

JSF
JOINT STRIKE FIGHTER
the next generation strike fighter



JOINT STRIKE FIGHTER PROGRAM BRIEF

13 September 2005

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VISION

DELIVER AND SUSTAIN
THE MOST ADVANCED, **AFFORDABLE** STRIKE FIGHTER AIRCRAFT TO
PROTECT FUTURE GENERATIONS WORLDWIDE.

MISSION STATEMENT

BE THE MODEL ACQUISITION PROGRAM FOR JOINT SERVICE AND
INTERNATIONAL COOPERATION.
DELIVER TO OUR WAR FIGHTERS AN **AFFORDABLE** AND EFFECTIVE
NEXT GENERATION STRIKE FIGHTER WEAPON SYSTEM AND SUSTAIN
IT WORLDWIDE.



What Is JSF?

The next generation “family” of strike fighters

- F-16/F/A-18C “like” aero performance
- Stealth Signature and Countermeasures
- Advanced avionics, data links and adverse weather precision targeting
- Increased range with internal fuel and weapons
- Highly supportable, state of the art prognostics and health management



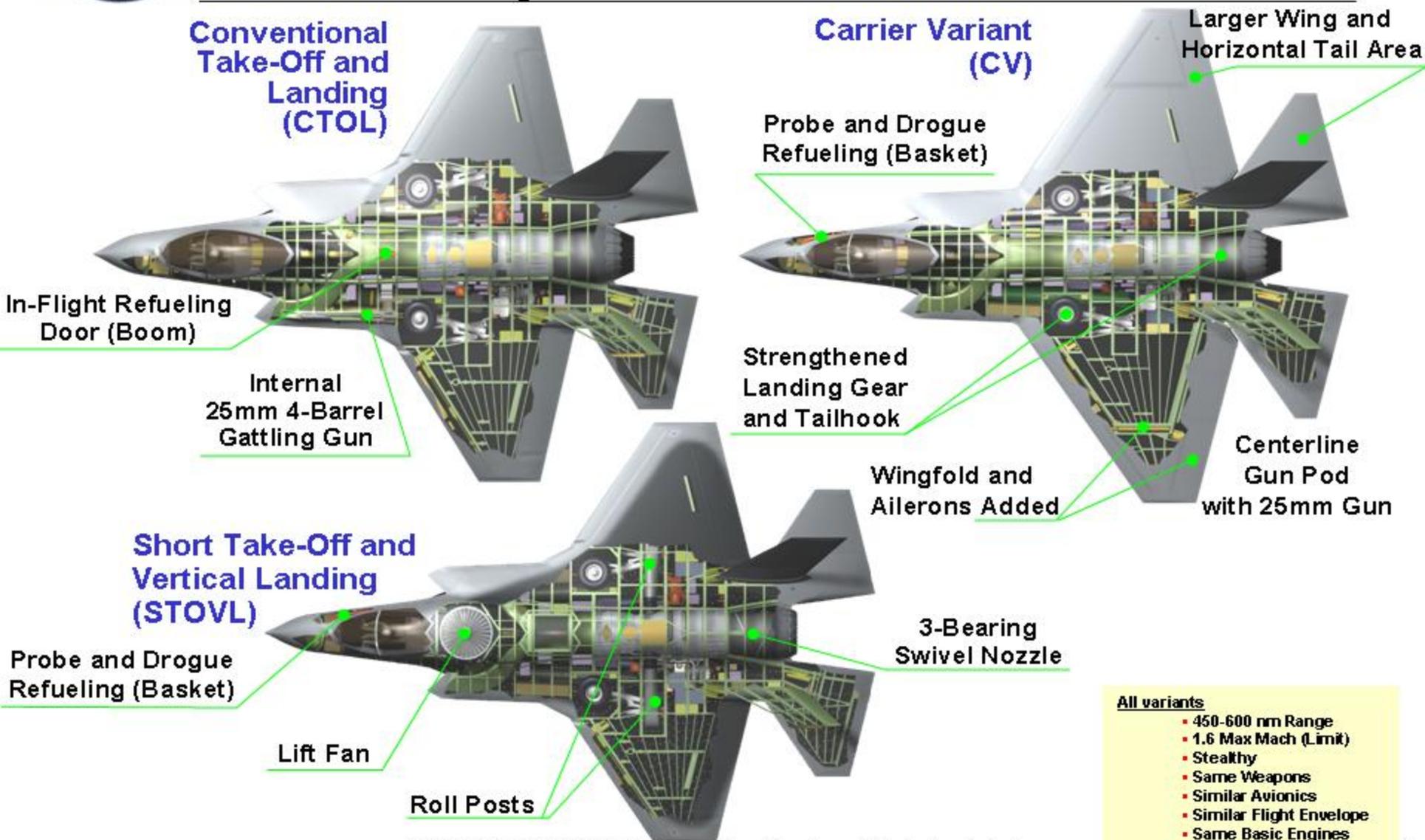
Lethal Survivable Supportable Affordable



JSF Family Of Aircraft

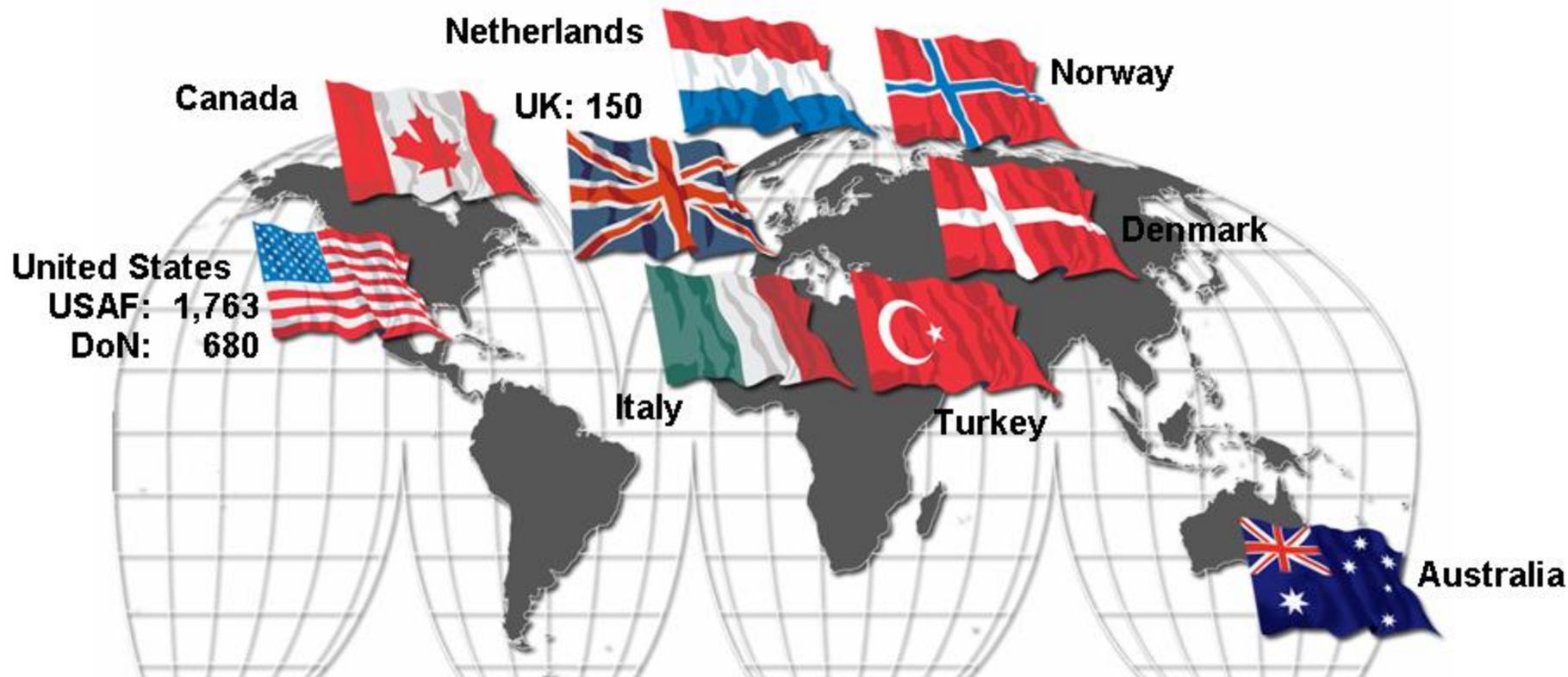
One Program -- Three Variants

Meeting Service and International Needs





Service & International Needs



- **USAF:** Multi-role (primary air-to-ground) fighter to replace F-16 & A-10 & to complement F/A-22
- **USMC:** Multi-role, short takeoff, vertical landing strike fighter to replace AV-8B & F/A-18C/D
- **USN:** Multi-role strike fighter to complement the F/A-18E/F
- **UK (RN and RAF):** Supersonic replacement for Sea Harrier and GR-7

2,593 US/UK JSFs > 2,000 International JSFs



JSF Enables True Joint/Coalition Operations

Domestic and UK



*F-35
Joint
Strike
Fighter*

International

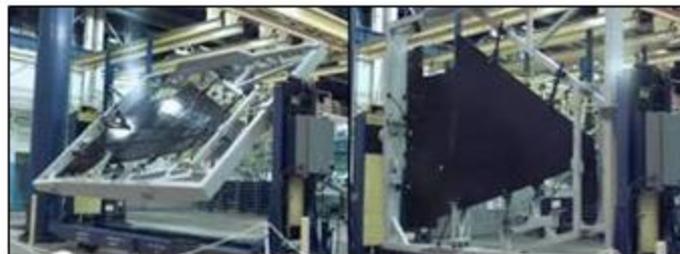




F-35 Joint Strike Fighter

Three Years and Ten Months into Twelve-Year SDD Program

- **JSF System Development and Demonstration Contract Award on 26 Oct 01**
- **Air System Preliminary Design Review Completed in March 2003**
- **Successfully Resolved STOVL Weight Issues**
 - Benefits All Variants Through Commonality
 - All Variants Projected to Meet/Exceed Key Performance Parameters
 - "Optimized" designs underway
- **JSF Re-Plan Initiated**
 - STOVL Design Upgrades and Re-Plan approved by DAB (Oct 04)
 - F35 Contract Mod planned Sep 05
 - F135 Contract Mod awarded Aug 05
 - F136 SDD Contract Award Aug 05
- **Pratt & Whitney F135 Test Engines Have Accumulated Over 3409 Hours (as of 12 Sep 05)**
- **GE/Rolls Royce F136 Test Engines Have Accumulated Over 207 Hours (pre-SDD Effort)**
- **First CTOL Aircraft Manufacturing and Assembly Underway**
- **Airborne Mission Systems Testing Underway**
- **Service Concurrence on Joint Integrated Training Center**





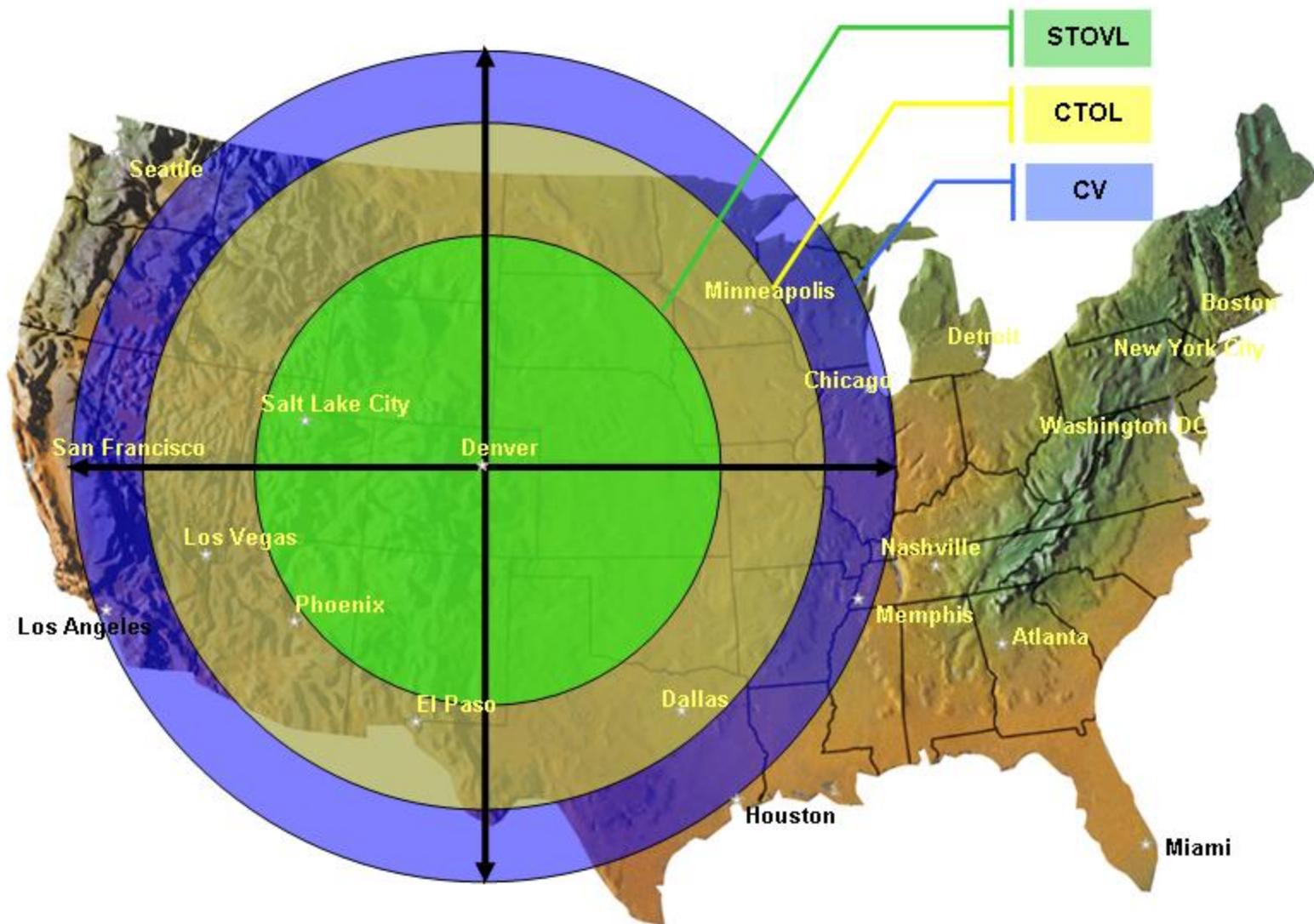
Key Performance Parameters

| | KPP | STOVL | CTOL | CV |
|----------------|---|---|---------------------------------------|--------------------------|
| JOINT | <i>Radio Frequency Signature</i> | Very Low Observable | | |
| | <i>Combat Radius</i> | 450 nm USMC Profile | 590 nm USAF Profile | 600 nm USN Profile |
| | <i>Sortie Generation</i> | 4 Surg / 3 Sust | 3 Surg / 2 Sust | 3 Surg / 2 Sust |
| | <i>Logistics Footprint</i> | < 8 C-17 equivalent loads (20 PAA) | < 8 C-17 equivalent loads (24 PAA) | < 46,000 cu ft 243 ST |
| | <i>Mission Reliability</i> | 95% | 93% | 95% |
| | <i>Interoperability</i> | Meet 100% of critical, top-level Information Exchange Requirements Secure Voice and Data | | |
| USMC/UK | <i>STOVL Mission Performance</i> <i>Short Take-Off Distance</i> | 550' | N/A | N/A |
| | <i>STOVL Mission Performance</i> <i>Vertical Lift Bring Back</i> | 2 x 1K JDAM, 2 x AIM-120 With Reserve Fuel | N/A | N/A |
| USN | <i>Maximum Approach Speed</i> | N/A | N/A | 145 knots |

JSF is Projected to Meet or Exceed Key Performance Parameters

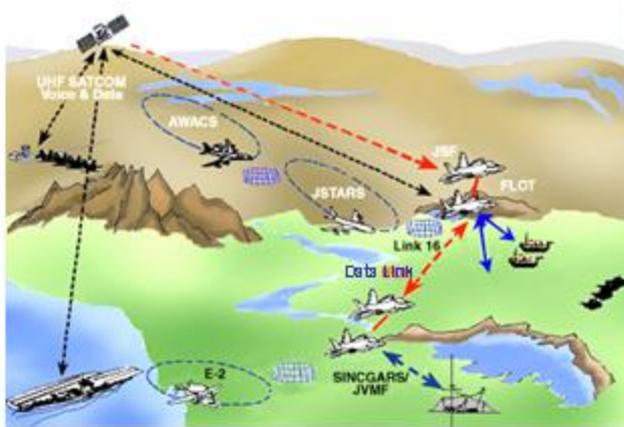


Combat Radius

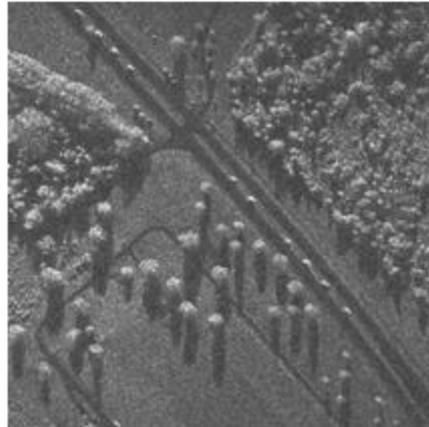




JSF Warfighter Capability Highlights



- Cooperative Ops
- Off-Board Connectivity



- Multi-Function AESA

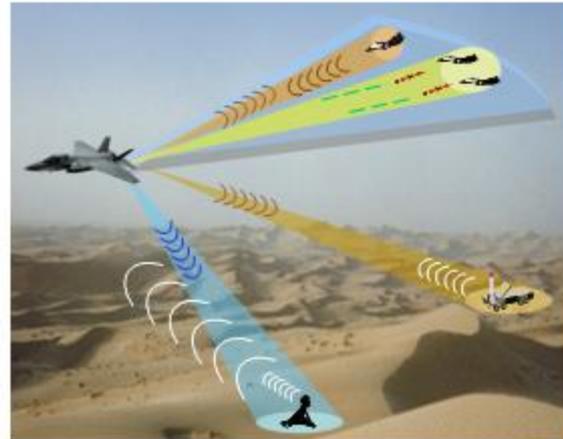


- EO Targeting

- Versatile Weapons Capability



- All Around Situation Awareness



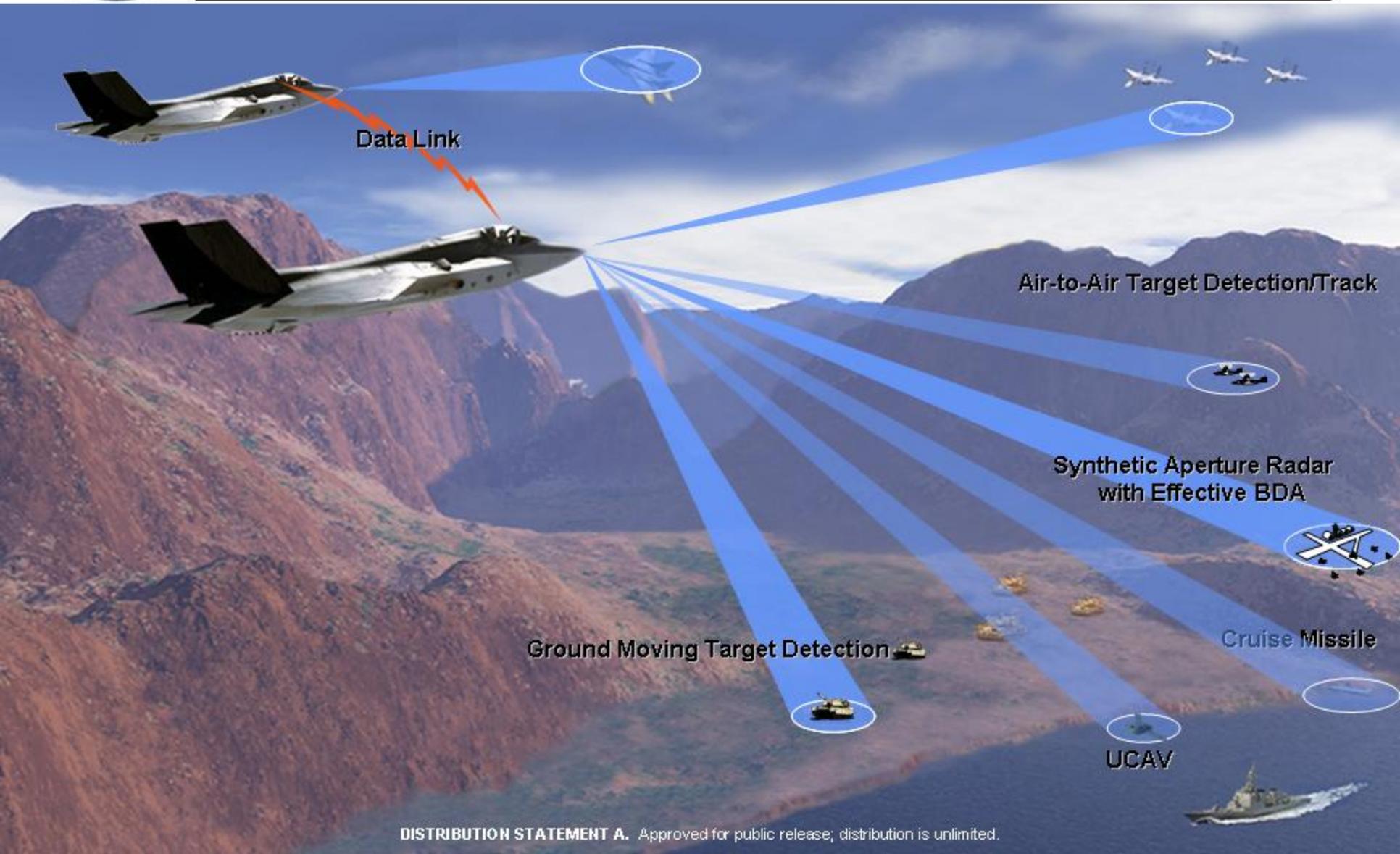
- Passive Precision Emitter Location and Targeting



- Fused, Coherent Common Operational Picture



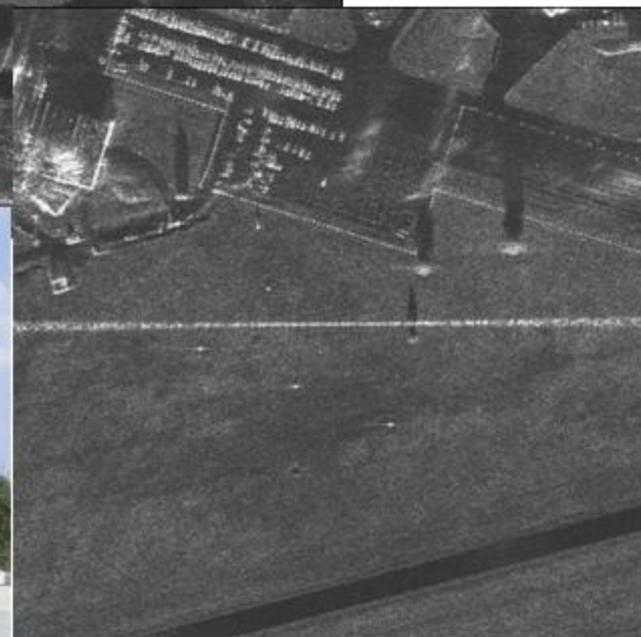
APG-81 Radar Active Electronically Scanned Array Interleaved Search & Track





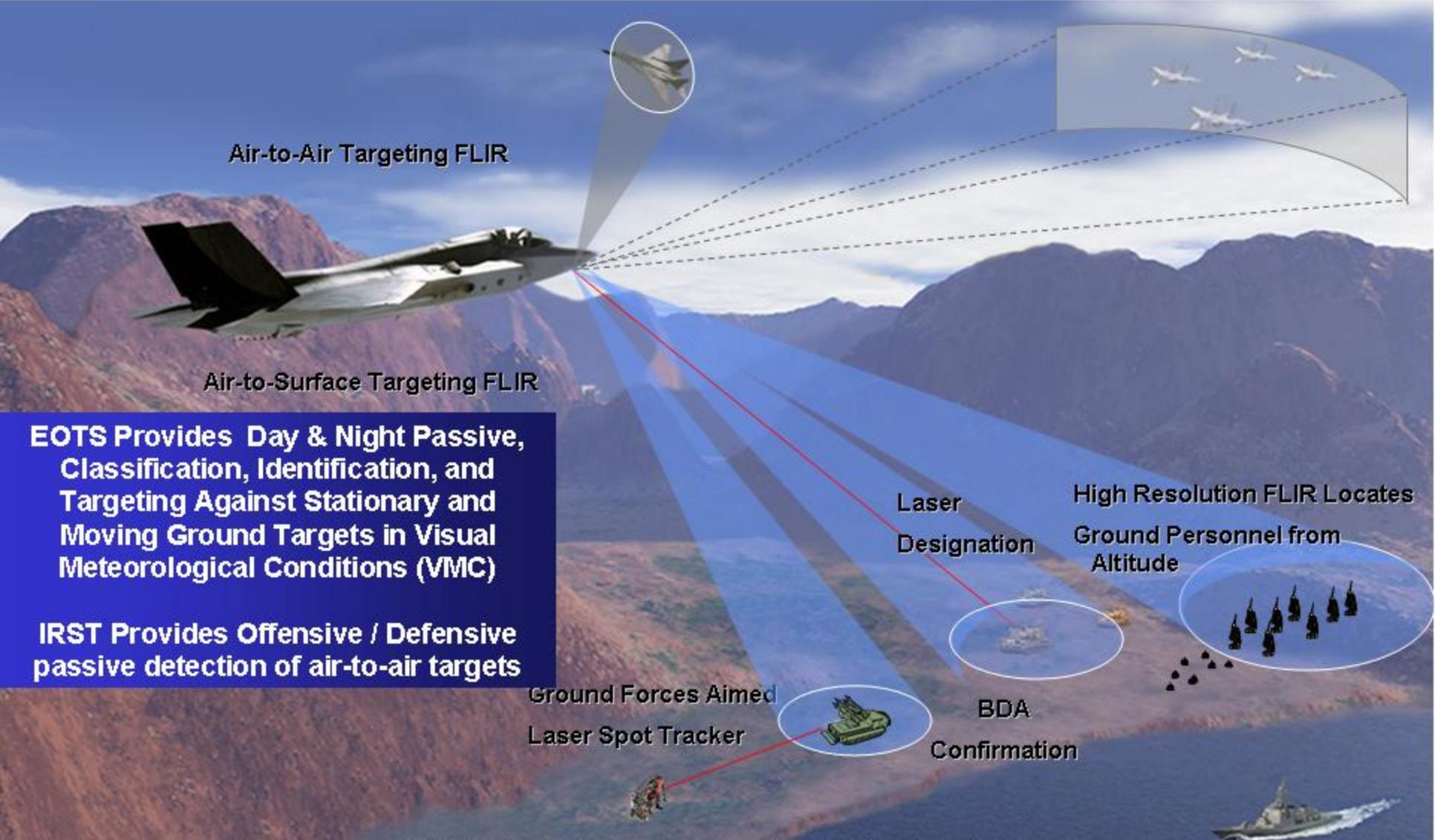
Synthetic Aperture Radar (SAR) Images from First Flight

- Northrop Grumman Electronic Systems completed the first two radar flights on the BAC1-11 aircraft on 23 and 25 August 2005 at Baltimore, MD
- Successfully completed multiple SAR images at various resolutions





Electro-Optical Targeting System (EOTS) & Infrared Search & Track (IRST)



EOTS Provides Day & Night Passive, Classification, Identification, and Targeting Against Stationary and Moving Ground Targets in Visual Meteorological Conditions (VMC)

IRST Provides Offensive / Defensive passive detection of air-to-air targets

Air-to-Air Targeting FLIR

Air-to-Surface Targeting FLIR

Laser Designation

High Resolution FLIR Locates Ground Personnel from Altitude

Ground Forces Aimed Laser Spot Tracker

BDA Confirmation



Electro-Optical Targeting System (EOTS)

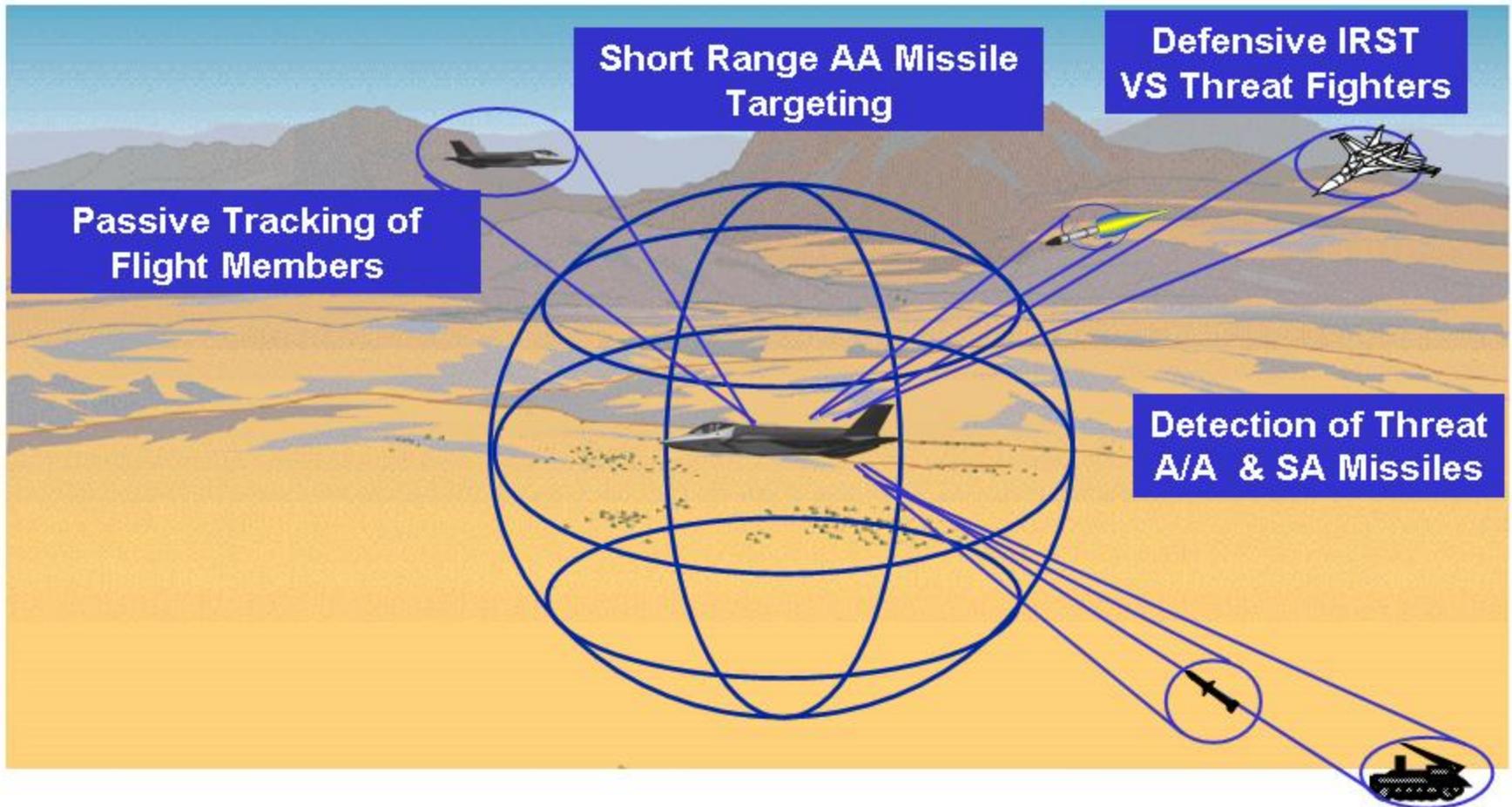
- Internally Mounted
- Long Range, High Resolution
- NAVFLIR, Targeting FLIR,IRST Functions
- Digital Continuous Zoom





Distributed Aperture System (DAS)

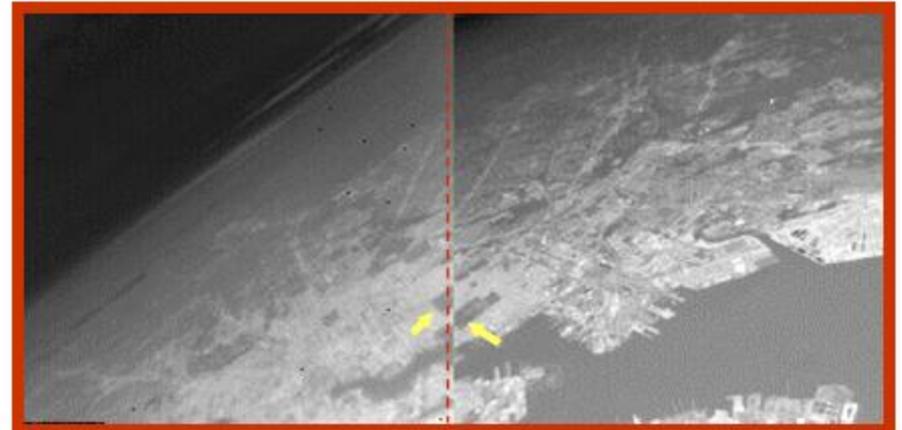
Full Spherical Coverage





EO Distributed Apertures Flight Demonstration

JSF generates 6 continuous images....



....seamlessly stitched together for full 360 degree imaging capability!



SDD Weapons List



Internal Weapons

- GBU-32 JDAM 1,000-lb (MK-83/BLU-110 Warhead)
- GBU-31 JDAM 2,000-lb (MK-84 Warhead)
- AGM-120C AMRAAM
- CTOL Internal GD425
- GBU-31 JDAM 2,000-lb (BLU-109 Warhead)
- AGM-154 AC JSOW Glide Bomb
- AIM-132 ASRAAM
- CBU-103 / 104 / 105 WCMD
- GBU-38 JDAM 500-lb (MK-82 Warhead)
- Brinsstone
- CBU-87 / 89 Cluster Munition
- BDU-48 / MK-58
- UK 500k PGB
- JDAM PGK (BLU-109 & MK-82)
- Phase I SDB
- Missionized Gun Pod (STOVL / CV)
- UK 500k PGB
- AIM-132 ASRAAM
- GBU-10 Paveway II 2,000-lb LGB (MK-84 Warhead)
- AIM-9X Sidewinder
- MK-82 BLU-111 500-lb LDGP
- GBU-31 JDAM 2,000-lb (MK-84 Warhead)
- CBU-99/100 Rockeye II Cluster Munition
- GBU-16 Paveway II 1,000-lb LGB (MK-83 Warhead)
- MK-82 BLU-111 BSU-49 Ballute 500-lb HDGP
- MK-84 BSU-50 Ballute 2,000-lb HDGP
- AGM-88 HARM (if 1760 compliant)
- GBU-24/B Paveway III 2,000-lb LGB (MK-84 / BLU-109 Warhead)
- MK-83 BLU-110 LDGP 1,000-lb LDGP
- AGM-119 JASSM
- Stormshadow
- MK-83 BSU-89 HDGP
- 426-Gallon Wing Tank
- MK-84 2,000-lb LD/HDGP
- MXU-643/CRU-88 Baggage Pod

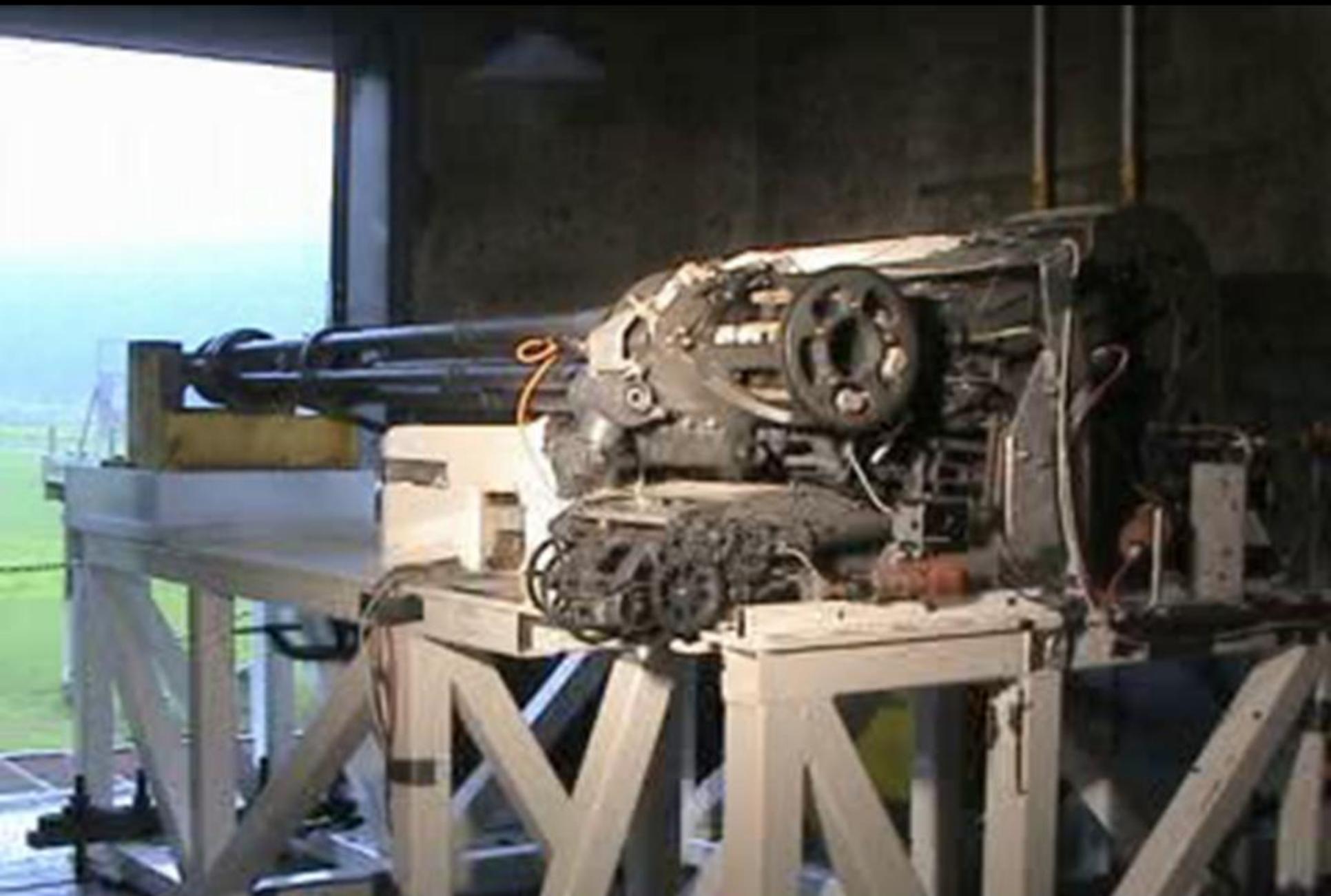
External Weapons

- AIM-120B
- AIM-120C
- Joint Common Missile
- MK-76

Store Fully Certified During SDD

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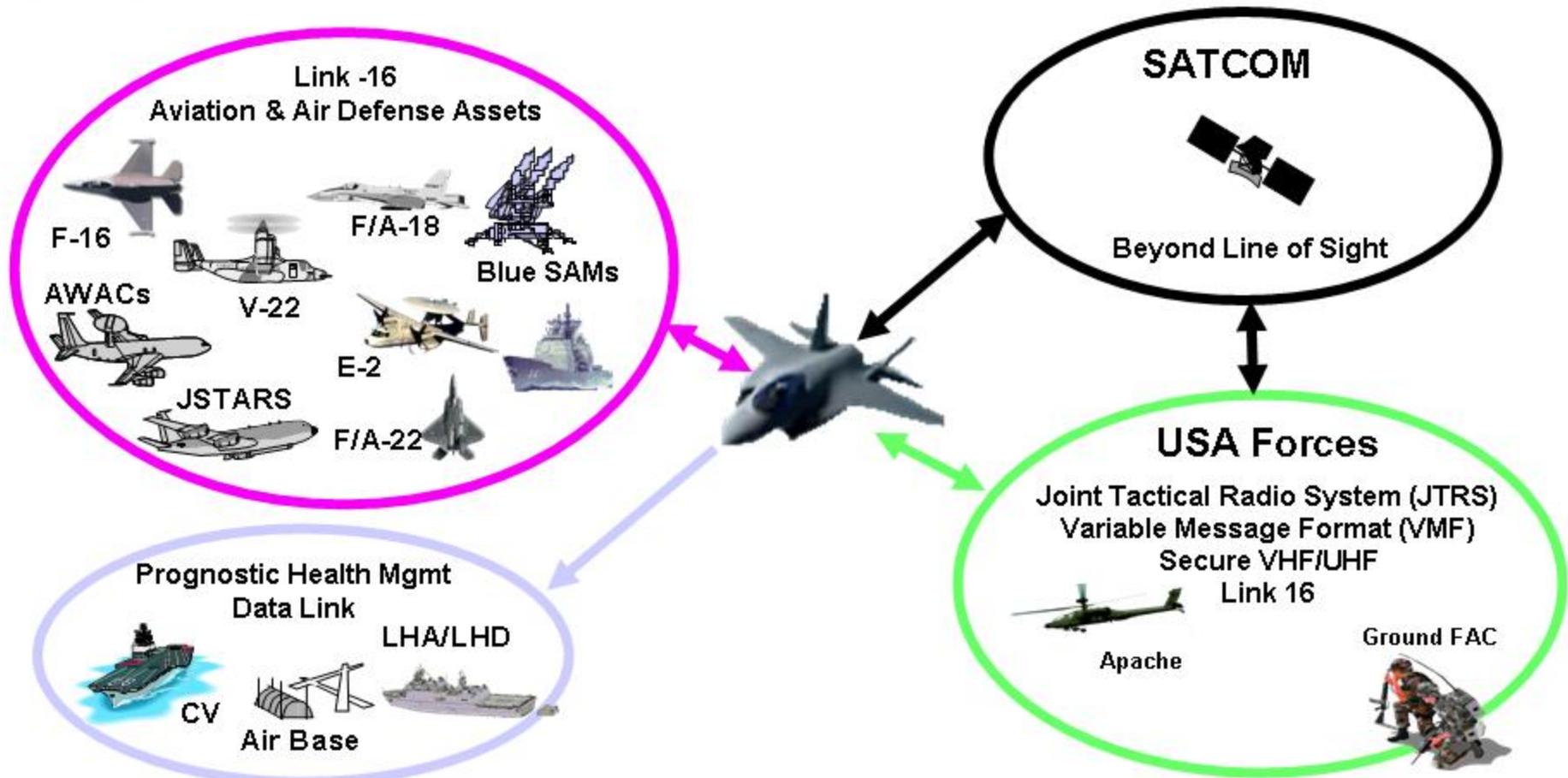
(if 1760 compliant)



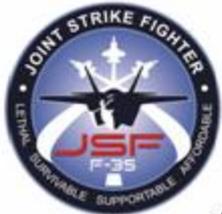
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Voice and Data Link Interoperability



Over 120 Information Exchange Requirements to Ensure Interoperability Across US and Coalition Forces



JSF Engine Interchangeability



CTOL



CV



- **Physically and Functionally Interchangeable**
- **Any Aircraft Able to Use Any Engine**
- **Common JSF Autonomic Logistics System Interfaces**

GE AIRCRAFT ENGINES/
ROLLS ROYCE F136

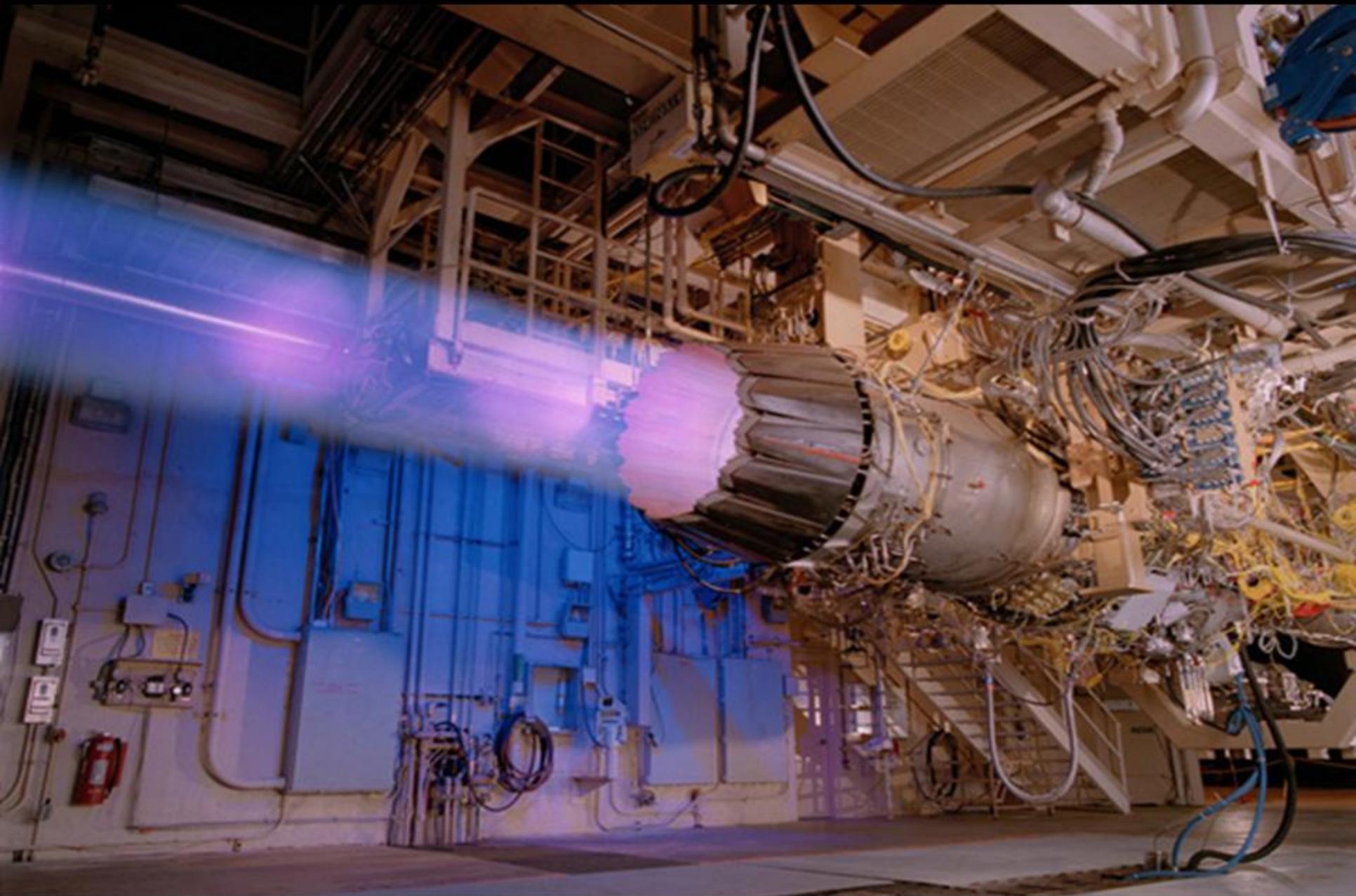
PRATT & WHITNEY F135

STOVL



COOPETITION

JSF Engines - - Common Core for Aircraft Variants, Competition in Production



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JSF Autonomic Logistics System

Highly Supportable Aircraft

- Smart / Reliable Design
- Prognostics and Health Management
- Remove and Replace (R/R) Maintenance
- On Condition Maintenance
- Reduced Maintenance Skill Groups
 - AFSC, MOS, etc.

Training System

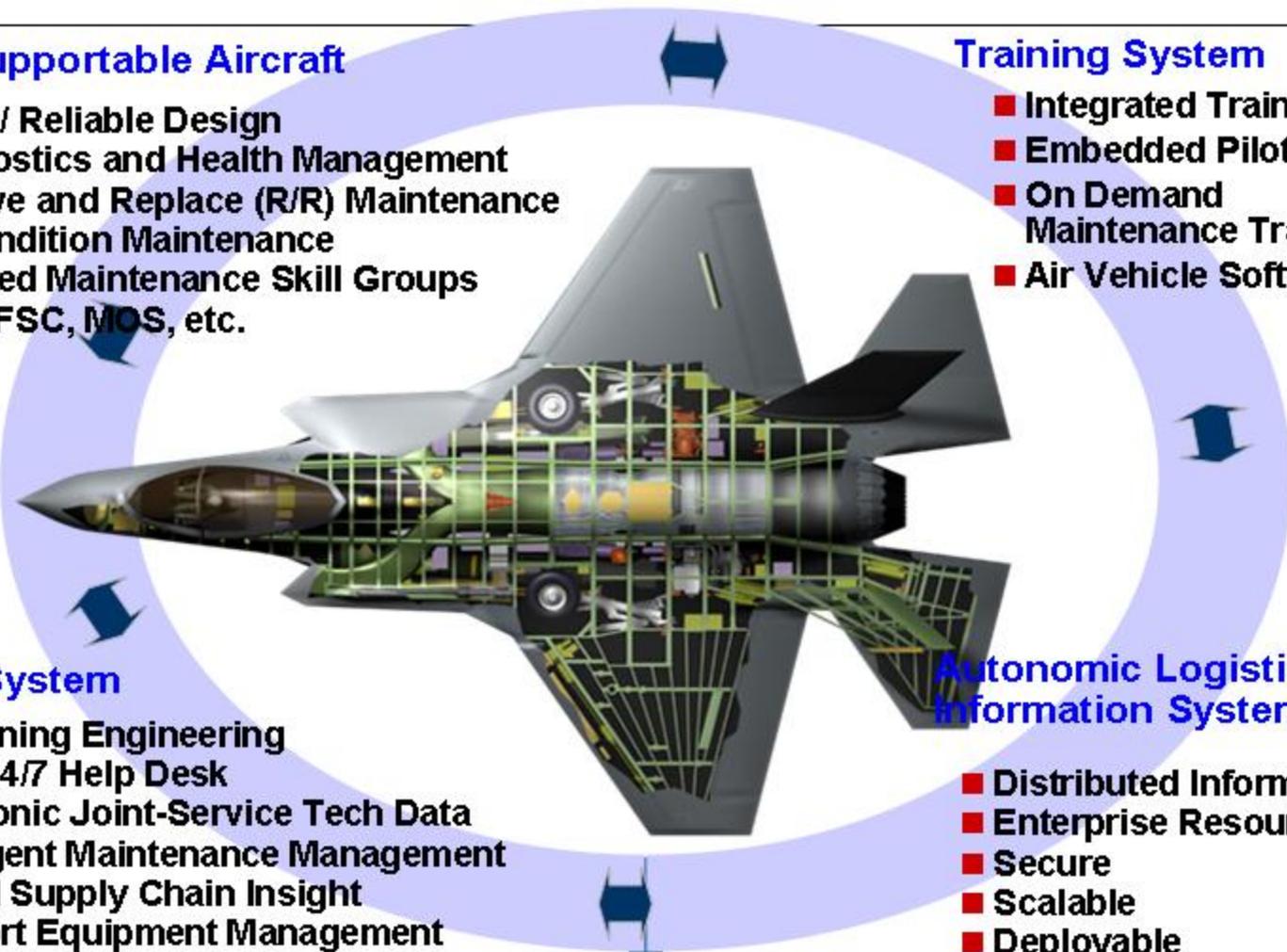
- Integrated Training
- Embedded Pilot Training
- On Demand Maintenance Training
- Air Vehicle Software Reuse

Support System

- Sustaining Engineering
 - 24/7 Help Desk
- Electronic Joint-Service Tech Data
- Intelligent Maintenance Management
- Global Supply Chain Insight
- Support Equipment Management

Autonomic Logistics Information System

- Distributed Information System
- Enterprise Resource Solution
- Secure
- Scalable
- Deployable



Autonomic Logistics Provides Order Of Magnitude O&S Savings



Future ... with F-35

- **F-35 Creates Truly Global, Highly Effective Fighter Force**
- **Coalition Package Able to Tackle Heavily Defended Targets**

**Lethal,
Survivable,
Supportable.....
Affordable**

Future Strike Package





JSF Overview

Dan Crowley
12 September 2005





JSF Leadership Team



**JSF Program Executive
Officer and Program
Manager**
RDML Steven Enewold



**Executive VP and
General Manager
F-35 Program**
Dan Crowley



**Executive VP and
General Manager
F-35 Program Integration**
Tom Burbage



**JSF Deputy
Program
Manager**
*BGen C.R. Davis
USAF*



**JSF
Technical
Director**
John McKeown



**Northrop
Grumman VP and
F-35 Deputy
Program Manager**
Janis Pamiljans



**BAE SYSTEMS
VP & F-35
Deputy Program
Manager**
Tom Fillingham



**VP and F-35
Program
Operations
Deputy**
Mike Walters



**VP and F-35
Technical
Deputy**
Tom Blakely



First Impressions



Power On

Mate

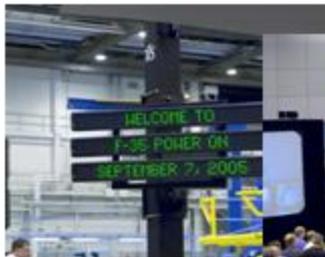
Mission / Vehicle Systems

Testing

Labs

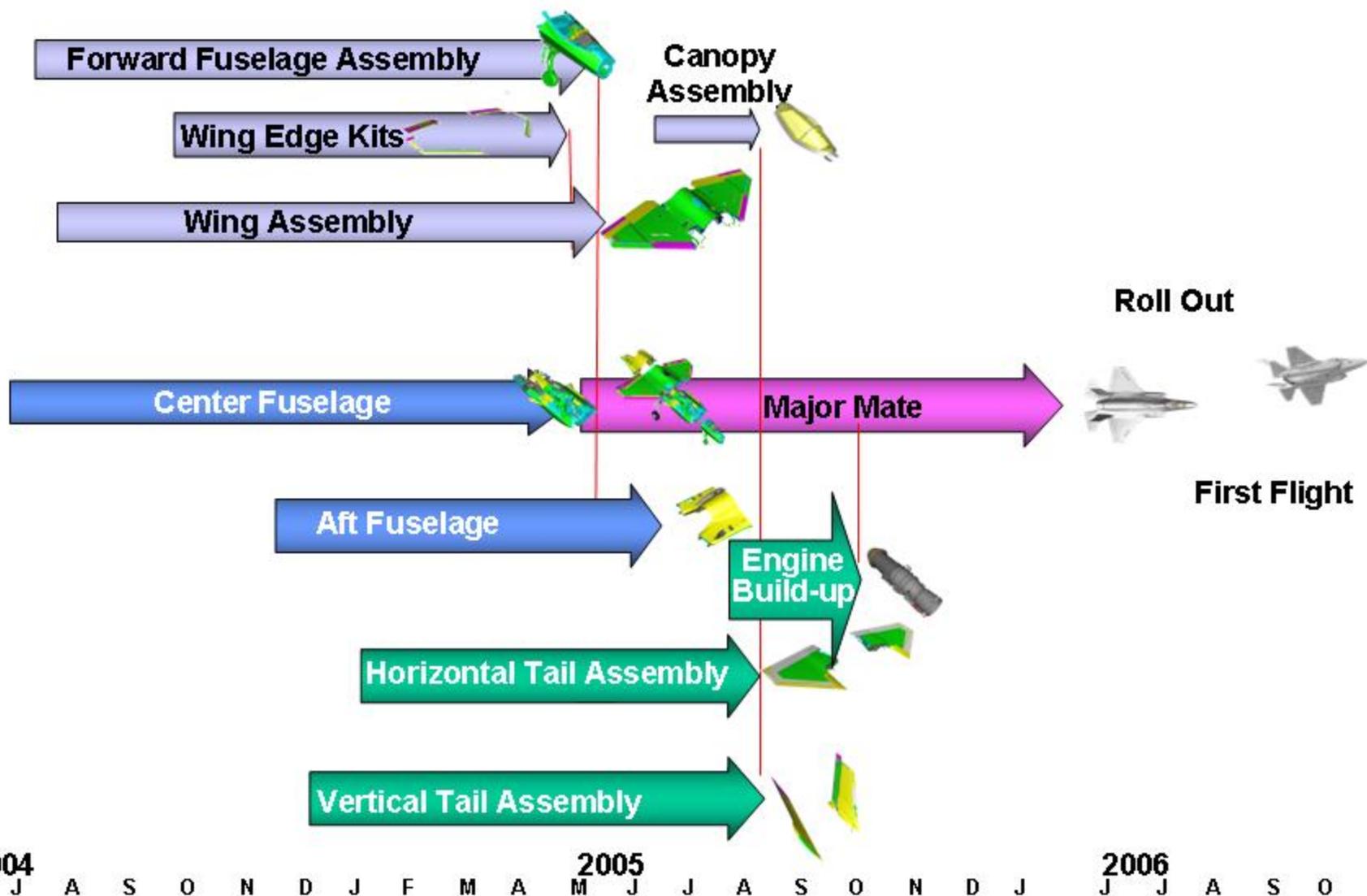
International Partners

Cooperative Avionics Test Bed





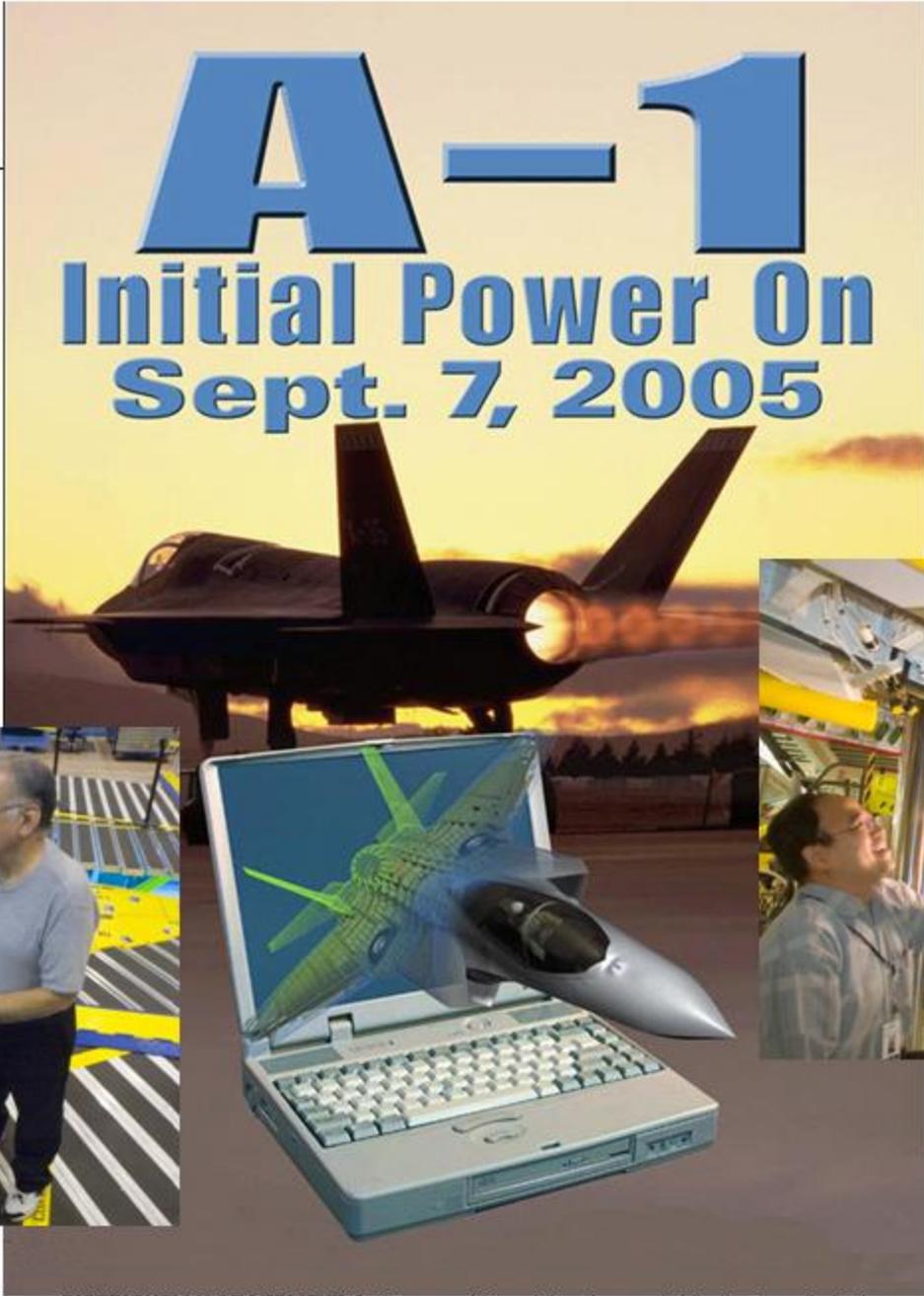
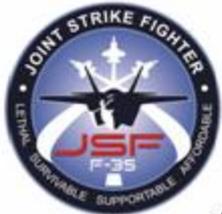
CTOL A-1 Major Assembly Schedule

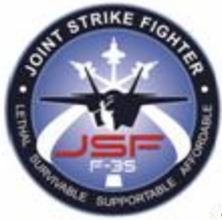


LOCKHEED MARTIN



**Lockheed Martin Aeronautics
Fort Worth, Texas**





B-1 1st Jig Load - NGC





Questions ?



WORKING TO AFFORDABLY MEET THE REQUIREMENTS OF THE WARFIGHTER

