



JOINT STRIKE FIGHTER AUTONOMIC LOGISTICS

Joint Strike Fighter Program Office
Autonomic Logistics Directorate



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**

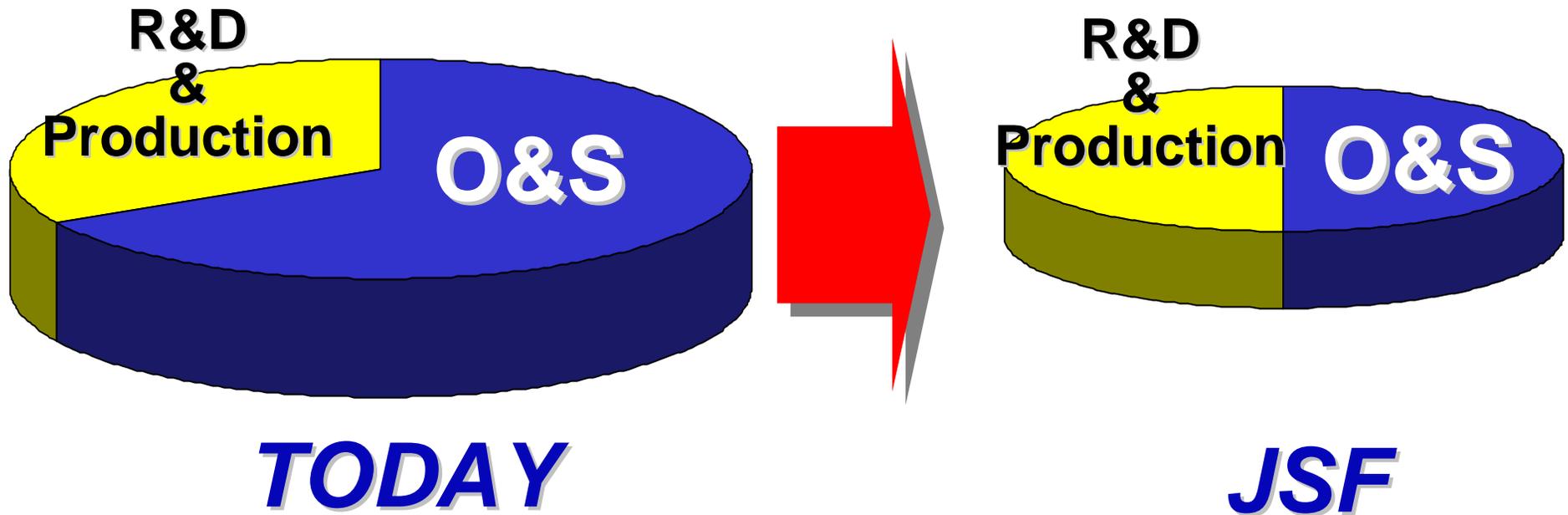


OVERVIEW

- **JSF AutoLog Background**
- **LM AutoLog Approach**
- **Way Ahead**
- **Summary**



AFFORDABILITY CHALLENGE



Note: O&S (Operations & Support) = Whole Life Support



LOGISTICS COST DRIVERS

Maintenance Costs

- Reliability & maintainability



Mission Personnel

- Sortie generation rate, personnel infrastructure & training

Unit Level Consumption

- Fuel consumption, depot level repairables, training munitions



Sustaining Support

- Sustaining engineering, software maintenance

Indirect Support

- Base operations



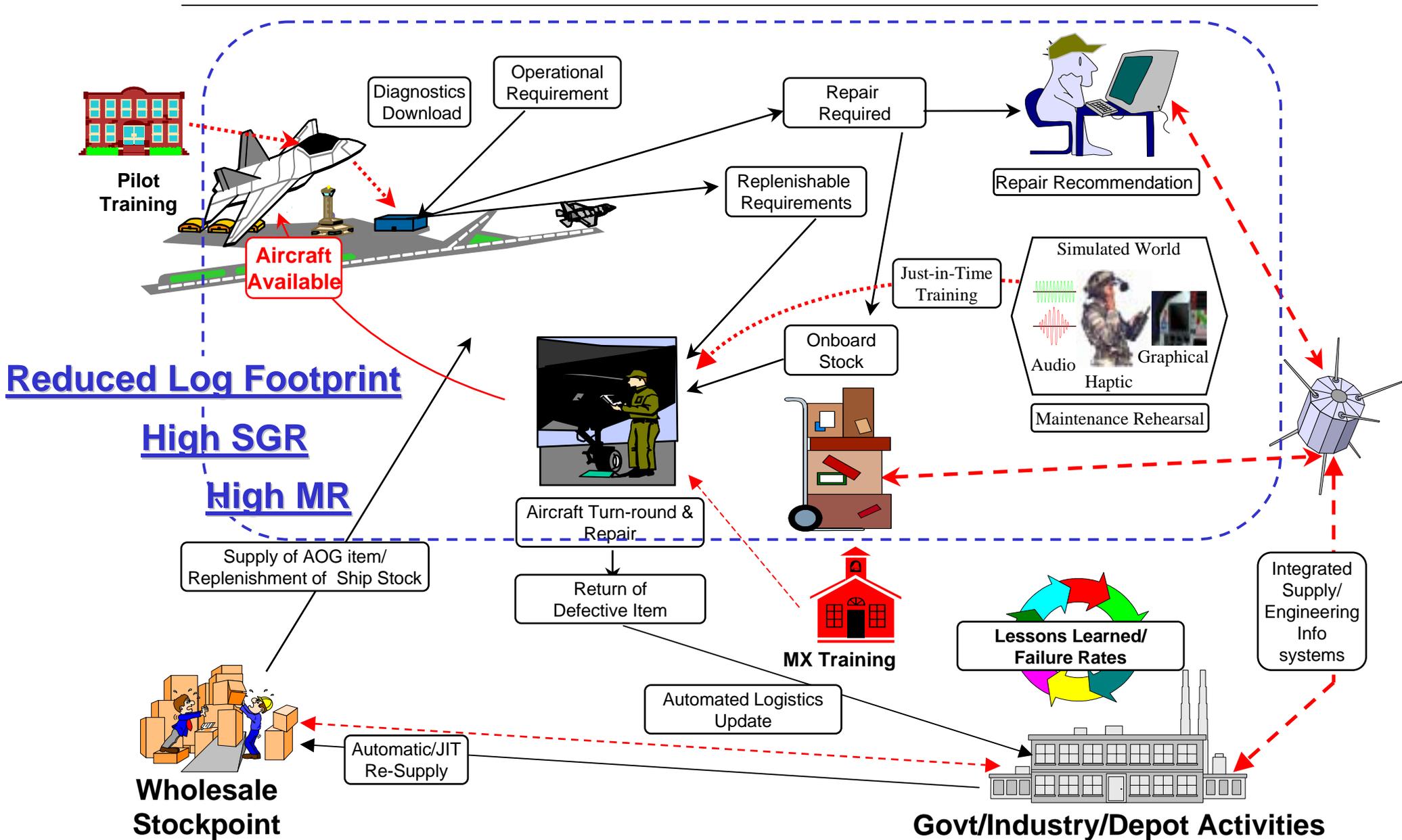
AUTONOMIC LOGISTICS VISION

A comprehensive logistics support environment for the JSF which has these key features:

- **A highly reliable aircraft which encompasses Prognostics & Health Management**
- **A technologically enabled warfighter**
- **A Joint Distributed Information System**
- **A logistics infrastructure that is sufficiently responsive to support requirements**



AUTONOMOMIC LOGISTICS CONOPS



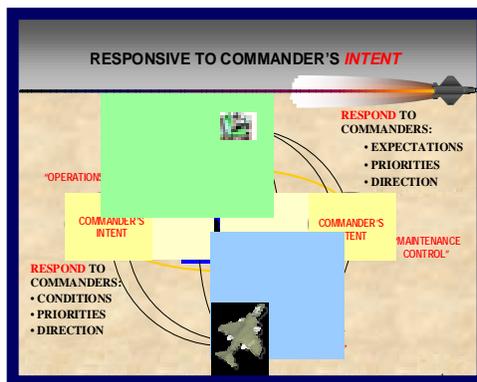


AUTONOMIC LOGISTICS TECHNOLOGIES

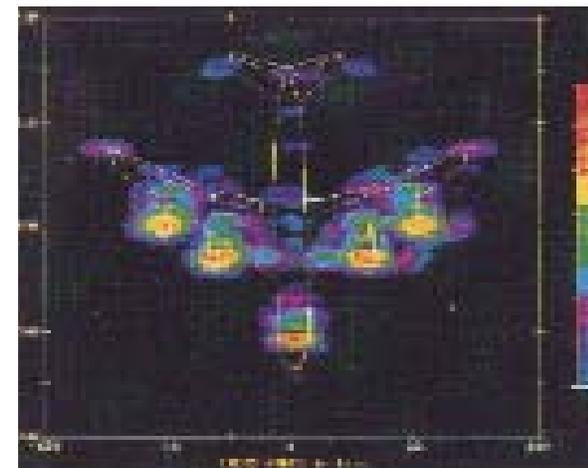
JSF Paintless Aircraft



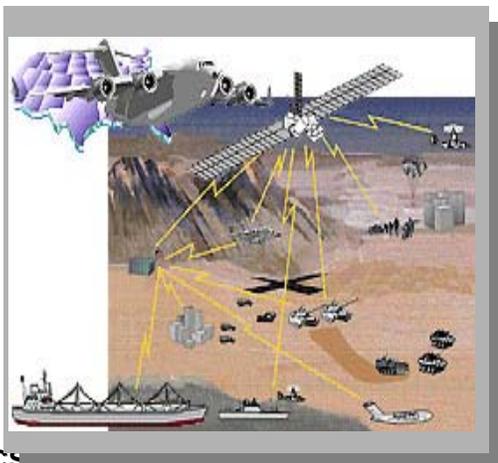
CACE



Supportable LO



Joint Distributed information system (JDIS)



DOCS

Prognostics & Health Management (PHM)



Reliability & Maintainability



Training





JOINT PAINTLESS AIRCRAFT PROJECT

Joint Paintless Aircraft - JPAP

UNCLASSIFIED



Flight Test- SD325

Completed 31 Aug 98
 # Flights 268
 Flight Hours 399
 Hours Supersonic >3.5
 Hours in Rain >1.5
 Catapult Launches 62
 Traps 62

Supportability Evaluation

<u>Maintainability</u>	Paint Appliqué	
Coating MMH/FH	0.98	<0.3
MTTR Repair	4.85	0.95
MTTR Cure (hr)	24 - 72	1

Next Generation Paintless Aircraft

UNCLASSIFIED



Supportability Flight Tests Completed

- Stripped JPAP Aircraft & ReCoated W/Gen 4 Film
- Accumulated Supportability Data on Gen 4 Applique
- Partial ReCoat with Gen 5 Applique
- Accumulated Supportability Data on Gen 5 Applique
- Results - Improved Supportability Demonstrated



BOUNDARY AREAS

- **Maintenance Planning**

- Logistics Support Will Capitalize Fully on Public & Private Partnering Opportunities
- Operational Squadron Functions Must Be Organic Military
- All Field Level Ordnance Handled by Government Personnel
- System Must Address USN Shore Rotation, USAF CONUS Billets & UK Deployment Rotation to Retain Maintenance Proficiency
- May Include Use of Maintainers at COCO or GOCO Facility

- **Supply Support**

- Total Asset Visibility Will Be Provided & Compatible With the DoD/MoD Systems
- Retail Stock Will Be Received, Accounted For & Issued by the Service at the Operational Level

- **Transportation**

- Contractors' Proposed Transportation System(s) Must Interface With the Services' Pipeline & It Must Be Flexible

Boundaries Establish the Tradespace for the Design Solution



BOUNDARY AREAS

- **Data**

- JSF Information System Must Meet Defense Information Infrastructure (DII) Common Operating Environment (COE) Interoperability Standards
- Full Access (Not Delivery) Electronically to Technical Data & Drawings
- Data Rights Will Be Identified, Assessed & Acquisition Options Established, Based on Business Case Analyses, for Potential Future Organic Support &/or Recompensation

- **Information Systems**

- Autonomic Logistics Information System Designed to Interface With Legacy Systems Will Be Established

- **Configuration Management**

- Government Approval Is Required for Changes in Which Form, Fit, Function, or Interface Are Affected
- Improvements to the Configuration Management Process in a Manner That Provides a Collaborative Approach Between the WSC & the Government Will Be Evaluated & Implemented



BOUNDARY AREAS

- **Training**

- Commercial Support of Training Is Acceptable Under Government Control
- Military Instructors Will Provide Flight Instruction; Civilian Instructors May Be Used in Ground School & Simulator Events
- Common Core Training Will Be Provided With Service-Unique Modules for Aircrew & Maintainers, As Appropriate

- **Safety**

- Governments Retain Joint Flight Certification & Overall Airworthiness Responsibility for Aircraft

- **Title 10 Statutes (US)**

- Depot Repair Capability Will Be Established That Complies With Applicable Title 10 Statutes & FAR Regulations



HIGH COMMONALITY THROUGH MULTI-SERVICE PREFERRED DESIGN CONCEPT

Common Characteristics

Continuous Wing/body Structure

Common Avionics And Data Bus

Common Radar

F119 Derivative Engine

Diverterless Inlet

Integrated Power Package

Common Weapons Bay Geometry

Four External Hard Points

Common Wing Box Geometry



STOVL

- Lift Fan
- 3 Bearing Swivel Nozzle
- Missionized Gun



CTOL

- Lo Axi Nozzle
- Internal Gun



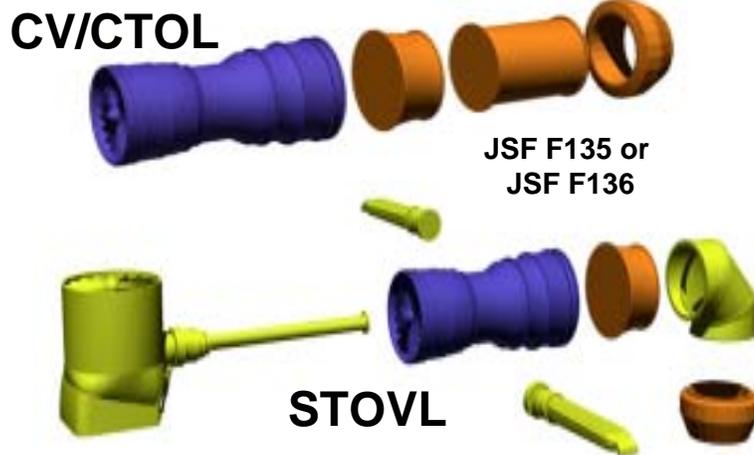
CV

- Wing Tip Fold
- Higher Strength Gear
- Unique Control Surfaces
- Missionized Gun



JSF ENGINE INTERCHANGEABILITY

Lockheed Martin Concept



COOPETITION

- P&W F135 & GEAE/RR F136 Engines Will Be Physically & Functionally Interchangeable
- All JSF Aircraft Will Be Able to Use Any JSF Engine
- Common JSF Autonomic Logistics System Interfaces



TRAINING CYCLE

INTEGRATED TRAINING

Pilot Entry Criteria

- UPT Fast Jet or
- Fighter Qual

Maintainers Entry Criteria

- Initial Skills Trainee or
- Qual on Fighter A/C



Operational Locations



- Unit Mission Training
- Continuation & Structured Upgrade Training
- Operational Training (UK)
- On-Demand/Rehearsal Training
- Training Status

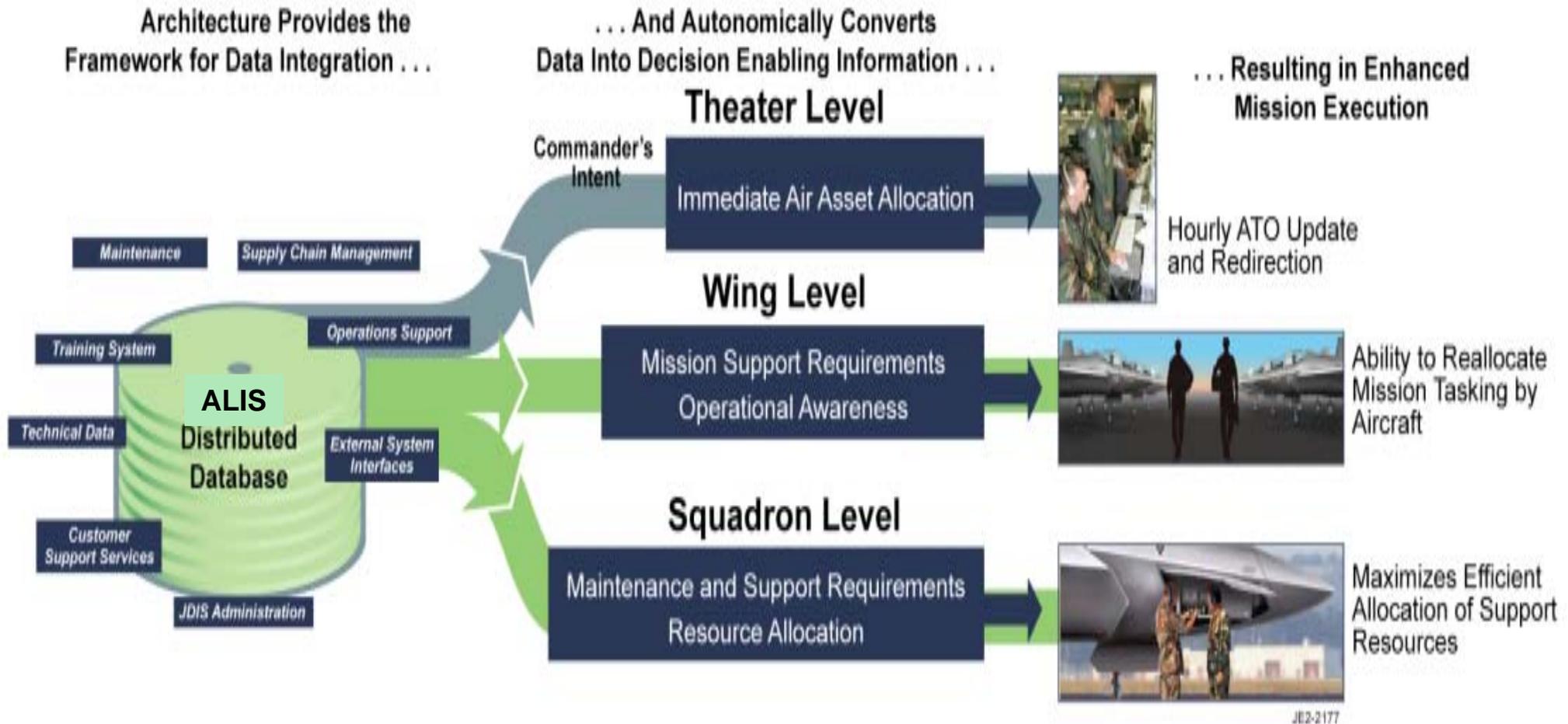
- Training Center Provides
- Mission Qualified Wingman
 - Task Qualified Technician
 - Operationally Qualified Pilots & Maintainers (UK)

- Service Unique Training
- Tactics/Weapons
- Military Instructors

Our Approach Provides Maximum Capability & Flexibility At Minimum Cost



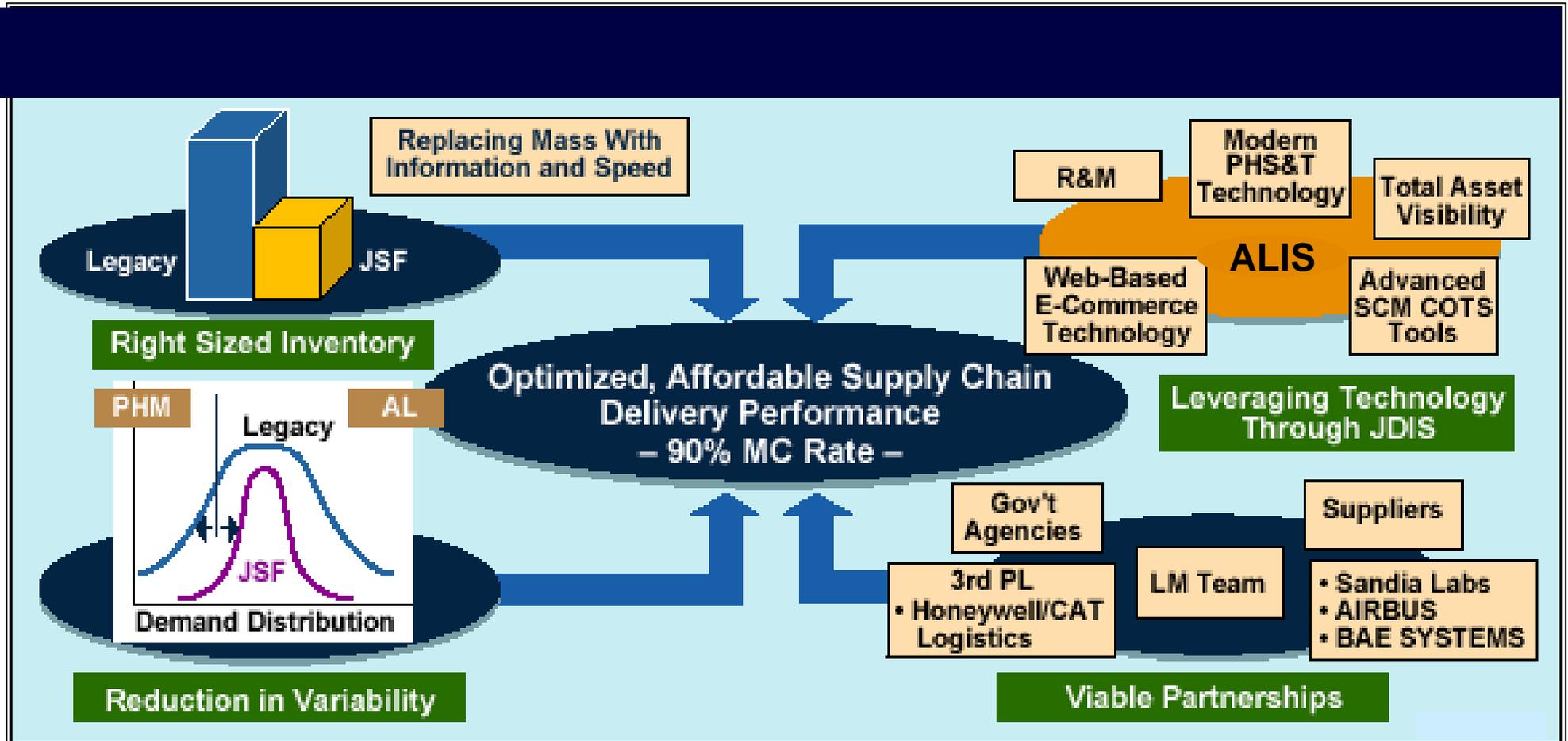
AUTONOMIC LOGISTICS INFORMATION SYSTEM (ALIS)



Provides Timely, Total Logistics Support



AGILE SUPPLY & TRANSPORTATION CHAIN MANAGEMENT



Our SCM Approach allows a 90% MC Rate at Reduced Cost



DEPOT PARTNERSHIPS

- **Full Best Value Partnerships With Organic Depots**
 - Including All Financial Incentives Contractually Guaranteed
 - With Standardized Depot Repair Equipment
 - Full Title 10 Compliance (US only)
- **Cost, Quality & Schedule Based Decisions**
- **Harmonization To Reduce Non-recurring Capital Costs**
 - WRALC, Cherry Point & Jacksonville Model
- **Greatly Decreased Turn-Around-Times Financially Incentivized**
- **During Early SDD, DoD/Industry To Establish Provisions Of Prime – OEM – Organic Depot Relationships**



JSF JOINT SERVICE / INDUSTRY TEAM: A PARTNERSHIP VISION

Gov't - Military Services

- O & I - Level Repair
- Deployed local supply
- Common parts supply (DLA)
- GFE Management
- In-theater/to ship transport
- Configuration Control for Warfighting Improvements
- Program Management
- System Engineering
- System Safety
- Information Systems
- Life Cycle Management
- Support Planning
- Depot Repair

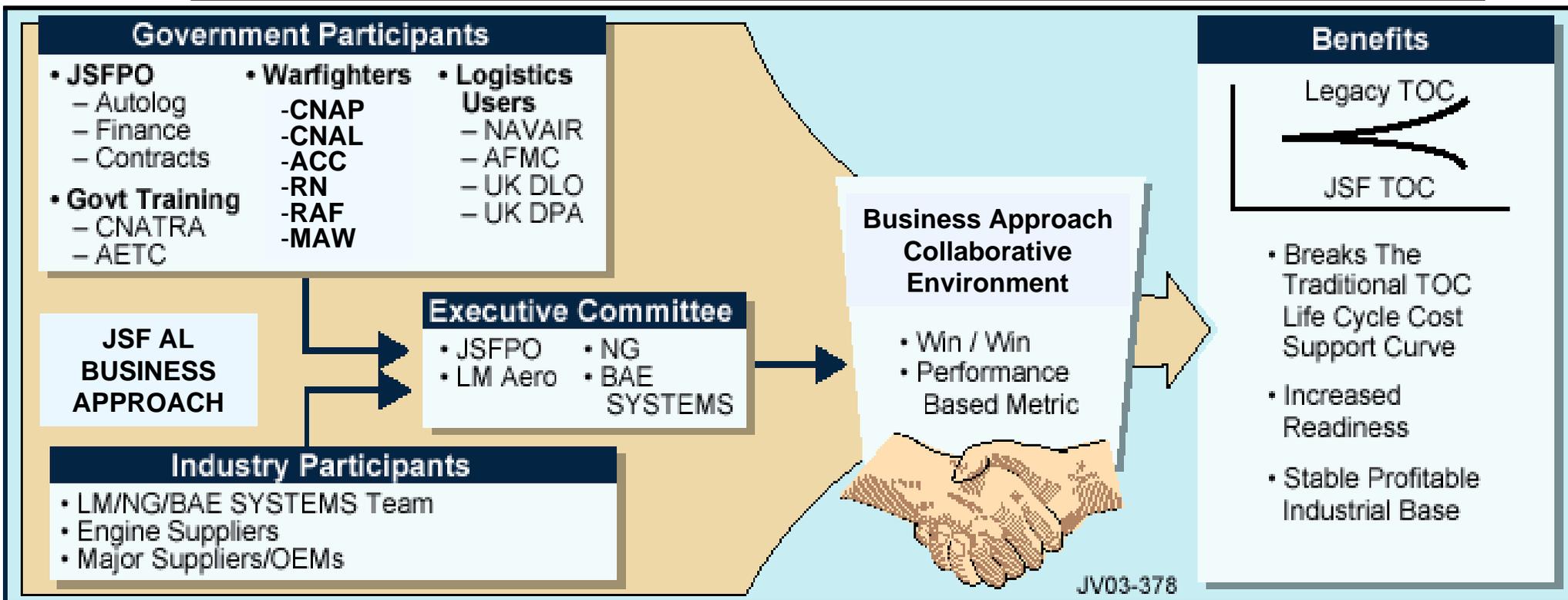
Industry team

- Supply Chain Management
- Most Transportation
- Configuration Management
- Configuration Control for Improvements to Lower Cost
- Most Engineering
- Most Tech Data
- Most Training

Leveraging the Strength of Government and Industry!



BUSINESS APPROACH



- **Define Offering Scope**

- Support
- Training

- **Define Contract Type/Phase**

- CPAF/IF SDD & LRIP
- FFP LRIP & Prod

- **Partnering Arrangements**

- OEMs
- Govt. Depots
- Title 10 Compliance

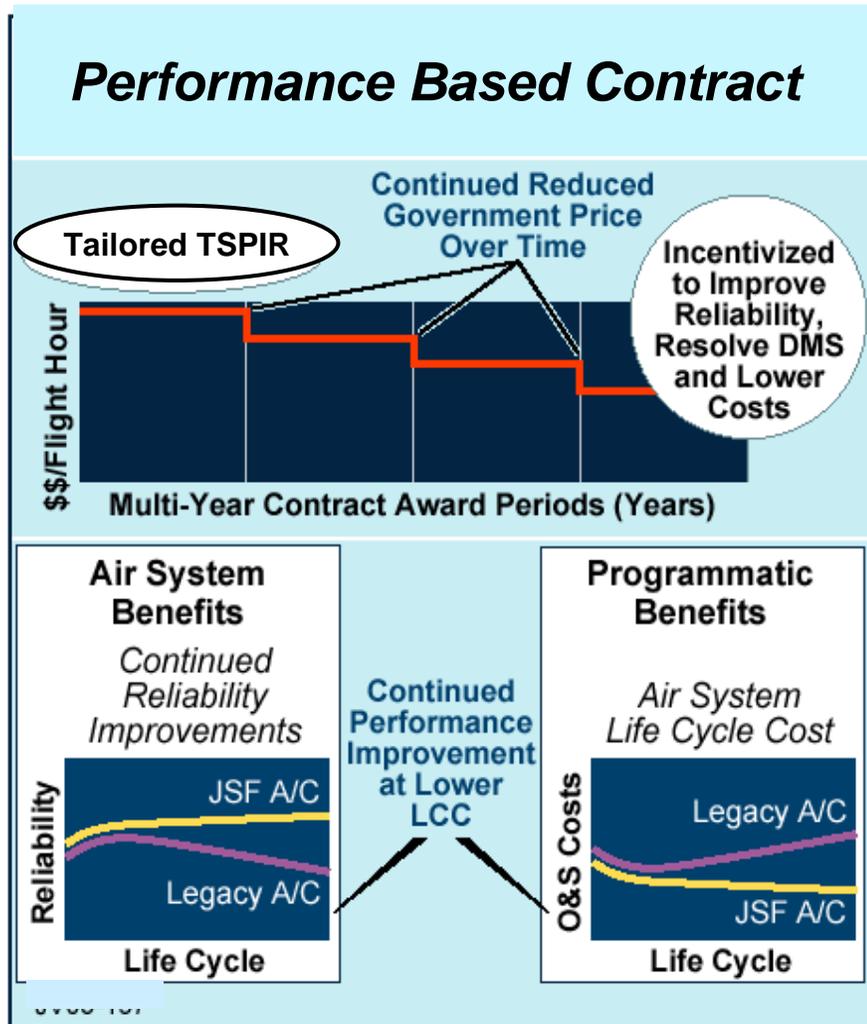
- **Funding**

- Govt. Constraints
- Funding Options
- Colors of Money

A Collaborative Government Contractor Integrated Business Team Develops the Optimal Business Approach for LRIP & Production



ACCOUNTABLE & INCENTIVIZED BUSINESS APPROACH



- **AWARD-TERM CONTRACT: PROVIDES DoD “OFF RAMP”**
- **“Power By The Hour” Concept – Fixed Revenue Per Flight Hour**
- **Inclusive Support – Logistics Not Lawyers**
- **Continuous Cost Reductions Only Method To Achieve Commercial Profitability**
- **Incentives/Penalties Flowed To All Teammates – Including DoD Depots & ICPs**
- **Comprehensive Support Per Flight Hour Cost Periodically Reduced Based On Learning Curve & Actuals**
- **Improved Component Reliability & Depot Turn-Around Times Perpetually Incentivized – Only Means To Enhance Profit Is Through Cost Reductions**



AUTOLOG SDD PRODUCTS

- **Develop (Design, Build & Test First Articles) the AutoLog System**
 - Support System
 - Training System
 - Information System
- **Support DT & OT&E Using AutoLog System**
- **Sustainment Plan**

Establish a Foundation to Deploy & Operate a Global Autonomic Logistics System



SUMMARY

- **JSF SDD Contract Covers Development of the Air System; (Comprised of the Air Vehicle and Autonomic Logistics)**
- **Many Challenges Ahead**
- **JSF has the Opportunity to Change the Way Weapon Systems are Supported**



NORTHROP GRUMMAN

LOCKHEED MARTIN

BAE SYSTEMS



Joint Strike Fighter Autonomic Logistics System