

N A V S T A R

Global Positioning System

***National Defense
Industrial Association***



***Washington, DC
20 July 2004***

***Colonel Allan Ballenger
System Program Director
Navstar Global Positioning System
Joint Program Office***



- **Mission success is top priority**
- **Sustaining worldwide military/civil utility**
- **Modernizing for civil and military users**
- **Acquisition challenges**
 - Requirements – civil & military
 - Balancing sustainment & modernization
 - Synchronization of space, control, and user equipment upgrades



U.S. AIR FORCE

Navstar GPS International Military Context

Vision:
We are the
Center of Excellence
for Space-Based
Navigation.

Mission:
Acquire and Sustain
Survivable, Effective,
and Affordable
Global Positioning Services
for our Customers

Motto:
"Any Time, Any Place,
Right Time, Right Place"



AUSTRALIA



BAHRAIN



BELGIUM



CANADA



CHILE



CZECH REPUBLIC



DENMARK



EGYPT



FINLAND



FRANCE



GERMANY



GREECE



HUNGARY



ICELAND



ISRAEL



ITALY



JAPAN



JORDAN



KUWAIT



LUXEMBOURG



MALAYSIA



NORWAY



PORTUGAL



SINGAPORE



SWEDEN



TURKEY



NETHERLANDS



OMAN



QATAR



SOUTH KOREA



SWITZERLAND



UAE



NEW ZEALAND



POLAND



SAUDIA ARABIA



SPAIN



TAIWAN



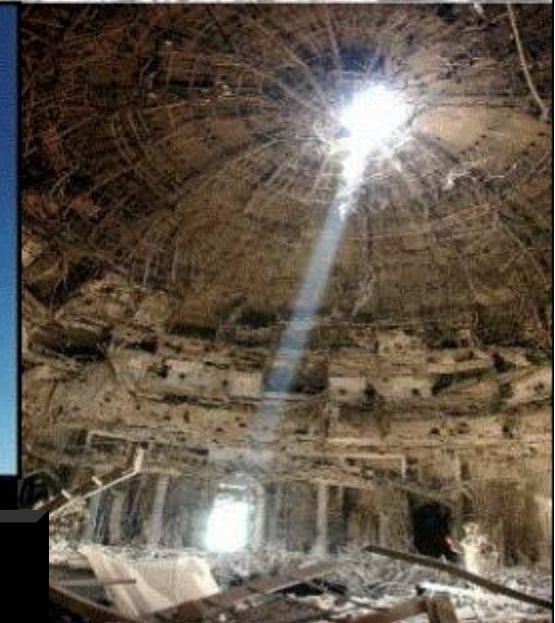
UK



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GPS as a Transformation Enabler: WWII Schweinfurt Raids vs Today

Dropped 24 million pounds of bombs to destroy 5 ball bearing plants



Same mission today...GPS + B-52 + 5 JDAMs



Our Mission Successes

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GPS IIR-10
21 Dec 03



GPS IIR-11
20 Mar 04
50th GPS Sat



GPS IIR-12
23 Jun 04

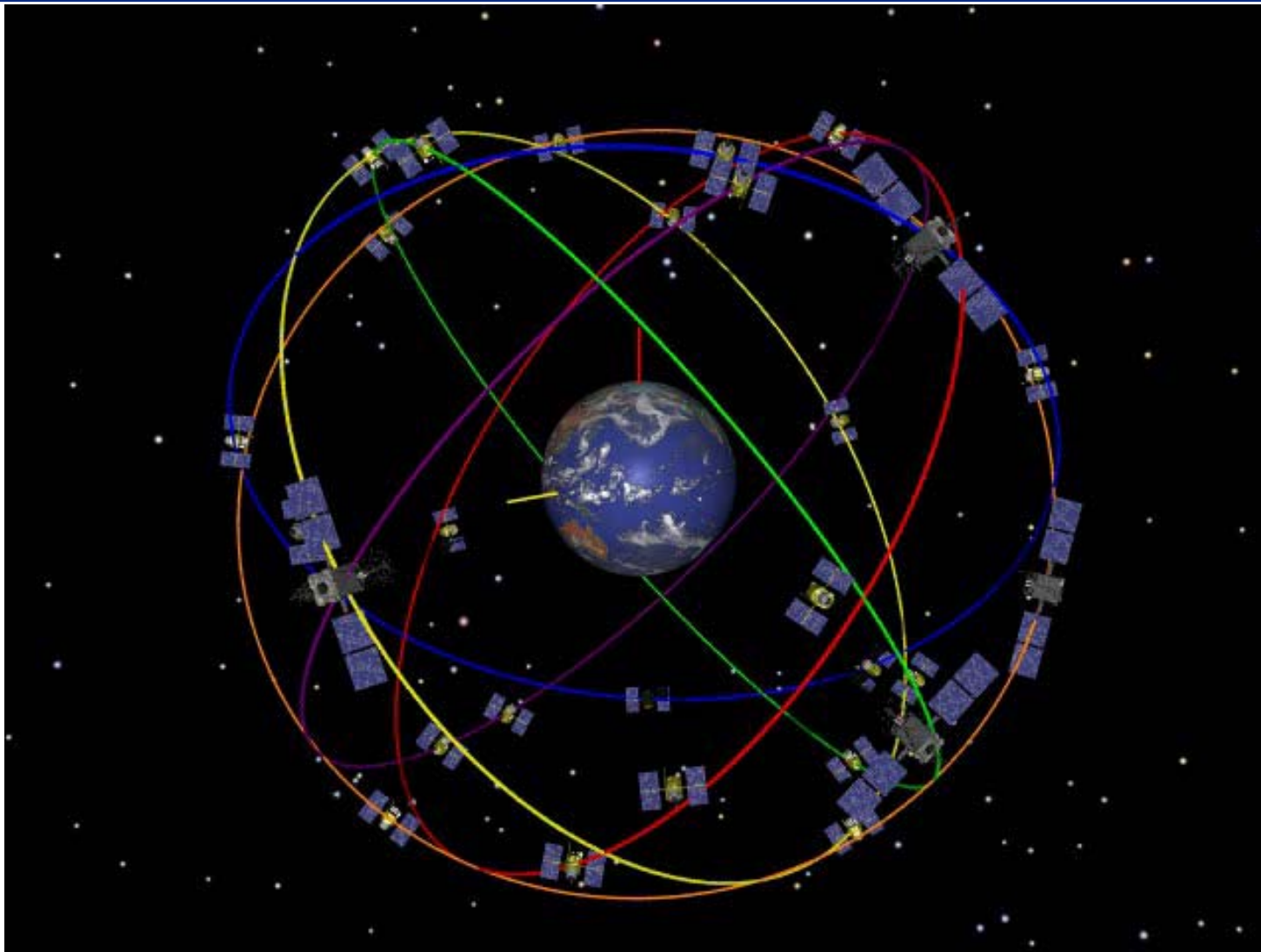
A world class team providing worldwide position, navigation, and timing!

Integrity - Service - Excellence



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GPS Satellite Constellation

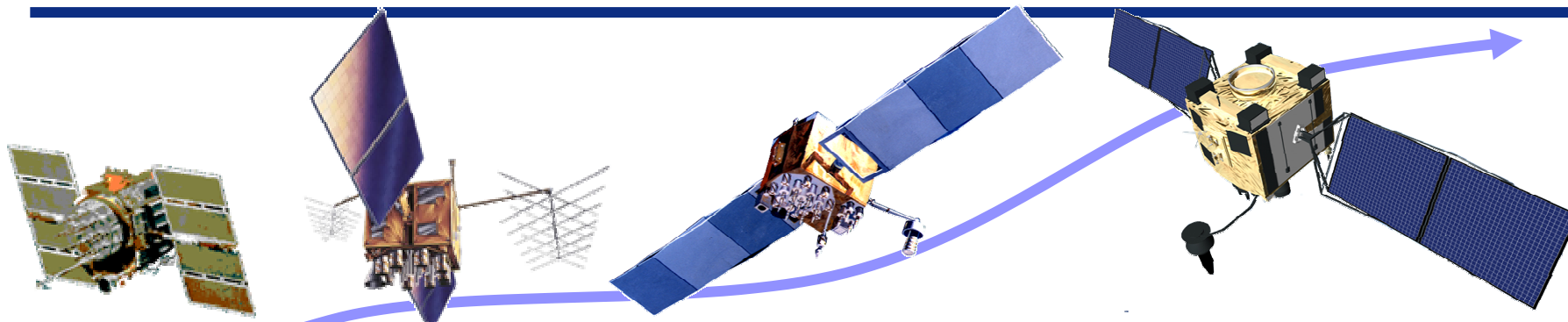


Integrity - Service - Excellence



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GPS Modernization



Increasing System Capabilities ♦ *Increasing Defense / Civil Benefit*

Block IIA/IIR

- Basic GPS
- Std Service (16-24m SEP)
 - Single frequency (L1)
 - Coarse acquisition (C/A) code navigation
- Precise Service (16m SEP)
 - Two frequencies (L1 & L2)
 - P-code navigation

Block IIR-M, IIF

IIR-M: IIA/IIR capabilities plus

- 2nd civil signal (L2C)
- Earth coverage military code
- Basic anti-jam power (+7dB)

IIF: IIR-M capability plus

- 3rd civil signal (L5)

Block III

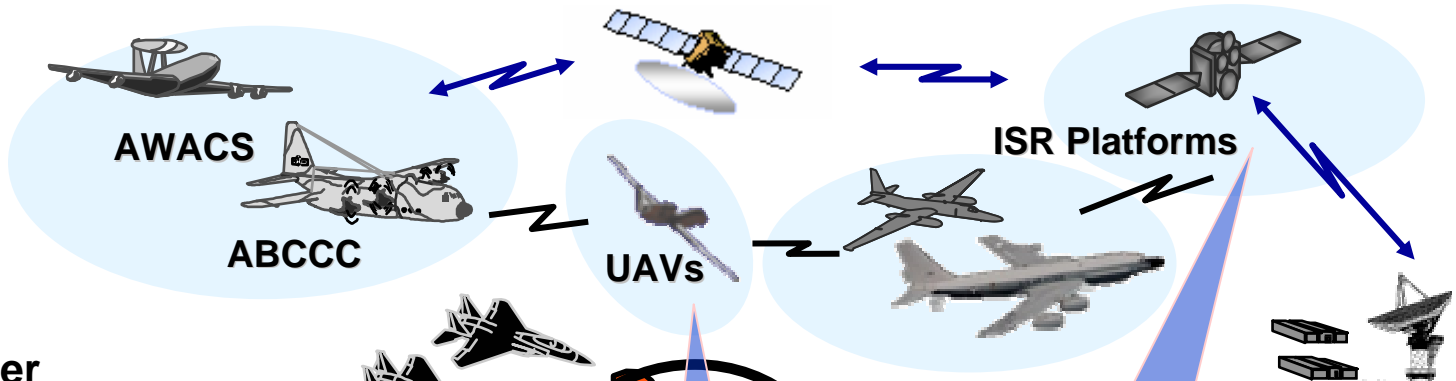
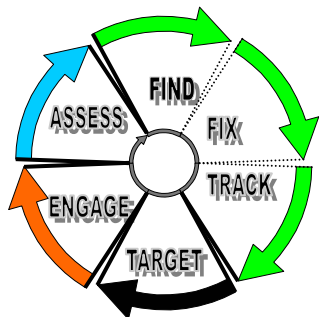
Evolutionary Acquisition:

- Navigation surety
 - Increased anti-jam power (+20-27dB)
 - Increased security
- Increased accuracy (4.8-1.2m Horz 90%)
- Backward compatibility
- Assured availability
- Controlled integrity
- System survivability



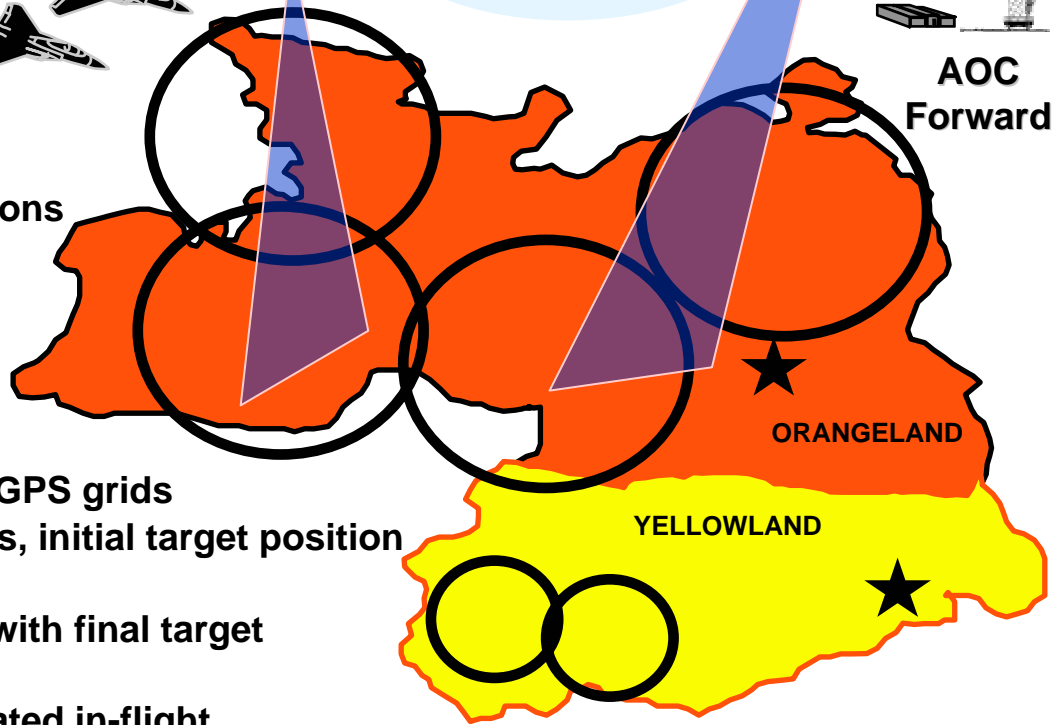
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GPS Strengthens Every Link of the Kill Chain



GPS as an Enabler

- Targets hit – one weapon-one target
- Distributed network time synch
- Maintain ISR “on-station” orbits
- Hot handoff between weapon and munitions
- Refueling ops to maintain 24/7
- Pre-positioned strike packages
- Target positions identified/geo-rectified
- Fused multiple sensor-data
- Synchronized target data hand-off
- Space and air sensors tasked to search GPS grids
- Orbiting shooters directed toward targets, initial target position data provided en-route
- Shooter mission profile, SMBs updated with final target coordinates
- Weapons released, target positions updated in-flight





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