Why GPS III?

• Deliver critical new high-value GPS space capabilities
  – Improved PNT accuracy and power for both warfighter and civilian users
  – Additional civil signal (L1C)
  – Enhanced M-code Earth Coverage power
  – Graceful growth path for future capability insertion (GPS IIIA → IIIB → IIIC)

• High-Confidence Acquisition
  – "Back to Basics" program execution
  – Mission Success emphasis
  – Time certain development for on-time launch availability

• Reverse previous space program acquisition pitfalls
  – Unnecessary technical, cost and schedule risks
  – Cost overruns and schedule delays
  – Program restructures or terminations

Low risk solution to satisfying on-going GPS modernization
GPS III Team

• Lockheed Martin
  – Spacecraft Development
  – Critical Space Vehicle Components
  – Space Vehicle Assembly, Integration and Test
  – Space Vehicle Launch Processing
  – Program Management

• ITT
  – Navigation Payload Design, Development and Production

• General Dynamics
  – Network Communications Element
  – UHF Crosslinks

Experienced Team Executing In Partnership with USAF GPS Wing
A2100 History

- Thirty-eight A2100s on-orbit today
  - 1st A2100 in operation for over 13 years
  - No SV failures after over 250 spacecraft-years accumulated to date
    - Received Frost & Sullivan’s Satellite Reliability Award: “Most reliable and efficient of its class”
    - Exceptional earth pointing reliability
- Modular design accommodates large range of payloads and launch vehicles
  - Features parts reduction/simplified construction
  - Increased on-orbit reliability
  - Reduced weight and cost
  - Proven production cycle time

GPS III built on highly reliable satellite bus platform
GPS IIR/IIR-M Heritage

- Twenty GPS IIR/IIR-M space vehicles on orbit today
  - 1st GPS IIR in operation for over 12 years
  - 1st GPS IIR-M in operation for over 4 years
  - 19 spacecraft currently operational with well over 100 spacecraft-years to date
    - Improved overall GPS constellation accuracy
    - Exceptional payload reliability (>99.9%)

- Modernization of GPS IIR accelerates acquisition of additional capabilities
  - GPS IIR-M provides ionospheric correction capability for civil users with L2C capability
    - 1st L2C NAV broadcast began in Sep 2009
    - Allows manufacturers to start early receiver development
  - Provides second set of military codes for both L1 and L2
    - Provides anti-jamming through flexible power capability
  - Flexible design allowed demonstration of third civilian signal (L5)
GPS IIIA (8 planned)
- Increased accuracy (0.63 m spec)
- Increased Earth Coverage Power (-151.5 dBW)
- Additional civil signal (L1C)
  - Interoperable with Galileo and Japan's QZSS
- Bus capacity for IIIB and IIIC

GPS IIIB (8 planned)
- Real-time command and control cross-links
  - Allows upload of all GPS IIIB/IIICs via single contact
  - Improves constellation accuracy

GPS IIIC (16 planned)
- High-power spot beam
  - Provides increased anti-jamming capability for warfighter

Flexible transition and content of future blocks reduces program risk
GPS III Schedule

**Pre-Award**
- Risk mitigation
- 72 months to 1st launch

**Contract Award**

**Integrated Baseline**
- Technical
- Schedule
- Performance

**Preliminary Design**
- Multiple subsystem and element reviews

**Critical Design**
- Multiple subsystem and element reviews

**Production & Test**
- Engineering Models
- Component Qualification
- Flight Production

**First IIAA Launch**

*notional representation*

2-4 missions per year

First IIIA Mission

Final IIC Mission

**Preliminary Design: On-cost, on-schedule, meets/exceeds technical specs**
• Closing Comments