



# JOINT STRIKE FIGHTER



# The Affordable Solution - JSF

Brigadier General Leslie Kenne, USAF  
Director, Joint Strike Fighter Program Office

Designing The Next Generation Strike Fighter



# JOINT STRIKE FIGHTER



## VISION

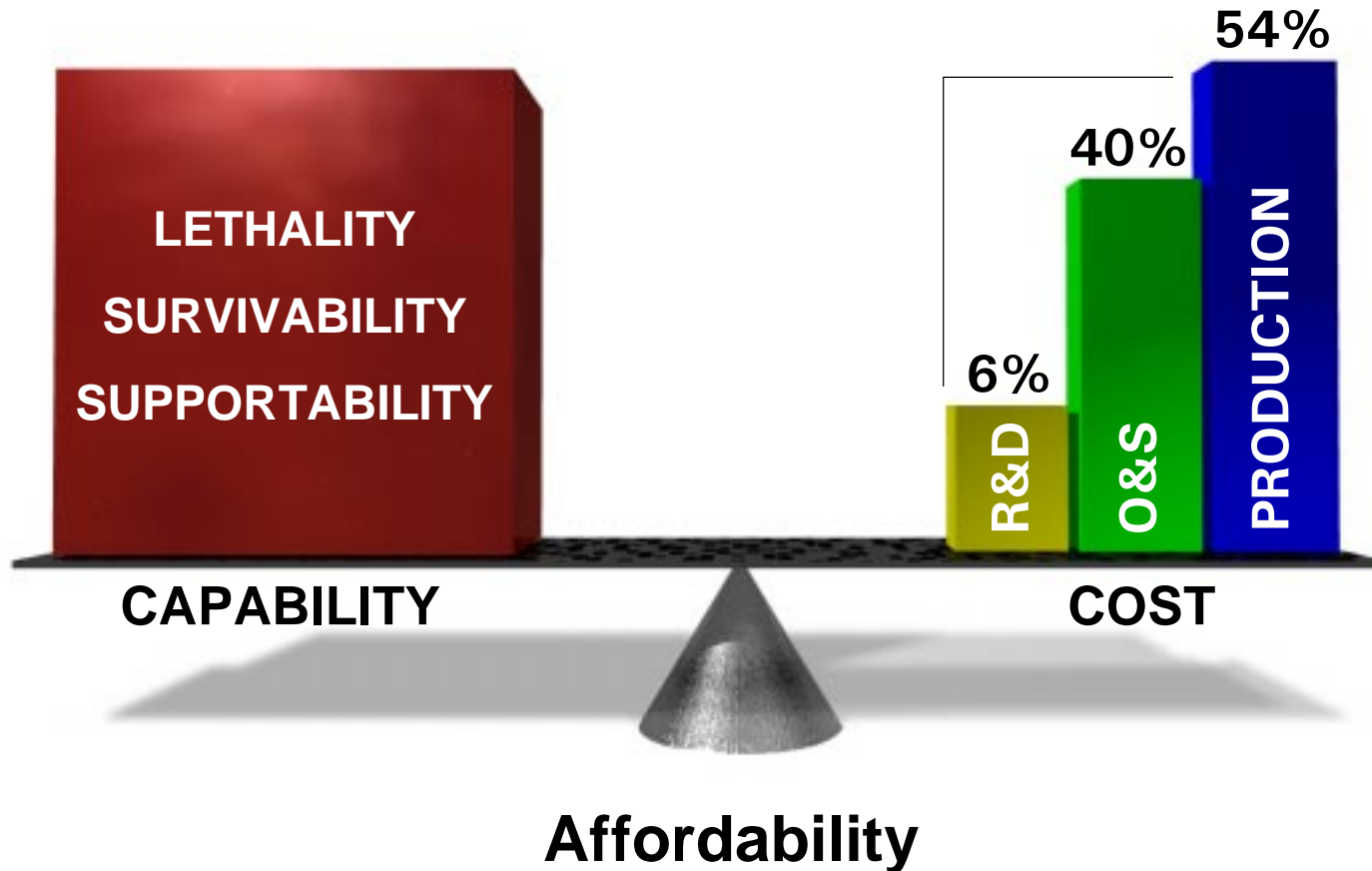
**BE THE MODEL ACQUISITION PROGRAM FOR  
JOINT SERVICE AND INTERNATIONAL  
COOPERATION**

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



# TACTICAL AIRCRAFT AFFORDABILITY OBJECTIVE

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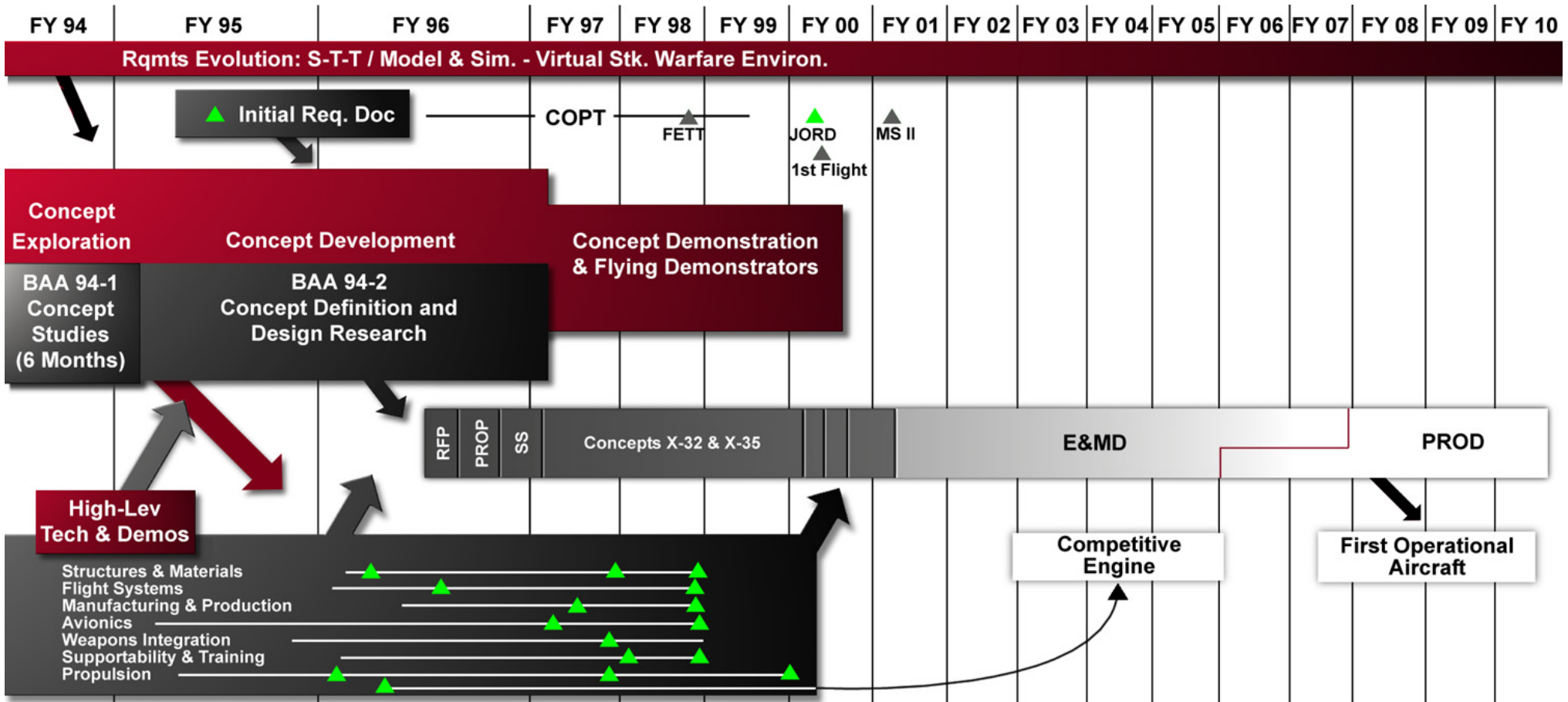
**Cost Objectives Shall Be Set To Balance Mission Needs With Projected Out-Year Resources, Taking Into Account Anticipated Process Improvements In Both DOD And Defense Industries.**



# JSF PROGRAM SCHEDULE



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↑  
**We Are Here**



# ROADMAP TO THE JORD



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## 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**

**MSI  
(01)**



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

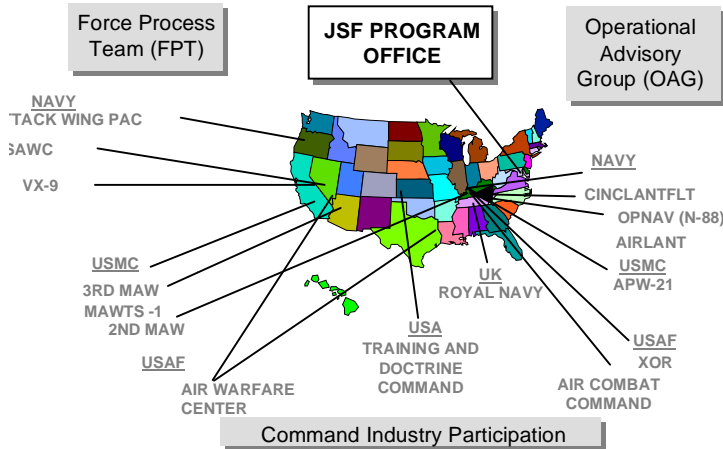


# COST AS INDEPENDENT VARIABLE (CAIV)

## DEFINING AFFORDABLE REQUIREMENTS

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### JOINT WARFIGHTER ORGANIZATION

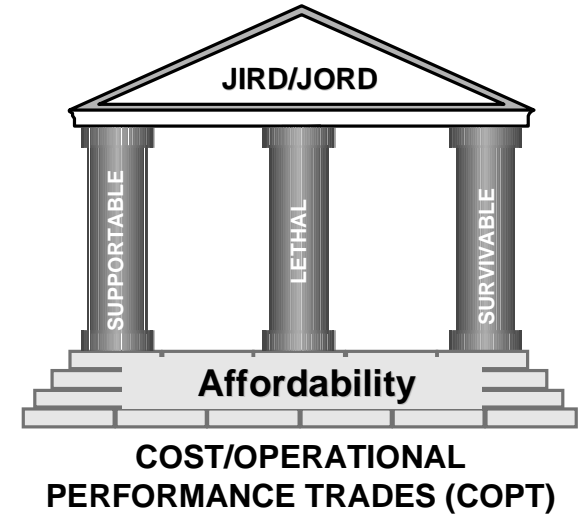


Warfighter Questions Focused on JSF Attributes & Required Levels of Performance

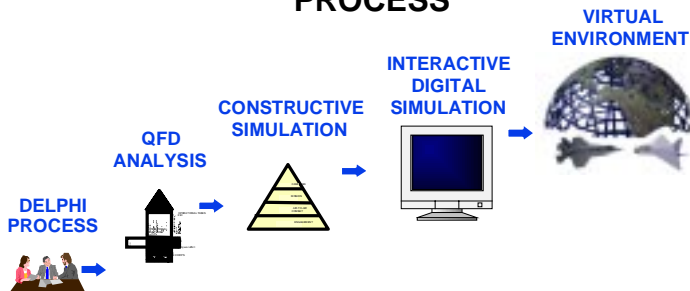
### FACILITATING REQUIREMENTS THROUGH GOVERNMENT INDUSTRY TEAMS OF WARFIGHTERS & DEVELOPERS



### VALIDATED & AFFORDABLE JOINT WARFIGHTING REQUIREMENTS

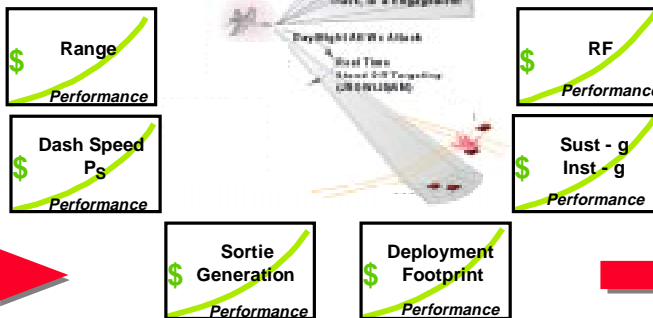


### MODELING SIMULATION AND ANALYSIS PROCESS

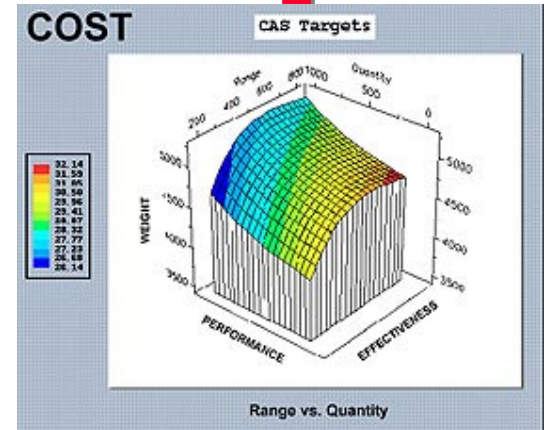


Operational Effectiveness/Logistics Modeling

Standardized Models, Scenarios & Threats



Attribute Trade Studies



Weapon Sys Level Trade

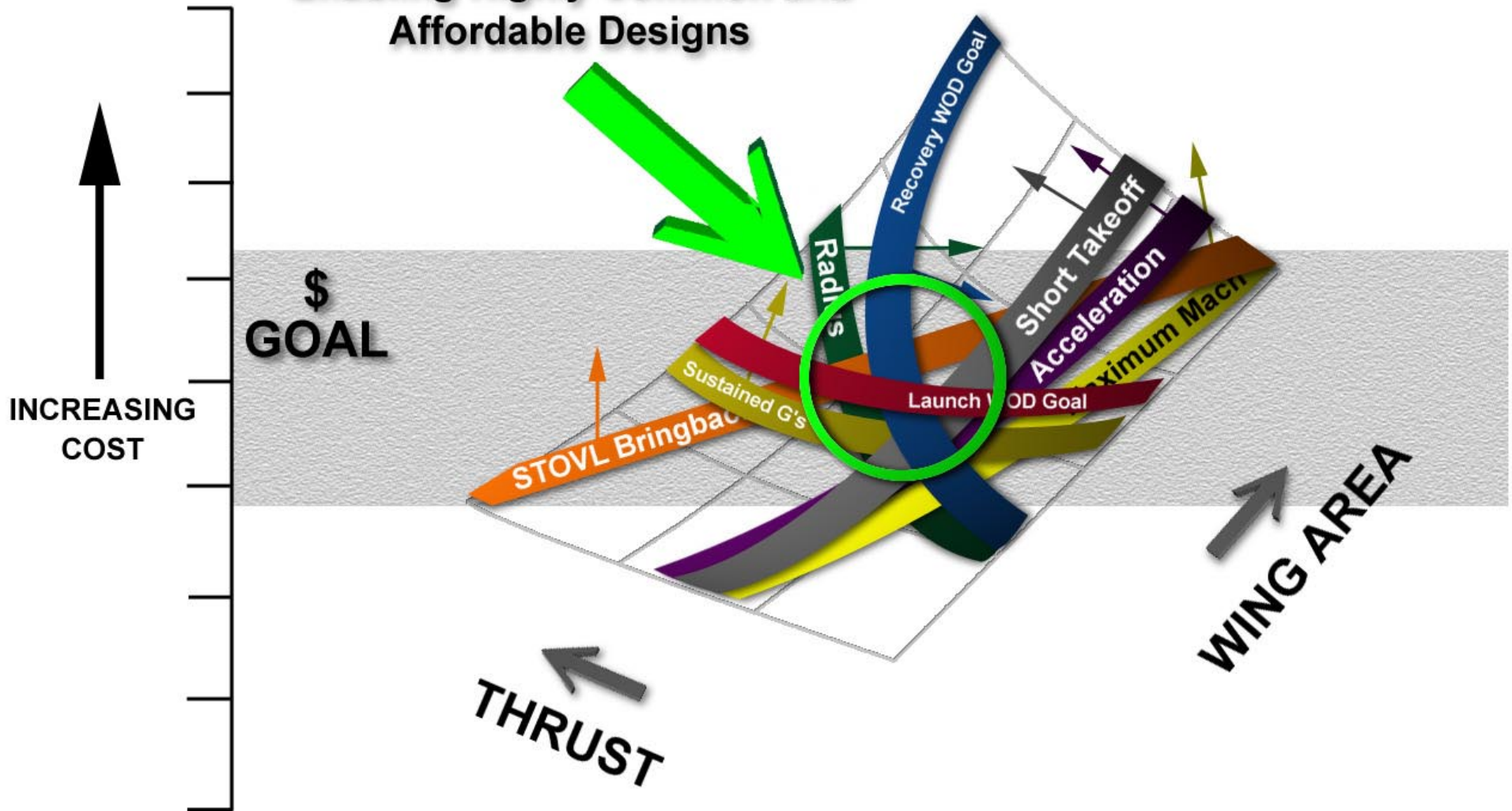


# SYNERGISTIC JSF REQUIREMENTS



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JSF Requirements are Well Matched  
Enabling Highly Common and  
Affordable Designs





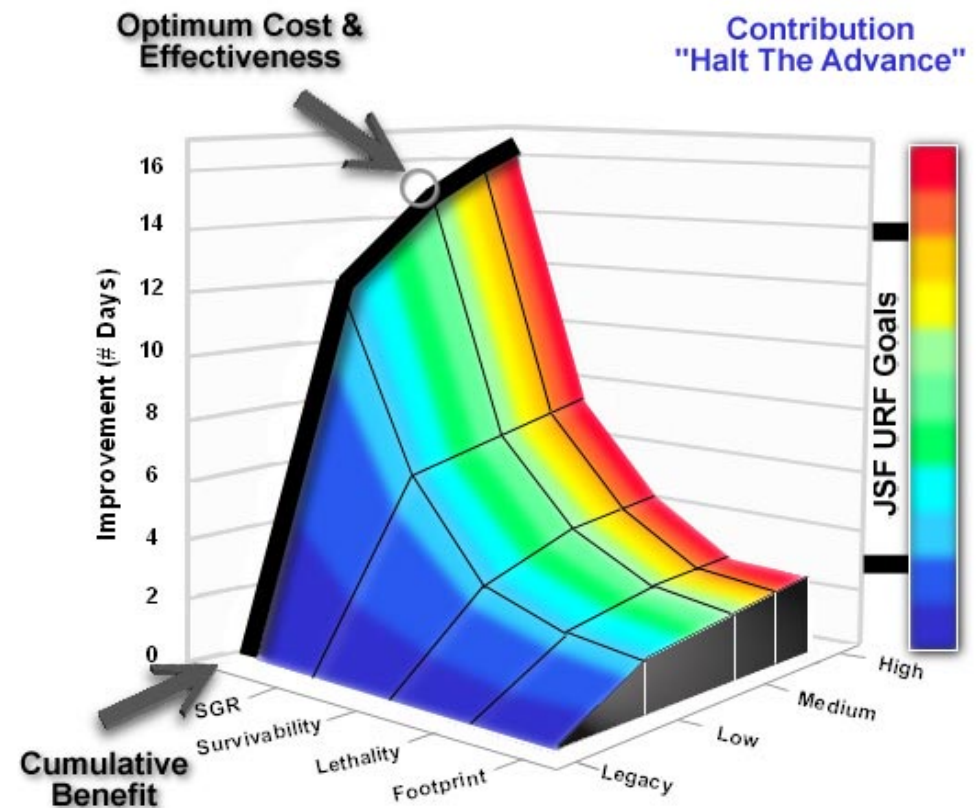
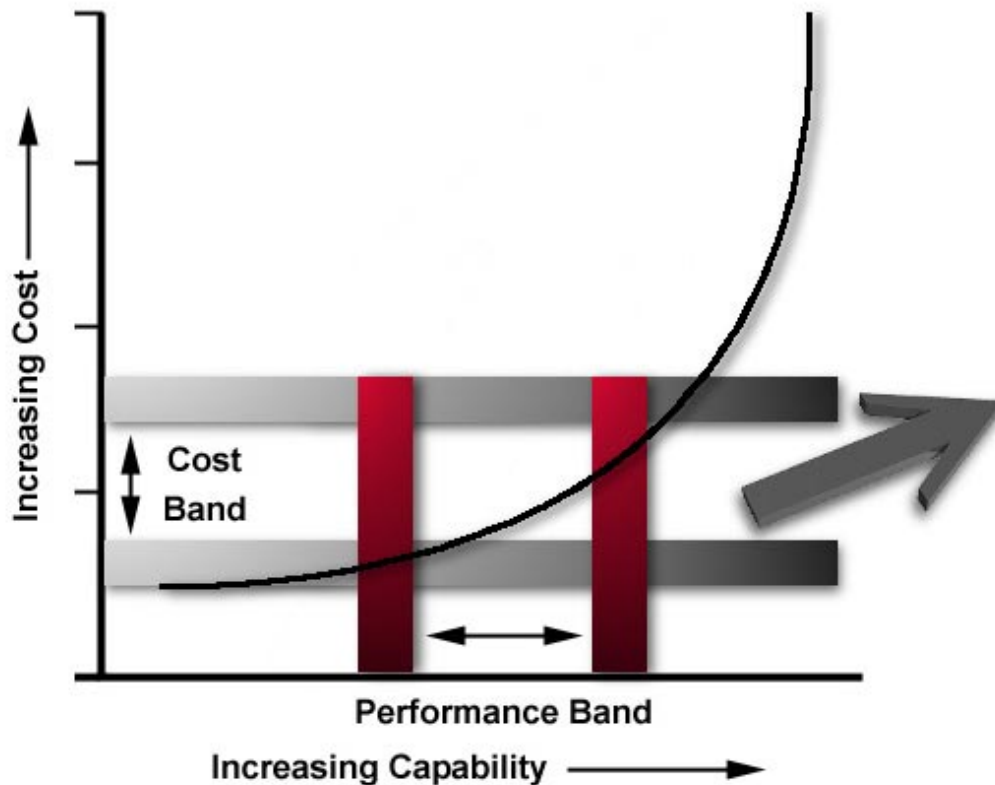
# THE BOTTOM LINE



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**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**



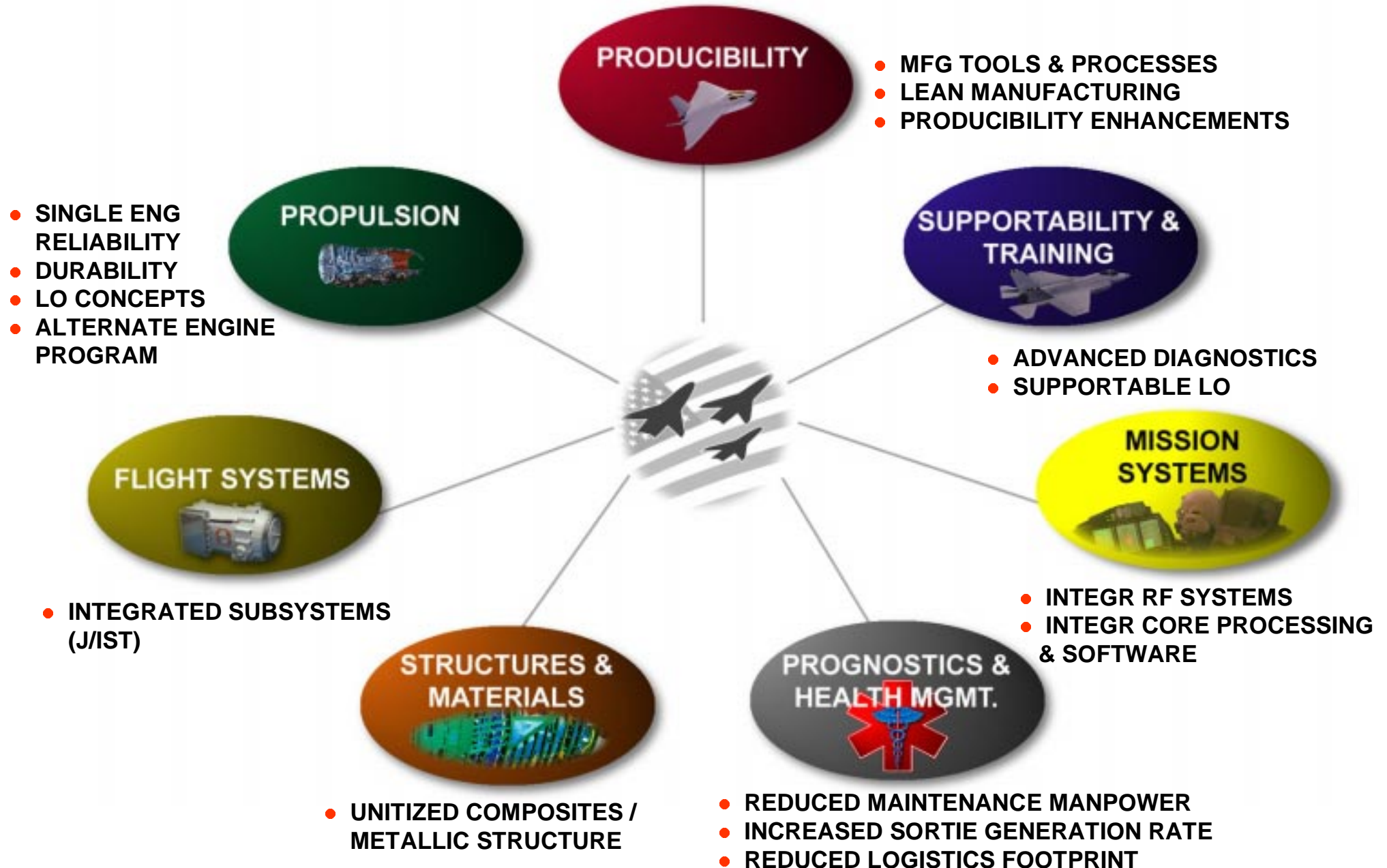




# KEY TECHNOLOGY MATURATION PROGRAMS



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# CONCEPT DEMONSTRATION PHILOSOPHY



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- **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



# BOEING



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**USAF CTOL**



**USN CV**



**USMC STOVL**



**UK RN STOVL**



# MULTI-SERVICE PWSC DESIGN CONCEPT



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## COMMON CHARACTERISTICS

COMMON OML, STRUCTURE,  
SYSTEMS, AND SOFTWARE

F119 DERIVATIVE ENGINE

SINGLE SEAT COCKPIT  
(2-SEAT TRAINER WITHIN  
SAME FUSELAGE LENGTH)

CHIN INLET

SIDE WEAPON  
BAY

2D PITCH VECTORING  
NOZZLE

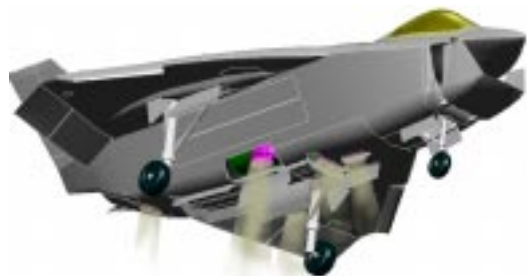
MULTIFUNCTIONAL  
CONTROL SURFACES

- DUAL CANTED TAILS  
WITH RUDDERS

- FLAPERONS

- LEADING EDGE  
FLAPS

BLENDED DELTA WING



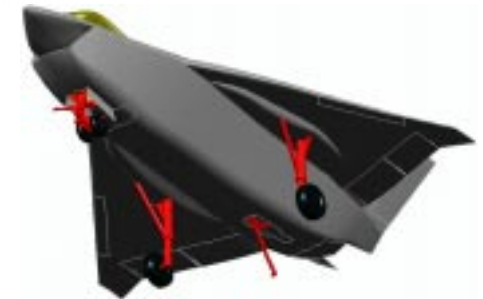
**STOVL**

- 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



# LOCKHEED MARTIN



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**USAF CTOL**



**USN CV**



**USMC STOVL**



**UK RN STOVL**

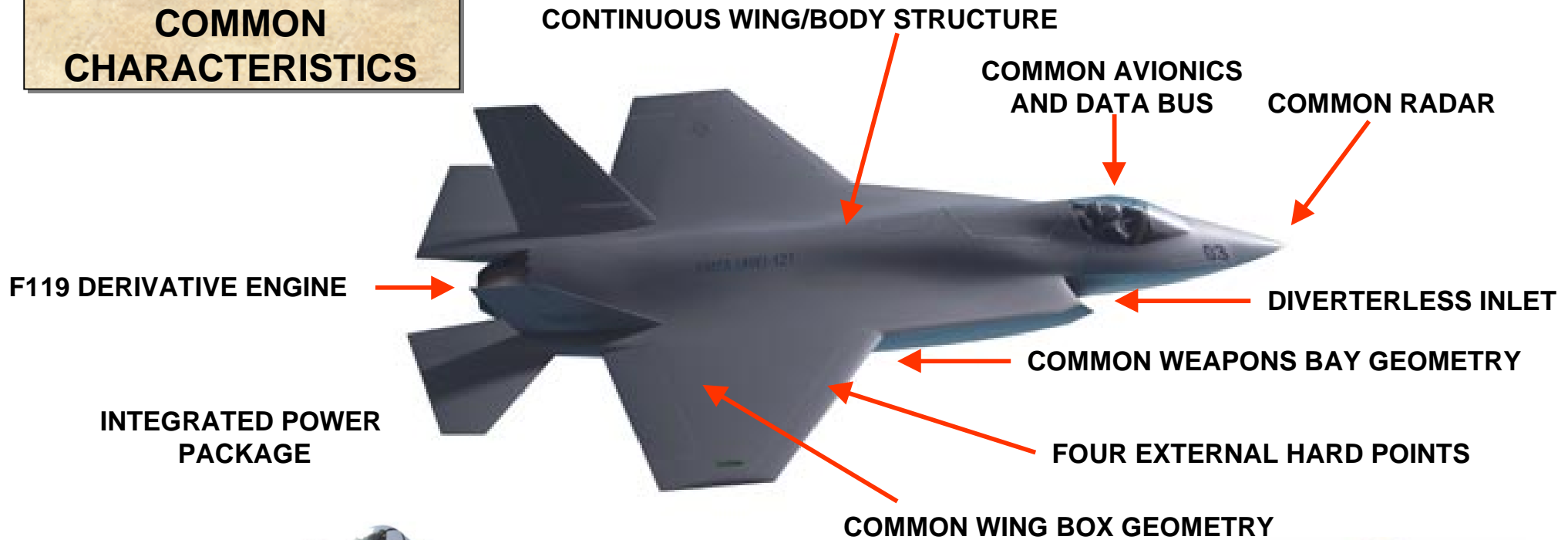


# MULTI-SERVICE PWSC DESIGN CONCEPT



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## COMMON CHARACTERISTICS



## 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



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- **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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## www.jast.mil

- 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**



**Designing The Next Generation Strike Fighter**