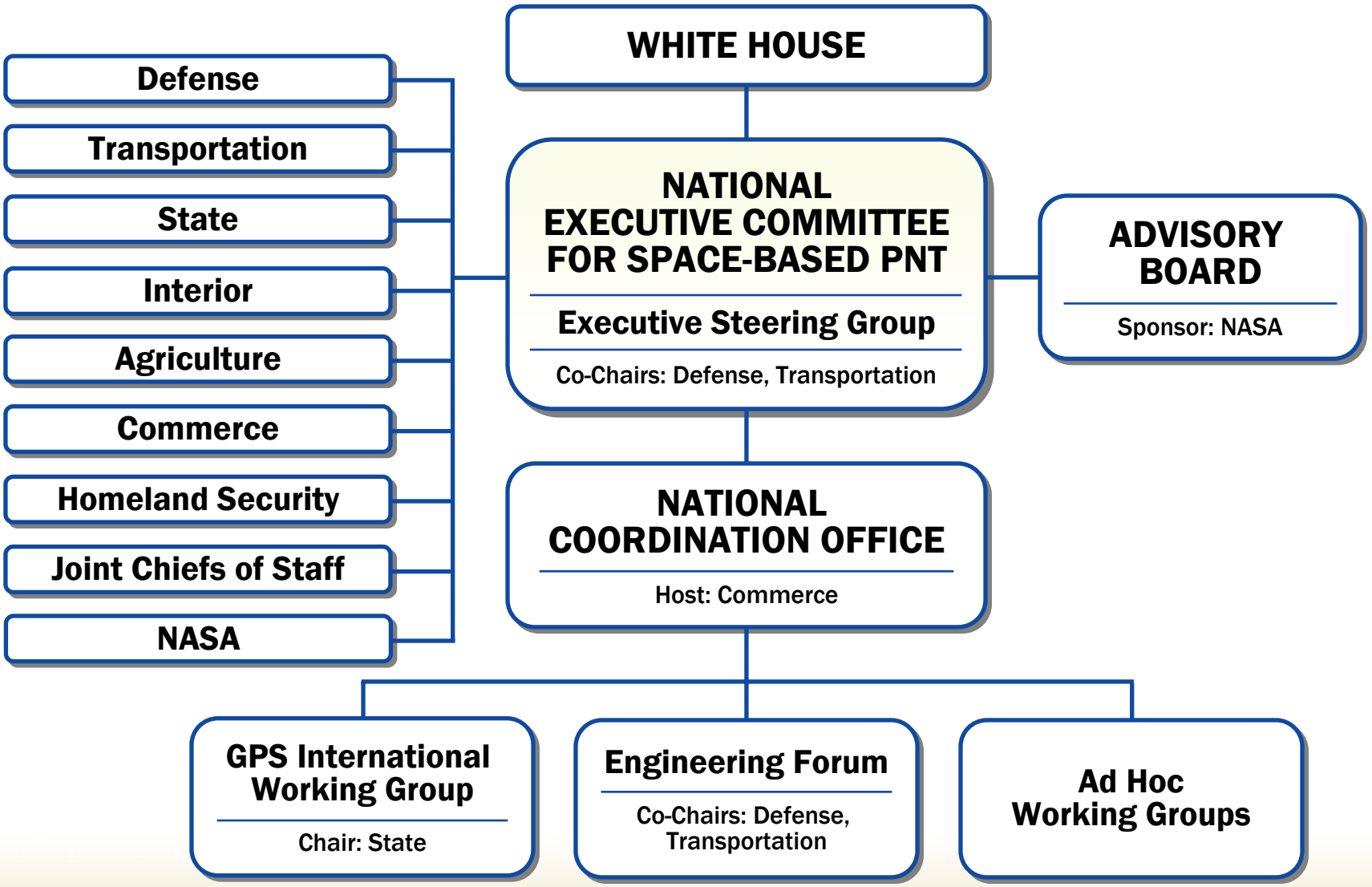
National Space-Based PNT Policy

- Recognizes the changing international scene
  - Other nations are implementing space-based systems that provide PNT services
- National Executive Committee for Space-Based PNT
  - Chaired by Deputy Secretaries of Defense and Transportation
  - Membership includes: State, Interior, Agriculture, Commerce, Homeland Security, Joint Chiefs of Staff and NASA
- Established National Coordination Office (NCO) with staff from each member agency

National Coordination Office

- Facilitates information sharing, coordination, and issue resolution regarding space-based PNT programs, requirements, budgets, and policies across all U.S. Agencies
- Facilitates coordination among Agencies regarding plans to modernize U.S. space-based PNT infrastructure
- Conducts or oversees space-based PNT studies, analyses and projects with a U.S. National benefit
- Informs state, local and international GNSS users and participants of National Executive Committee activities

National Space-Based PNT Organization Structure



EXCOM Activities

- Interest Areas
  - Five-Year National Plan
  - National PNT Architecture
  - GPS Modernization
  - Civil GPS Funding
  - GPS Augmentations
    - Nationwide Differential GPS
  - Distress Alerting Satellite System (DASS)
- International Engagement
  - Bilateral
  - Multilateral
- Spectrum Management
  - Interference Detection and Mitigation Plan
  - Spectrum Protection Plan
- Outreach
  - Publications, websites, exhibits
  - Conferences and other venues
  - Coordination of U.S. message

2004 U.S. Policy

- Demonstrates U.S. Government commitment to space-based PNT for all stakeholders
- Provides framework for public/private decision makers
- Improves ability to coordinate efforts across the various agencies of the U.S. Government
- Creates basis for meaningful dialogue between service providers and end users
- Promotes common standards for worldwide interoperability

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Role for APEC GIT

Existing and Future GNSS

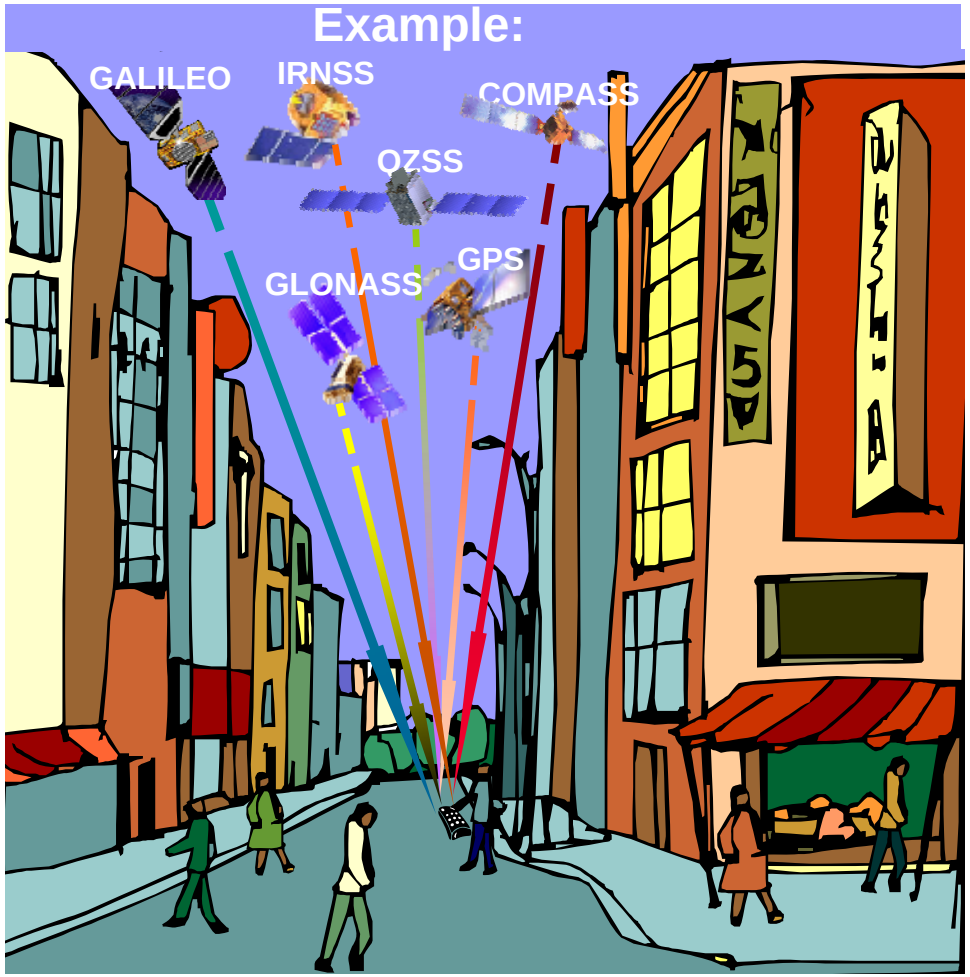
- Global Constellations
  - GPS (US)
  - GLONASS (Russia)
  - Galileo (EU)
  - Compass (China)
- Regional Constellations
  - QZSS (Japan)
  - IRNSS (India)
- Satellite-Based Augmentations
  - WAAS (US)
  - EGNOS (EU)
  - MSAS (Japan)
  - GAGAN (India)

Compatibility - Interoperability

- "Compatible" –ability of U.S. and non-U.S. space based PNT services to be used separately or together without interfering with each individual service or signal
  - Compatibility should also involve spectral separation between each system's authorized service signals and other systems' signals
- "Interoperable" – ability of civil U.S. and non-U.S. space-based PNT services to be used together to provide the user better capabilities than would be achieved by relying solely on one service or signal

Interoperable = Better Together than Separate

Goal of Civil Interoperability



- **Ideal interoperability** provides users a PNT solution using signals from different GNSS systems:
  - No additional receiver cost or complexity
  - No degradation in performance

Interoperable = Better Together Than Separate

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Role for APEC GIT

Guidance from APEC Leaders

2007 Sydney Declaration agreed that " … promoting open, efficient, transparent and flexible economies is vital to:

- continuing economic growth and
- the building of a strong and sustainable future for our Asia-Pacific community."

5th APEC Transportation Ministerial Statement

- " …encourage[d] member economies to continue reduction of business transaction costs through greater transport efficiency."

U.S. Delegation to Senior Officials meeting 2008 noted that:

- "application of Space Technology, such Global Navigation Satellite Systems (GNSS), could help improve energy efficiency…"

Draft APEC Project Proposal

- Seeking co-sponsors for multi-modal survey and assessment:
  - Current GNSS applications within surface transportation
  - Rail (passenger and freight)
  - Other surface transportation modes
- The Survey would:
  - Address APEC region need for applications impacting the transportation sector safety, security and efficiency
  - Identify, assess, and analyze the costs and benefits of surface transportation system GNSS applications
  - Include input from local government officials, contribution of key private industries and other APEC economies

Summary

U.S. Space-based PNT effort progressing significantly in areas of policy, programs and international outreach

- International cooperation is a top priority for the U.S.
- Continuing to improve U.S. space-based PNT system performance
- New GNSS applications emerging
- Implementation of 2004 U.S. Policy proceeding well
  - Very active senior USG leadership

As new space-based GNSS emerge globally, compatibility and interoperability is the key to "success for all"

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Presentation and other GPS information available:
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