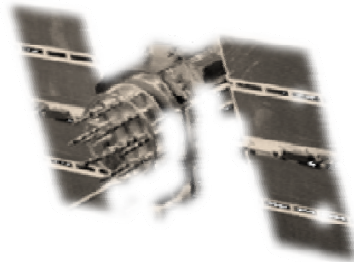




SPACE-BASED POSITIONING
NAVIGATION & TIMING
NATIONAL COORDINATION OFFICE

Global Positioning System

A Revolution Now in Evolution...

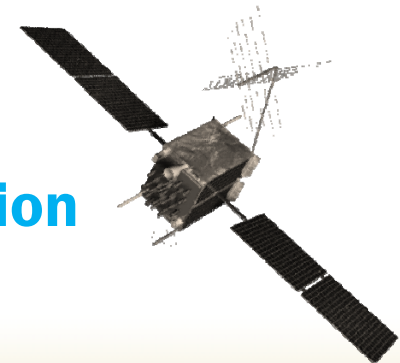


Anthony J. Russo
Director, National Coordination Office
United States of America



International Astronautics Federation

Prague, Czech Republic
September 28, 2010



GPS enables a diverse array of applications



Satellite Operation



Surveying & Mapping



Power Grids



Precision Agriculture



Transit Operations



NextGen



Disease Control



IntelliDrive



TeleComm



Trucking & Shipping



Personal Navigation



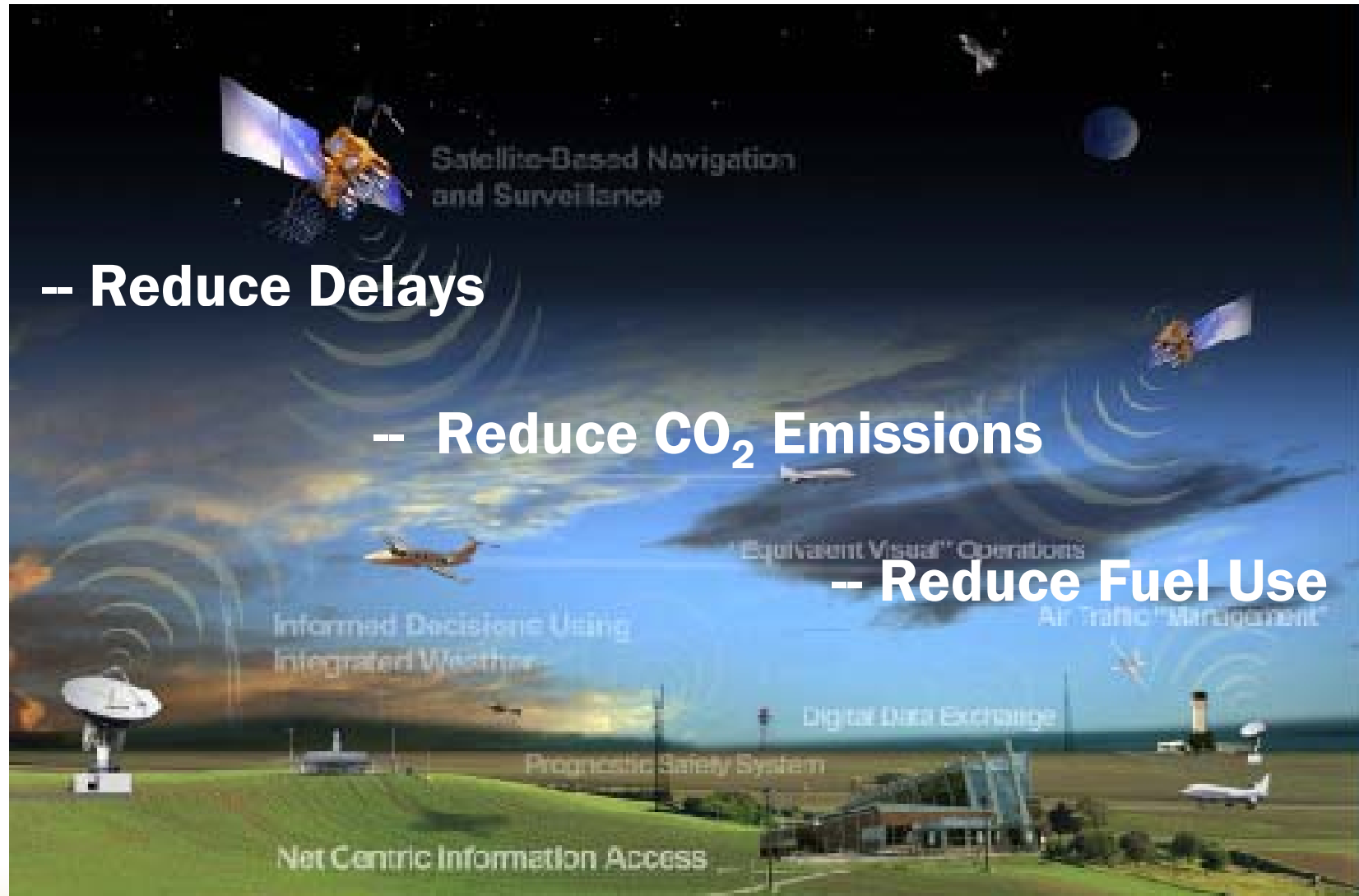
Oil Exploration



Fishing & Boating

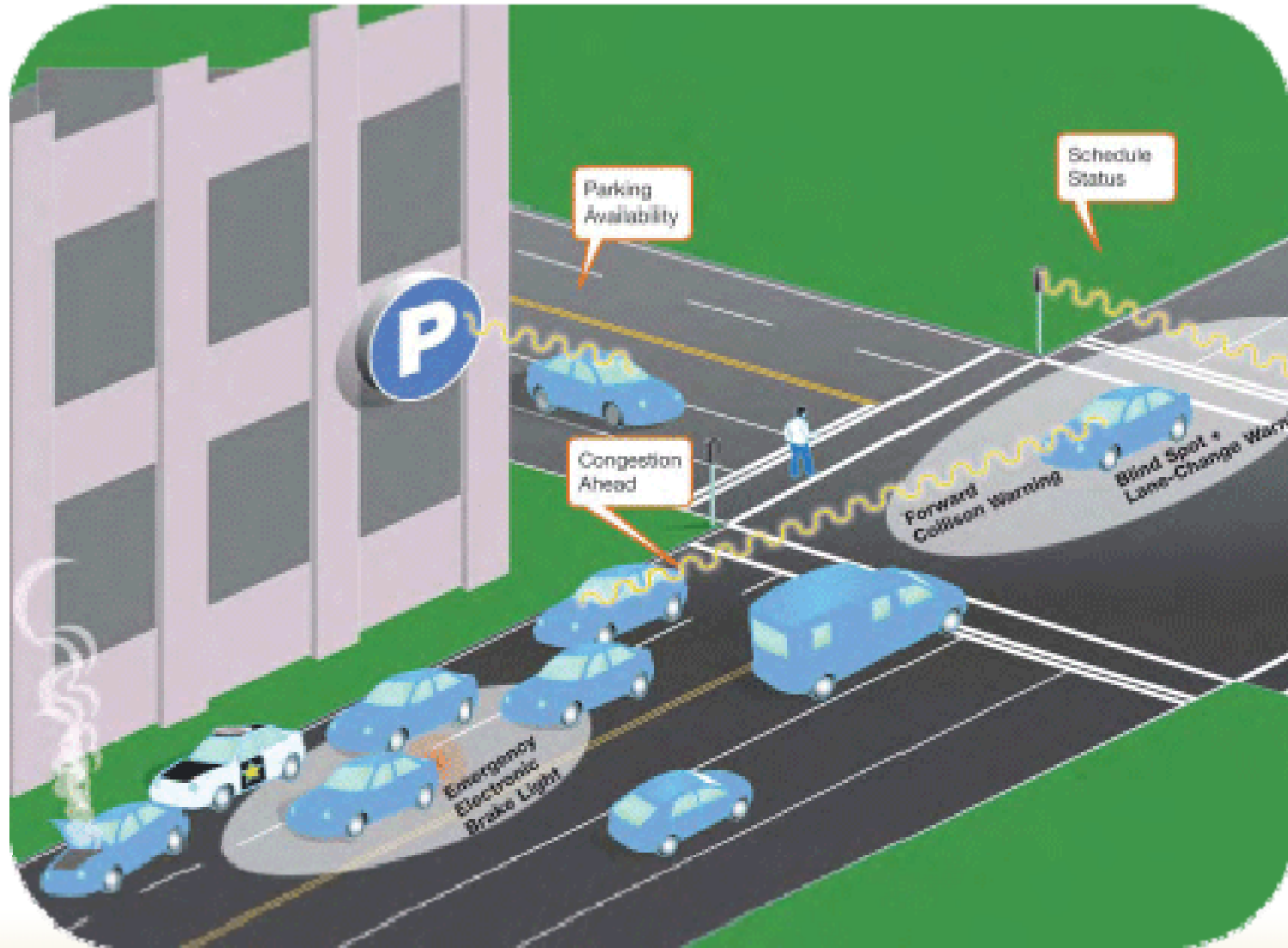


NEXTGEN Next Generation Air Traffic Control





IntelliDrive Intelligent Transportation Systems





GPS Constellation Status



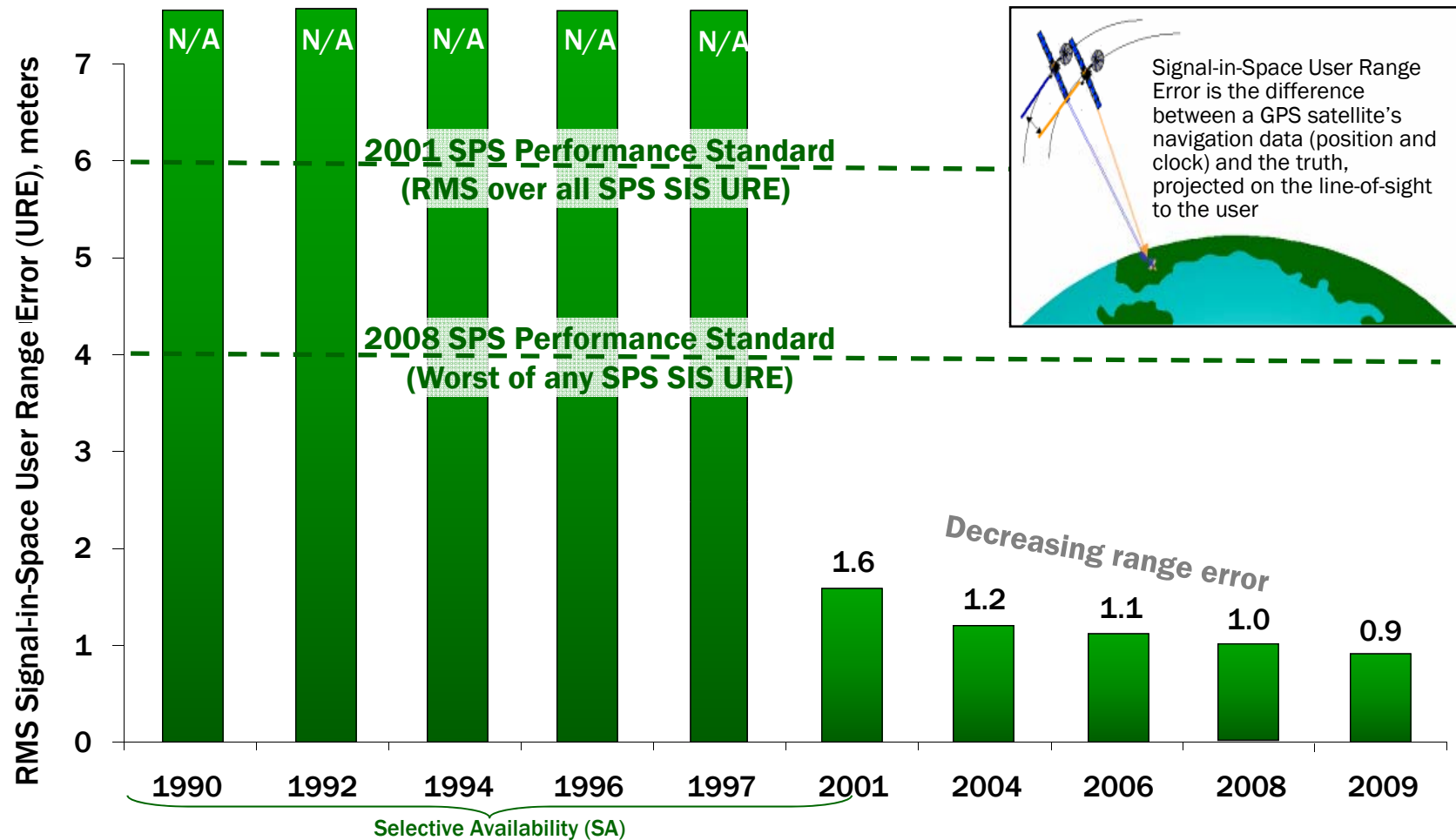
Baseline Constellation = “24 Expandable”

- Very robust constellation; exceeds user requirements
 - **31 satellites** currently in operation
 - 11 GPS IIA
 - 12 GPS IIR
 - 7 GPS IIR-M
 - **1 GPS IIF (set “healthy” 26 Aug 2010)**
 - 3 additional satellites in residual status
 - 1 additional IIR-M in test status
- Global GPS civil service performance commitment met continuously since December 1993





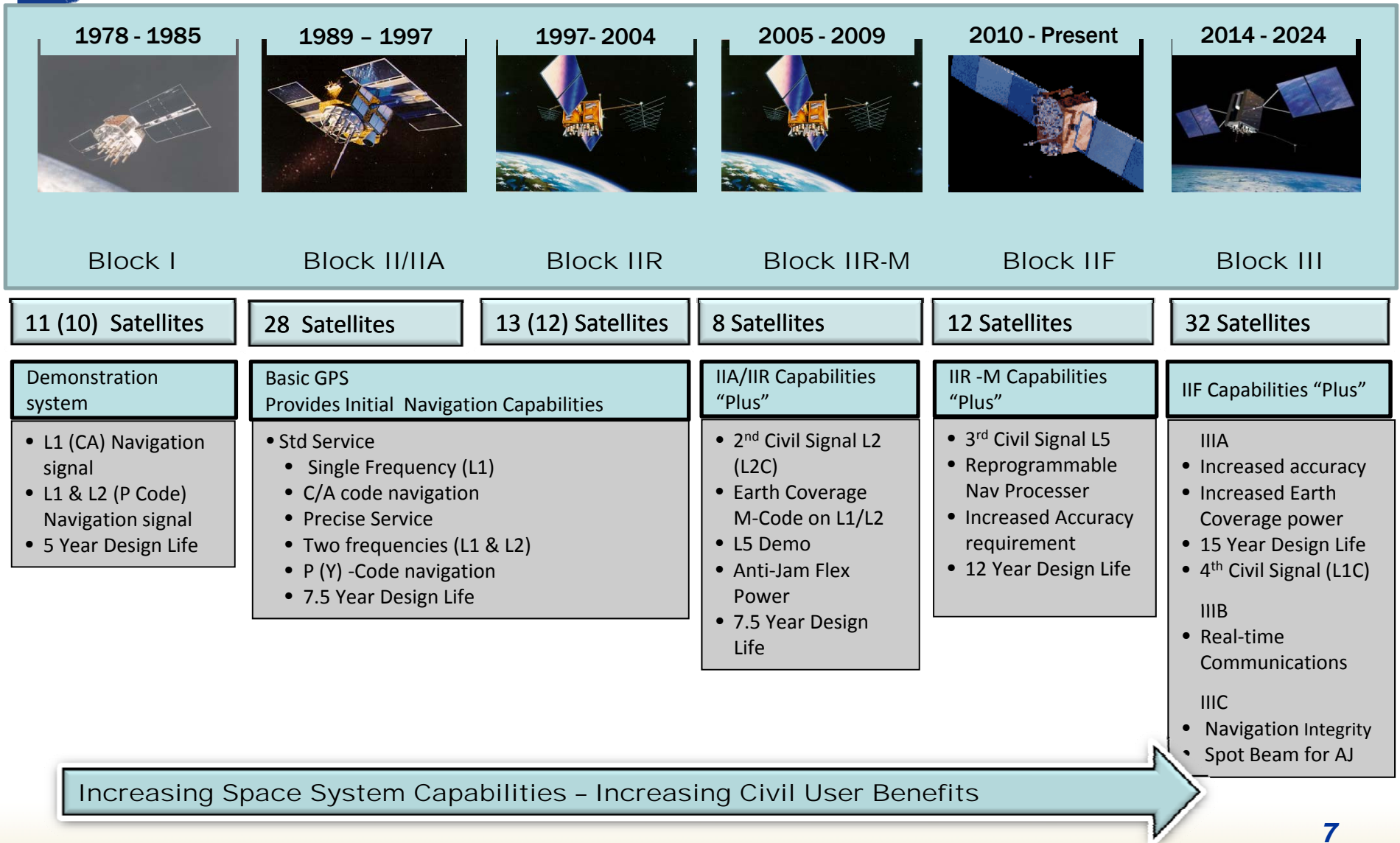
Current GPS Accuracy



System accuracy exceeds published standard

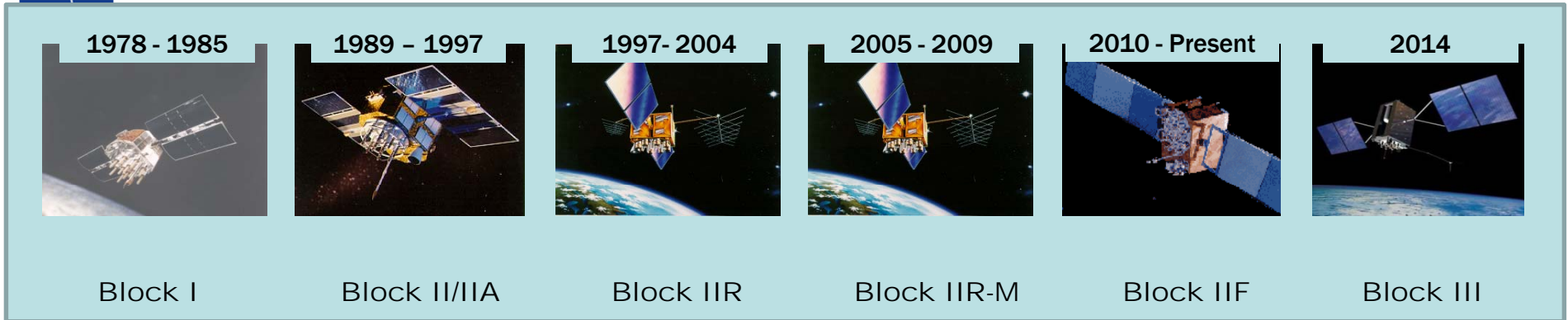


Modernization Path – GPS Space Segment





Modernization Path – GPS Control Segment



Legacy Control System

- Master Control System (MCS)
- Tracking, Telemetry & Control (TT&C)
- L1 & L2 Monitoring
- Satellite health and welfare monitoring
- GPS signal performance monitoring (P(Y) code only)
- Satellite navigation payload analysis

Architecture Evolution Plan (AEP)

- Distributed System
 - Launch, Anomaly, Disposal Ops (LADO)
- Increased capacity for signal monitoring
 - IIR, IIR (M), IIF
- Increased worldwide commanding capability
 - New MCS/AMCS
 - Flex Power

OCX

- Net Centricity
- Control for GPS III
- Monitors all GPS signals
 - Legacy plus L1C, L2C and L5
 - Flex Power
 - Real-Time C2



Increasing Control Segment Capabilities – Increasing Civil User Benefits



Latest U.S. Policy



- Provide continuous worldwide access for peaceful uses, free of direct user charges
- Encourage compatibility and interoperability with foreign GNSS services
- Operate and maintain constellation to satisfy civil and national security needs
 - *Foreign PNT may be used to strengthen resiliency*
- Invest in domestic capabilities and support international activities to detect, mitigate and increase resiliency to harmful interference



Summary



- **GPS performance is better than ever and will continue to improve**
 - Augmentations enable even higher performance
 - New civil GPS signal available now
 - Many additional upgrades scheduled
- **U.S. policy encourages worldwide use of civil GPS and augmentations**
 - Permits U.S use of foreign PNT to increase resiliency
- **International cooperation is a priority**
 - Compatibility and interoperability are critical



For Additional Information...



English | Español | Français | 普通话 | العربية

SISTEMA DE POSICIONAMIENTO GLOBAL

Al Servicio del Mundo

El Sistema de Posicionamiento Global (SPG) es un sistema de radionavegación de los Estados Unidos de América, basado en el espacio, que proporciona servicios fiables de posicionamiento, navegación, y cronometría gratuita e ininterrumpidamente a usuarios civiles en todo el mundo. A todo el que cuente con un receptor del SPG, el sistema le proporcionará su localización y la hora exacta en cualesquiera condiciones atmosféricas, de día o de noche, en cualquier lugar del mundo y sin límite al número de usuarios simultáneos.

El SPG se compone de tres elementos: los satélites en órbita alrededor de la Tierra, las estaciones terrestres de seguimiento y control, y los receptores del SPG propiedad de los usuarios. Desde el espacio, los satélites del SPG transmiten señales que reciben e identifican los receptores del SPG; ellos, a su vez, proporcionan por separado sus coordenadas tridimensionales de latitud, longitud y altitud, así como la hora local precisa.

Hoy están al alcance de todos en el mercado los pequeños receptores del SPG portátiles. Con esos receptores, el usuario puede determinar con exactitud su ubicación y desplazarse fácilmente al lugar a donde desea trasladarse, ya sea andando, conduciendo, volando o navegando. El SPG es

INFORMACIÓN SOBRE EL SISTEMA

- El Sistema de Posicionamiento Global
- Ampliaciones al SPG

APLICACIONES

- Cronometría
- Carreteras y Autopistas
- Espacio
- Aviación
- Agricultura
- Navegación Marítima
- Vías Férreas

GPS.gov

SPACE-BASED POSITIONING, NAVIGATION & TIMING

NATIONAL EXECUTIVE COMMITTEE

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The National Executive Committee for Space-Based Positioning, Navigation, and Timing (PNT) is a U.S. Government organization established by **Presidential directive** to advise and coordinate federal departments and agencies on matters concerning the Global Positioning System (GPS) and related systems.

Get GPS status info and other user support at the **Navigation Center**

Learn more about the uses of space-based PNT at www.GPS.gov

National Executive Committee featured in Inside GNSS

What's New at PNT.gov

Presentations from APLE...

- Presentation from GPS Partnership Council
- Request for Public Comments on Semi-Codeless GPS
- Presentations from ENC-GNSS 2008
- Presentations from CGSIC Toulouse

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An Advisory Board provides independent advice to the National Executive Committee through its sponsor agency, NASA.

Several working groups support the National Executive Committee through staff-level, interagency

PNT.gov