The Affordable Solution - JSF

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Designing The Next Generation Strike Fighter
VISION

BE THE MODEL ACQUISITION PROGRAM FOR JOINT SERVICE AND INTERNATIONAL COOPERATION

DEVELOP AND PRODUCE AN AFFORDABLE NEXT GENERATION STRIKE FIGHTER WEAPON SYSTEM AND SUSTAIN IT WORLDWIDE

Designing The Next Generation Strike Fighter
Affordability

We Are Here
ROADMAP TO THE JORD

‘LIVING COPT’

JIRD/COPT I (95)
- AFFORDABILITY
- RCS
- SPEED
- MANEUVERABILITY
- PAYLOAD
- SGR
- LOG “FOOTPRINT”
- COMMONALITY
- RANGE

JIRD/COPT II (97)
- AFFORDABILITY
- SHIPBOARD COMP
- MANPOWER
- TARGET ACQUISITION
- ACCURACY
- IDENTIFY TARGET
- IR SIG
- MANEUVERABILITY
- PASS/RECEIVE TIMELY INFO
- PAYLOAD
- OPERATIONAL AVAILABILITY
- RCS
- RCS V ECM
- RCS V SUPPORTABILITY
- SGR
- BASING FLEX./CARRIER SUIT.

JIRD/COPT III (98)
- AFFORDABILITY
- LOG FOOTPRINT / SGR
- MANPOWER
- R&M
- SUPPORTABLE LO
- ENGINE R&I
- ADVERSE WEATHER/NIGHT
- MULTI-ROLE CAPABILITY
- MISSION PLANNING
- MISSION FLEXIBILITY
- ACCURATE NAV
- COUNTERMEASURES
- INTEROPERABILITY
- SYSTEM REDUNDANCY

JIRD/COPT IV (99)
- AFFORDABILITY
- LOW VISUAL SIG
- HARDENING
- BDA
- WEAPONS CARRIAGE VERSATILITY
- LOW ACOUSTIC SIGNATURE
- MAINTAINABILITY

ORD (00)
- AOA
- MS I (01)

LEGACY FORCE
F-16, F-18C/D, AV-8B

Developed by Integrated Team of Warfighters and Developers

Analysis of Alternatives
COST AS INDEPENDENT VARIABLE (CAIV)
DEFININGAFFORDABLE REQUIREMENTS

JOINT WARFIGHTER ORGANIZATION

Facilitating requirements through government industry teams of warfighters & developers

Validated & affordable joint warfighting requirements

JSF PROGRAM OFFICE

Operational Advisory Group (OAG)

Force Process Team (FPT)

JSF PROGRAM OFFICE

Command Industry Participation

Warfighter questions focused on JSF attributes & required levels of performance

MODELING SIMULATION AND ANALYSIS PROCESS

Virtual Environment

Interactive Digital Simulation

Constructive Simulation

QFD Analysis

DELPHI Process

Operational Effectiveness/Logistics Modeling

Standardized Models, Scenarios & Threats

Attribute Trade Studies

Weapon Sys Level Trade

Cost/Operational Performance Trades (COPT)

Affordability

Cost

Range vs. Quantity
SYNERGISTIC JSF REQUIREMENTS

JSF Requirements are Well Matched Enabling Highly Common and Affordable Designs
THE BOTTOM LINE

The JSF Balances Affordability Requirements While Enhancing Total Warfighting Effectiveness

The JSF Enables the War to be Won More Quickly, Decisively, and with Minimum Losses

Optimum Cost & Effectiveness

Contribution "Halt The Advance"

Cumulative Benefit

Increasing Capability

Increasing Cost

Cost Band

Performance Band

JSF URF Goals

High

Medium

Low

SGR

Survivability

Lethality

Footprint

Legacy
KEY TECHNOLOGY MATURATION PROGRAMS

- SINGLE ENG RELIABILITY
- DURABILITY
- LO CONCEPTS
- ALTERNATE ENGINE PROGRAM

- INTEGRATED SUBSYSTEMS (J/IST)
- UNITIZED COMPOSITES / METALLIC STRUCTURE
- PRODUCIBILITY
  - MFG TOOLS & PROCESSES
  - LEAN MANUFACTURING
  - PRODUCIBILITY ENHANCEMENTS

- SUPPORTABILITY & TRAINING
  - ADVANCED DIAGNOSTICS
  - SUPPORTABLE LO

- MISSION SYSTEMS
  - INTEGR RF SYSTEMS
  - INTEGR CORE PROCESSING & SOFTWARE

- PROGNOSTICS & HEALTH MGMT.
  - REDUCED MAINTENANCE MANPOWER
  - INCREASED SORTIE GENERATION RATE
  - REDUCED LOGISTICS FOOTPRINT

- FLIGHT SYSTEMS

- PROPULSION
  - INTEGRATED SUBSYSTEMS (J/IST)
CONCEPT DEMONSTRATION PHILOSOPHY

• Two Teams - Designations Assigned
  – Boeing X-32A, B, C*
  – Lockheed Martin X-35A, B, C

• Two Aircraft Per Team - Sufficiently Representing The PWSC to Satisfy Demonstration Objectives
  – Commonality/Modularity for an Affordable Family of Multi-Service Variants
  – Successful Short Takeoff, Vertical Landing, Hover and Transition
  – Satisfactory Low Speed Carrier Approach Flying and Handling Qualities

* A, B, & C Represent Variants For USAF, USMC and NAVY
COMMON CHARACTERISTICS

- COMMON OML, STRUCTURE, SYSTEMS, AND SOFTWARE
- F119 DERIVATIVE ENGINE
- SINGLE SEAT COCKPIT (2-SEAT TRAINER WITHIN SAME FUSELAGE LENGTH)
- CHIN INLET

2D PITCH VECTORING NOZZLE

- MULTIFUNCTIONAL CONTROL SURFACES
  - DUAL CANTED TAILS WITH RUDDERS
  - FLAPERONS
  - LEADING EDGE FLAPS

- BLENDED DELTA WING

STOVL
- WINGTIPS REMOVED
- DIRECT LIFT NOZZLES, ACS AND LIDS
- JET SCREEN

CTOL
- INTERNAL 20MM GUN
- LIGHTWEIGHT ARRESTING HOOK

CV
- DUAL NOSE GEAR, ARRESTING HOOK
- HIGHER STRENGTH GEAR
- VORTEX FENCE
MULTI-SERVICE PWSC DESIGN CONCEPT

COMMON CHARACTERISTICS

CONTINUOUS WING/BODY STRUCTURE

COMMON AVIONICS AND DATA BUS

COMMON RADAR

F119 DERIVATIVE ENGINE

INTEGRATED POWER PACKAGE

DIVERTERLESS INLET

COMMON WEAPONS BAY GEOMETRY

FOUR EXTERNAL HARD POINTS

COMMON WING BOX GEOMETRY

STOVL
- LIFT FAN
- 3 BEARING SWIVEL NOZZLE
- REFUEL PROBE

CTOL
- LO AXI NOZZLE
- INTERNAL GUN
- REFUEL RECEPTACLE

CV
- WING TIP FOLD
- HIGHER STRENGTH GEAR
- UNIQUE CONTROL SURFACES
- INTERNAL GUN PROVISIONS
- REFUEL PROBE
ACQUISITION REFORM

• COST as an INDEPENDENT VARIABLE (CAIV)
  – JIRD PROCESS W / INDUSTRY AND WARFIGHTERS
  – COST-PERFORMANCE TRADES

• COMMON COST MODEL
  – JOINT COMMON COST MODEL (JCCM) DEVELOPED
  – COST ESTIMATES DEVELOPED BY JOINT INDUSTRY/GOV’T TEAM

• CONCEPT DEMONSTRATION PROGRAM PHILOSOPHY
  – DEMO ONLY WHAT’S NEEDED
  – STATEMENT OF OBJECTIVES VS. STATEMENT OF WORK
  – MINIMUM FORMAL DOCUMENTATION
  – INSIGHT VS. OVERSIGHT
  – ON-LINE MANAGEMENT INFORMATION SYSTEMS
  – COOPERATIVE ATMOSPHERE
ACQUISITION STREAMLINING
USE OF THE WORLD WIDE WEB

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- GENERAL PROGRAM INFORMATION
- ANNOUNCEMENTS (e.g., PROCUREMENTS, AWARDS)
- BRIEFINGS
- DISSEMINATE SPECIAL INFORMATION (e.g., NEWSLETTERS, MASTER PLAN)
JOINT STRIKE FIGHTER

JSF CHALLENGE

AFFORDABLY MEET THE REQUIREMENTS OF THE WARFIGHTER

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