



SPACE-BASED POSITIONING
NAVIGATION & TIMING
NATIONAL COORDINATION OFFICE

Global Positioning System Policy, Constellation, and Applications

United Nations International Meeting on the Applications of Global Navigation Satellite Systems

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Department of Transportation Liaison to Air Force Space Command

**December 12, 2011
Vienna, Austria**



U.S. Policy History

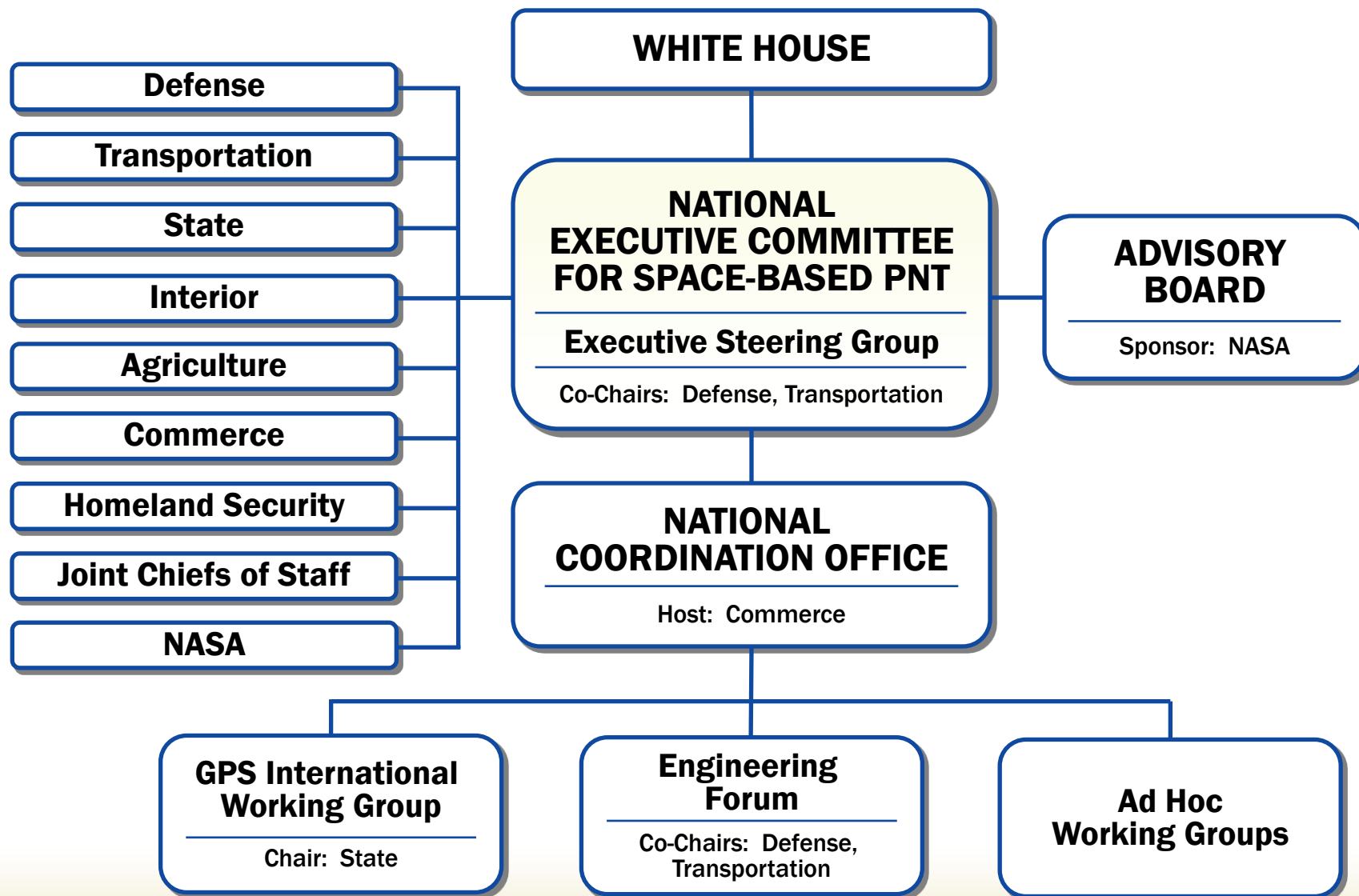


- **1983:** President announces civilian access to GPS
- **1994:** U.S. offers free civil GPS service to International Civil Aviation
- **1996:** First U.S. GPS Policy establishes joint civil/military management
- **1997:** Civil GPS access free of direct user fees codified in U.S. statute
- **2000:** President ends use of *Selective Availability*
- **2004:** President issues U.S. Policy on Space-Based PNT
- **2004:** Agreement signed on GPS-Galileo Cooperation
- **2007:** President announces *Selective Availability* eliminated from future GPS III satellites
- **2010:** New National Space Policy includes specific PNT guidance





U.S. Space-Based PNT Organizational Structure





U.S. National Space Policy



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

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



GPS Constellation Status



30 Operational Satellites

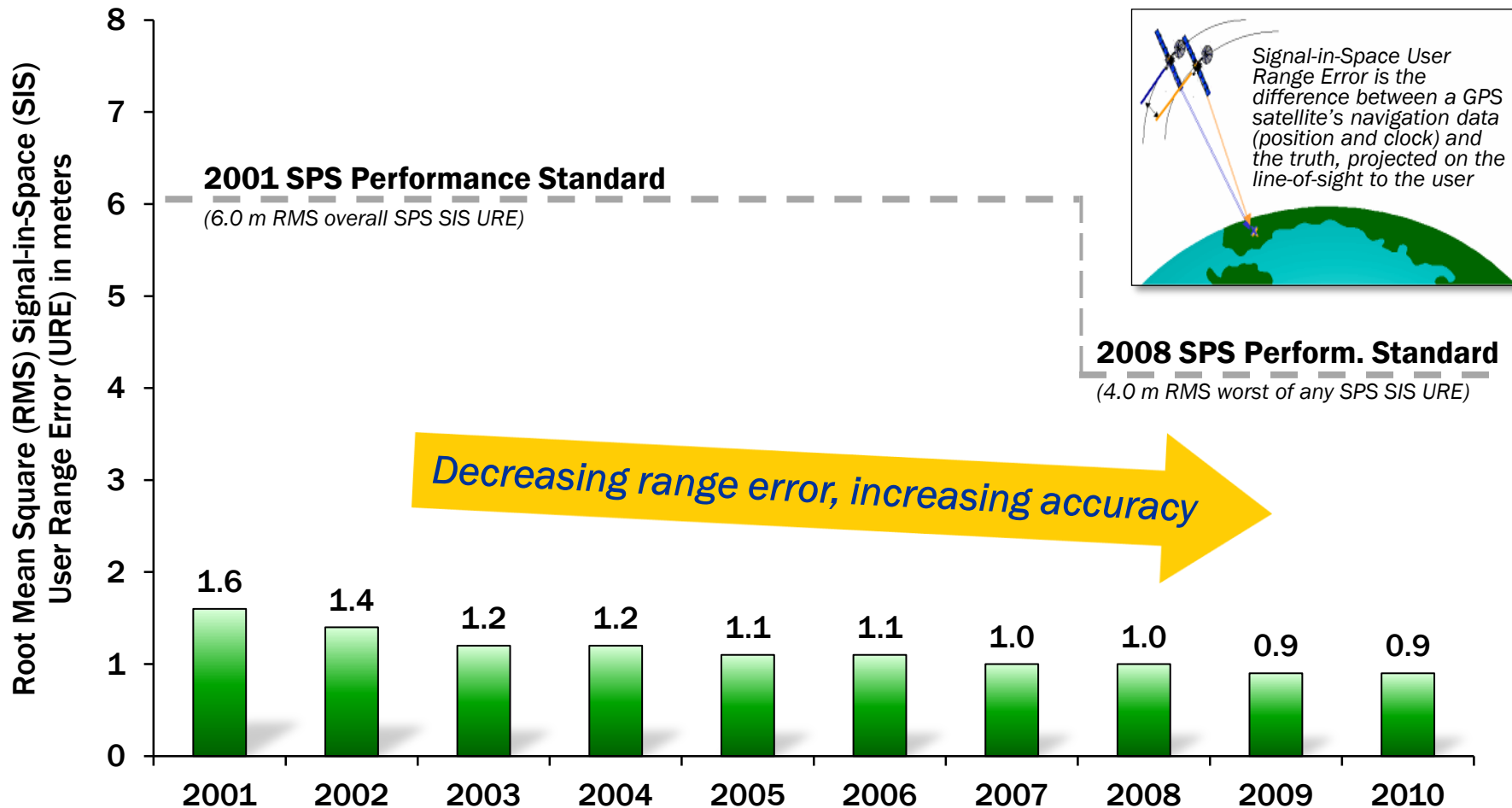
Baseline Constellation: 24 + 3

- 9 Block IIA Satellites
- 12 Block IIR Satellites
- 7 Block IIR-M Satellites
- 2 Block IIF Satellites
 - *IIF-2 healthy as of October 14, 2011*
- Global GPS civil service performance commitment met continuously since December 1993





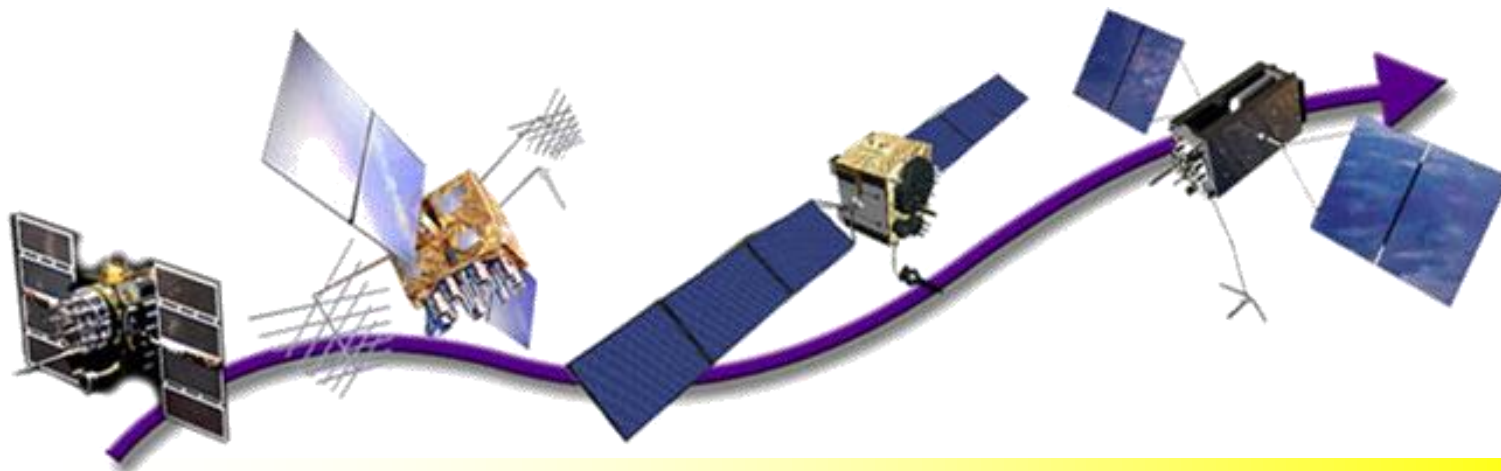
Standard Positioning Service (SPS) Signal-in-Space Performance



System accuracy exceeds published standard



GPS Modernization Program



Increasing System Capabilities ♦ Increasing User Benefit

Block IIA/IIR

Basic GPS

- Standard Service
 - Single frequency (L1)
 - Coarse acquisition (C/A) code navigation
- Precise Service
 - Y-Code (L1Y & L2Y)
 - Y-Code navigation

Block IIR-M, IIF

IIR-M – Basic GPS capability plus

- 2nd civil signal (L2C)
- M-Code (L1M & L2M)

IIF – IIR-M capability plus

- 3rd civil signal (L5)
- 2 Rb + 1 Cs Clocks
- 12 year design life

Block III

- Backward compatibility
- 4th civil signal (L1C)
- 4x better User Range Error than IIF
- Increased availability
- Increased integrity
- 15 year design life

GNSS is Essential to Our Economies



Satellite Operations



Transit Operations



Telecom



Precision Agriculture



Intelligent Vehicles



Power Grids



Trucking & Shipping



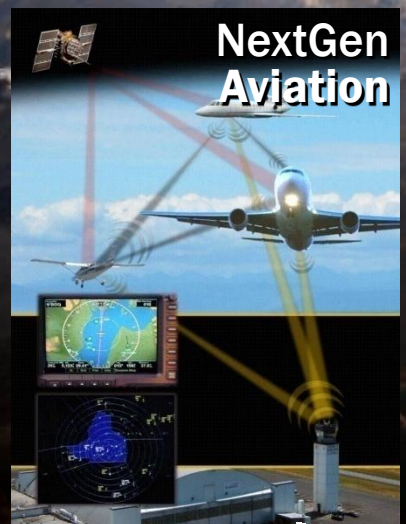
Oil Exploration



Fishing & Boating



Surveying & Mapping



NextGen Aviation



Personal Navigation



Disease Control



U.S. Air Force Receives Award



- The International Astronautical Federation bestowed its 60th Anniversary Award to the U.S. GPS program at a ceremony held October 4, 2011 in Cape Town, South Africa



Awarded for “Benefits to Humanity”



Summary



- **International cooperation is a priority**
 - *Compatibility, Interoperability, Transparency are critical*
 - *U.S. policy permits use of foreign PNT to augment GPS and increase resiliency*
- **GPS continues to meet or exceed our performance commitments to worldwide users**
 - *Performance is better than ever and will continue to improve with planned modernization*

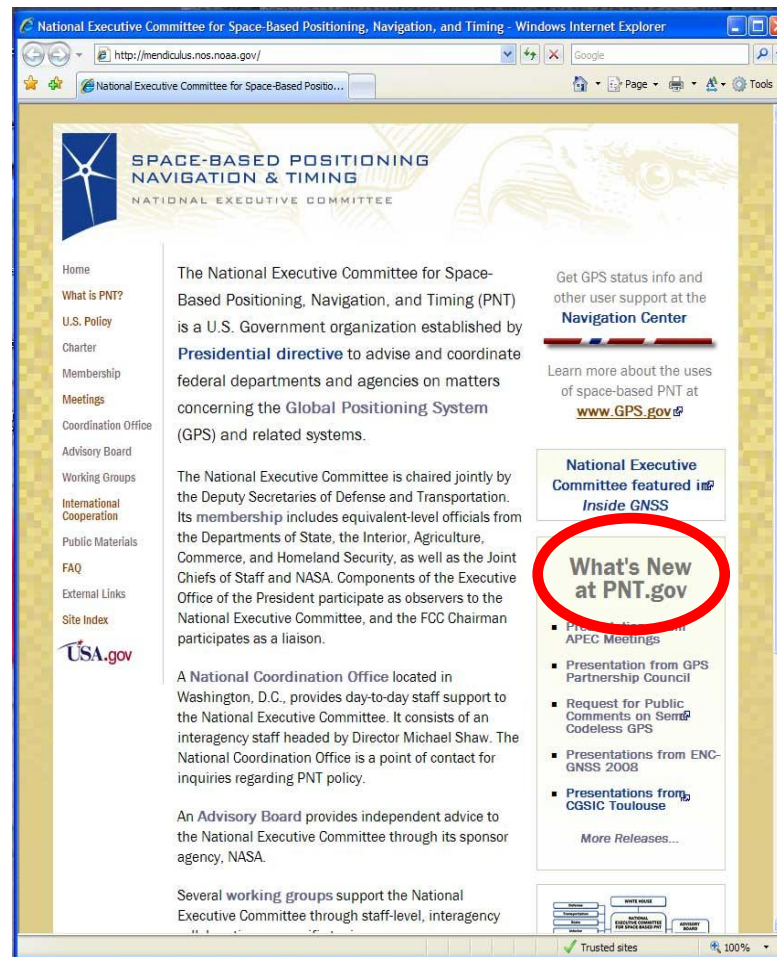
**Policy stability and transparency improve
industry confidence and investment**



For Additional Information...



GPS.gov



PNT.gov



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