



Status and Modernization of the U.S. Global Positioning System

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Overview

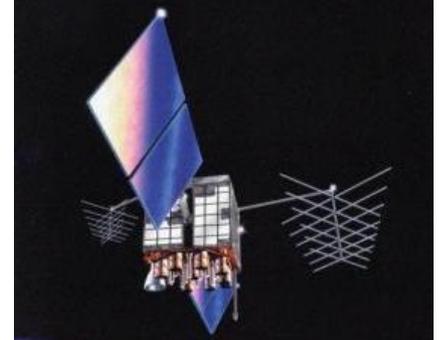
- GPS Constellation Status
- GPS Performance
- GPS Modernization
- Summary



GPS Constellation Status

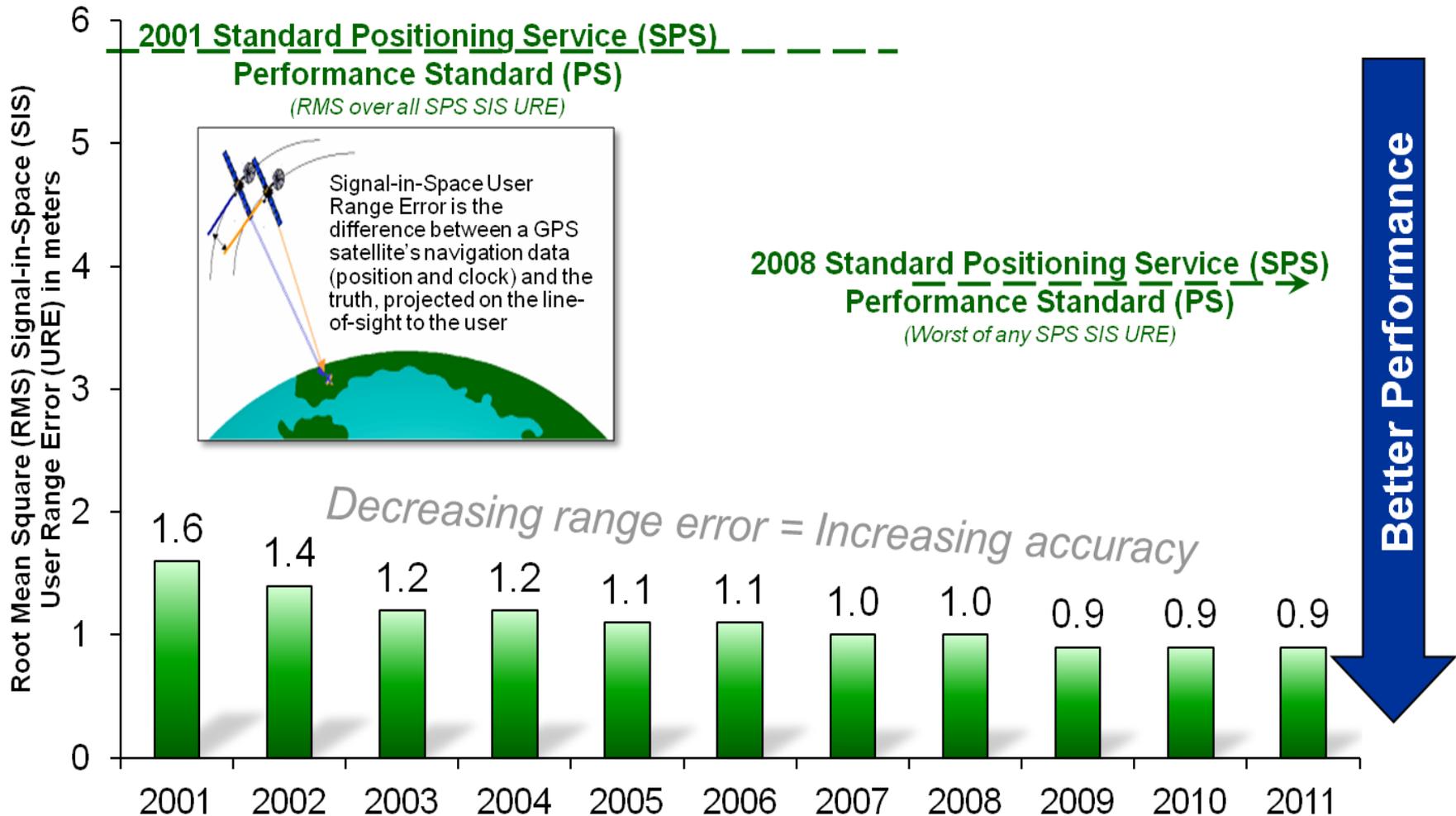
31 Healthy Satellites Baseline Constellation: 24 + 3

- 10 Block IIA Satellites
- 12 Block IIR Satellites
- 7 Block IIR-M Satellites
- 2 Block IIF Satellites
 - 3 additional satellites in residual status
 - *Next IIF launch scheduled Oct. 2012*
- Global GPS civil service performance commitment met continuously since December 1993



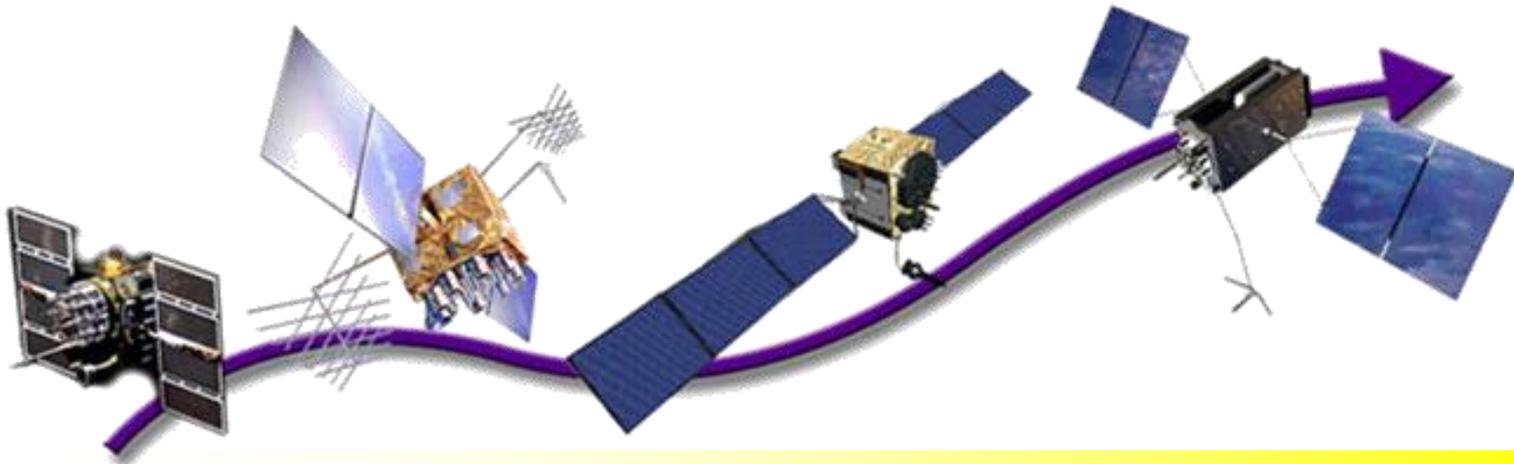


Standard Positioning Service (SPS) Signal-in-Space Performance





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

IM – 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)
- Improved User Range Error
- Increased availability
- Increased integrity
- 15 year design life



GPS Modernization – New Civil Signals

- Second civil signal “L2C”
 - Designed to meet commercial needs
 - Available since 2005 without data message
 - Currently broadcast from 9 satellites
 - Full capability: 24 satellites and full CNAV ~2016*



- Third civil signal “L5”
 - Designed to meet transportation safety-of-life requirements
 - Currently broadcast from 2 satellites
 - 24 satellites and full CNAV ~2020*

- Fourth civil signal “L1C”
 - Designed for GNSS interoperability
 - Specification developed in cooperation with industry
 - Fully designed and in testing
 - Will be broadcast by GPS III
 - Available on 24 satellites ~ 2026*



Urban Canyons

Improved performance in challenged environments

* FOC dates are based on our best estimate of launch schedule



Ground Segment Status



Monitor Station



Ground Antenna

- Current system Operational Control Segment (OCS)
 - Currently flying expanded 24+3 constellation of GPS Block II satellites
 - Provides worldwide ground antenna and monitor station with redundant coverage
- Next Generation Operational Control System (OCX) continues
 - Provides ability to fly GPS III and operate modernized GPS signals
 - OCX Block I deployment planned for 2016



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



“...provided the greatest human benefit over the history of the space age”



Summary

- GPS continues to meet or exceed our performance commitments to worldwide users
- Modernization of all GPS segments on track
- Striving to continually improve navigation and timing services while maintaining backward compatibility with legacy equipment.
- GPS is committed to open and transparent cooperation with the international GNSS community



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