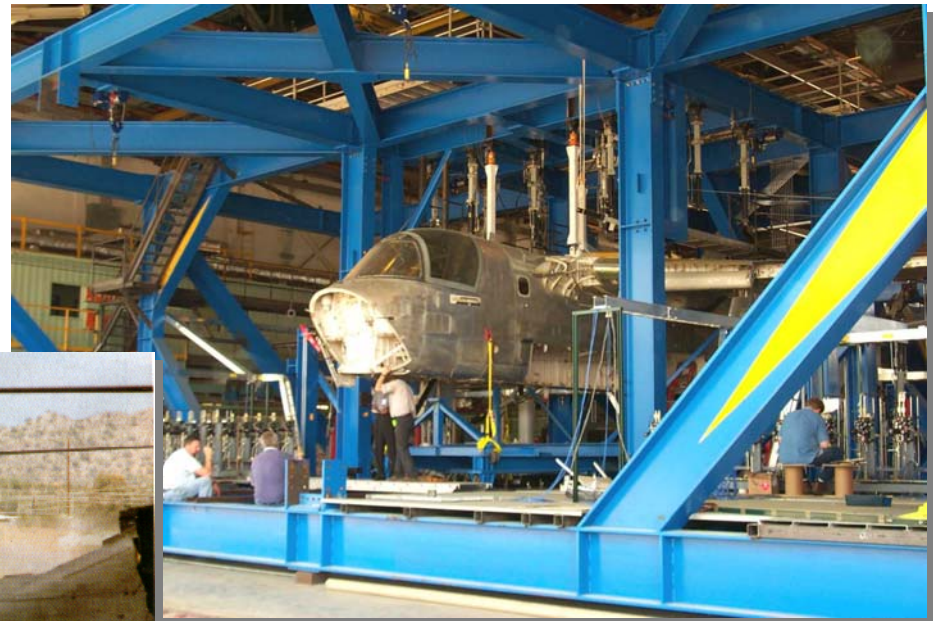




# **National Strategy**

**Synopsis Briefing  
July 2004**

- **Executive Summary**
  - Strategy Focus and Foundation
- **Tactical Initiatives – Steering Groups**
- **Strategic Thrusts**
- **Road Maps**
- **Take Aways**





Jointly Identify, Investigate, and Implement Programs that will Field Products to *Improve* the *Availability* and *Affordability* of all the Services' and Agencies' Aging Aeronautical Systems

- Through the use of Integrated Roadmaps, Shared Data and Analyses, the JCAA will:
  - Identify *Process Recommendations* & Improvements
  - Advocate/Enable *Promising Technology*
  - *Facilitate Transition* of Technology/Program Opportunities
  - *Promote Knowledge Management* on Aging Aircraft
  - *Coordinate Funding* for Promising Areas



ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

## THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010

29 JAN 2003

MEMORANDUM FOR COMMANDER, U.S. ARMY MATERIEL COMMAND  
DEPUTY CHIEF OF NAVAL OPERATIONS  
(FLEET READINESS AND LOGISTICS)  
COMMANDER, U.S. MARINE CORPS MATERIEL COMMAND  
COMMANDER, AIR FORCE MATERIEL COMMAND  
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: REQUEST FOR SPONSORSHIP OF THE JOINT COUNCIL ON AGING  
AIRCRAFT (JCAA)

Aging aircraft issues represent a serious challenge for continued aircraft viability and safety. I would like the JCAA, under the direction of the Joint Logistics Commanders' Joint Aeronautical Commanders' Group to be a DoD focal point for addressing such concerns.

The JCAA should take a leadership role in bringing together all interested players in DoD, other government agencies, academia, and industry in a collaborative environment to ensure that all activities are coordinated as much as possible. These efforts should result in the development of consolidated requirements and a strategy, prioritized roadmap, and investment plan for satisfying them. It is important to adopt a business-efficient approach when dealing with identified shortfalls.

With respect to funding, I urge each of you to contribute resources for the first year. I will consider further funding to continue the effort.

Section 1067 of the FY 2003 National Defense Authorization Act directed the Secretary of Defense to designate an individual or board regarding the prevention and mitigation of corrosion of military equipment and infrastructure. Their duties would include establishment of policy, review and oversight of programs, and monitoring acquisition practices. Corrosion of aging aircraft is an important part of the larger corrosion issue. I want to ensure a close working relationship between this effort and the JCAA.

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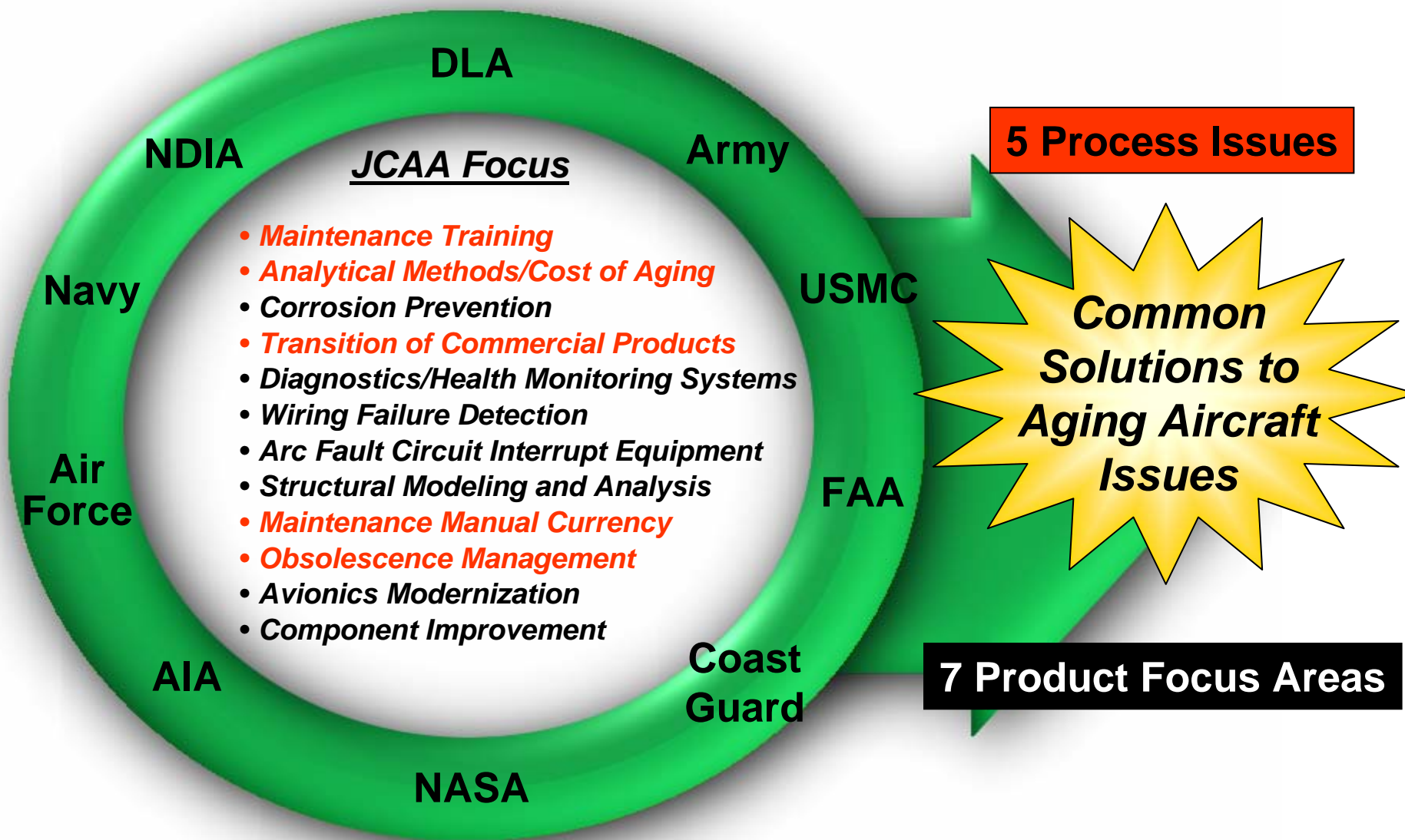
Dr. Spiros Pallas, the Principal Deputy for Strategic and Tactical Systems, phone (703) 695-7417 will be my liaison to the JCAA. As such, the JCAA should keep him informed of all its activities so he can provide an Office of the Secretary of Defense (OSD) perspective on aging aircraft issues and solutions. I look forward to our combined progress in finding solutions to these critical problems. I would like the JCAA to periodically brief me on its progress.

E. C. Aldridge Jr.

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# National Strategy Focus



OSD and JLC Charged JCAA to Develop a National Strategy

- **Shared R&D...Shared Risk**
- **Transition Opportunities**
- **Standardized Production**
  - **Across Services/Agencies**
  - **Materials, Components, Processes**
  - **Common Configuration, Lower Costs**
- **Eliminate, “Not invented here.”**
- **Common Solutions to Common Problems.**
- **Army, USAIR, US Coast Guard.. We all need to reduce our operating costs.**



***TOP  
New  
Initiatives***

- D** - Corrosion/NDI mapping
- D** - Finish systems roadmap
- D** - CPC product update

## Corrosion

- S** - Prognosis

Legend:  
**S** - Study  
**D** - Development  
**P** - Partially Complete  
**C** - Completed

- S** - Wiring system Metrics
- S** - National wiring forum

## Wiring Systems

- D** - Maintenance database system **(ON HOLD)**
- P** - Improve diagnostic/prognostic equipment
- P** - Training assessment
- D** - Arc-fault circuit breakers

**S** - Phase 0, Info Gathering

## Structural Health Management

***BOTTOM  
Ongoing  
Initiatives***

- D** - Propeller balancing

## Dynamic Components

- P** - Servocylinder seals
- P** - Electronic propeller control system

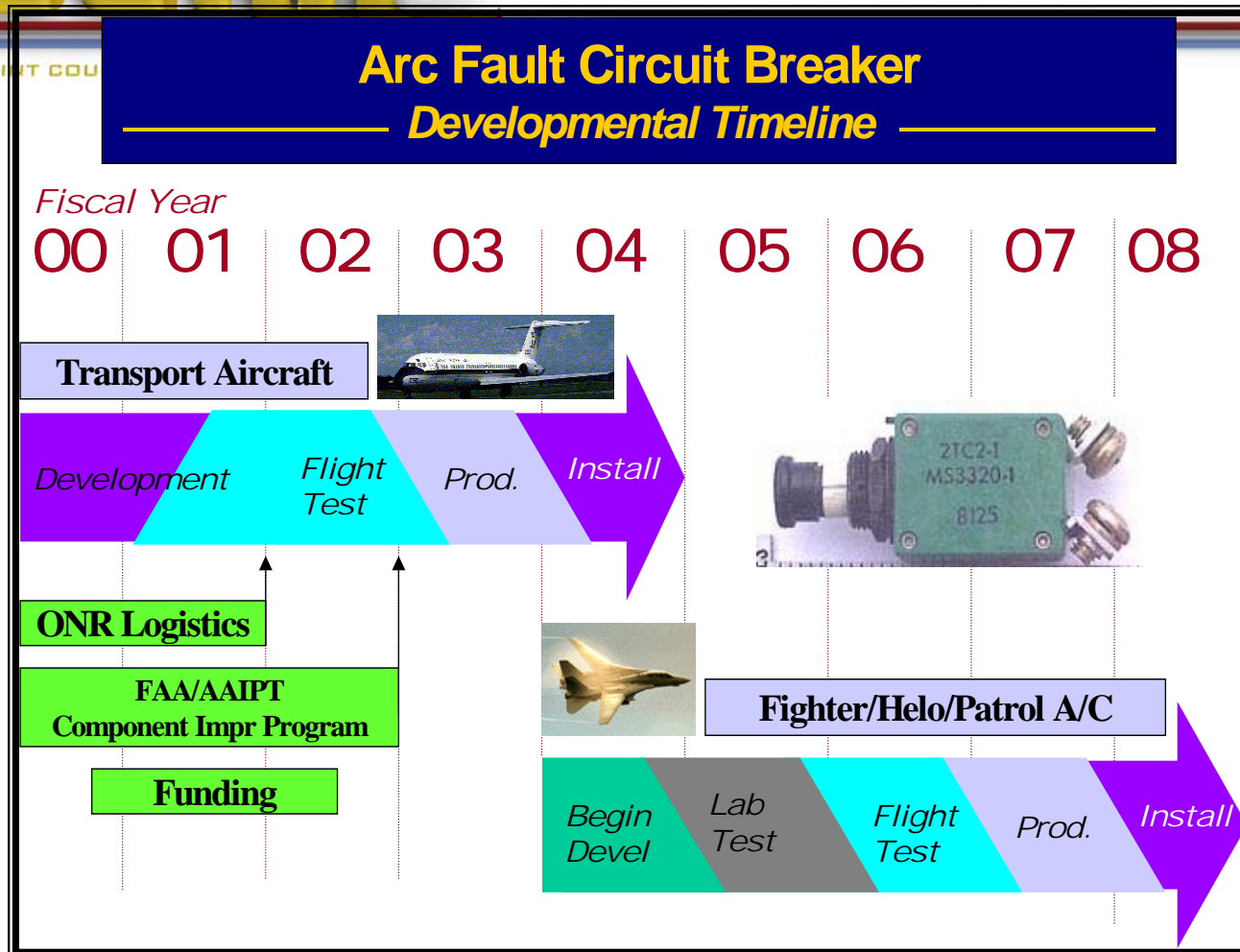
***AVSI Projects  
Support all  
Steering  
Groups***

- D** - AVSI
- D** - Lead Free Solder
- D** - AQEC

## Avionics

- D** - Extended -1553 data bus





- Initial (larger) size complete**
- Flying in Commercial A/C
  - Some prototype work in H-53
  - Feedback requested

**Smallest size under development**

**Core logistics Package being developed as a joint effort**

### FY-05/06 Challenges

- AFCB Test Equipment
- Core Logistics Package
- Transition (LRIP) Feedback

# Wiring

## Off-Board Diagnostics COSSI/CTTO

**TEST SYSTEMS**  
(MIL-STD-810 EXPLOSIVE ENVIRONMENT)

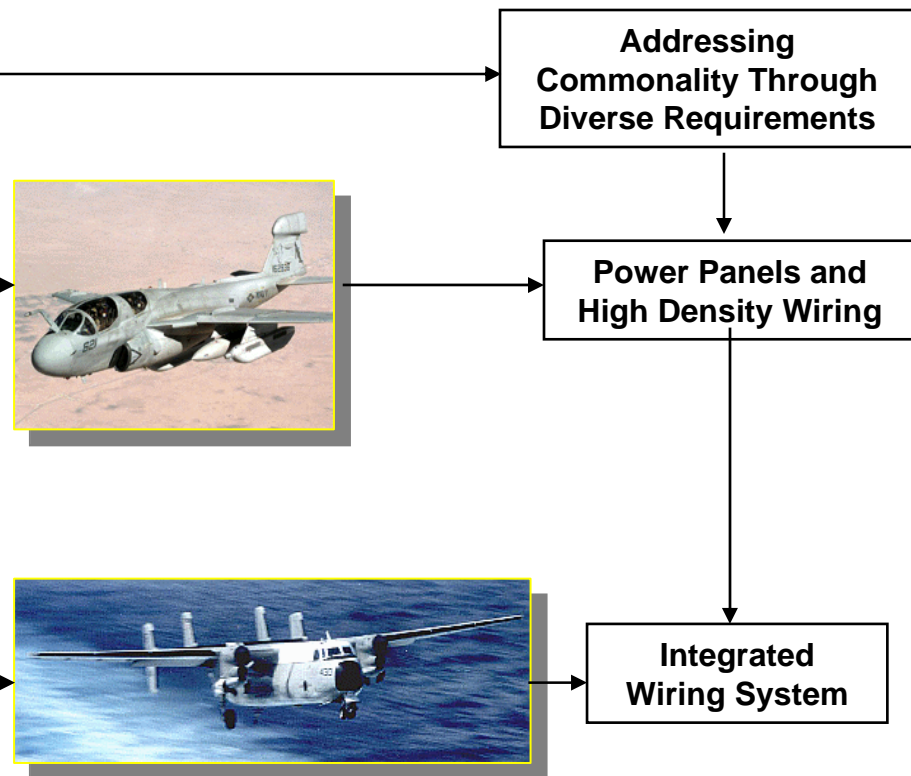
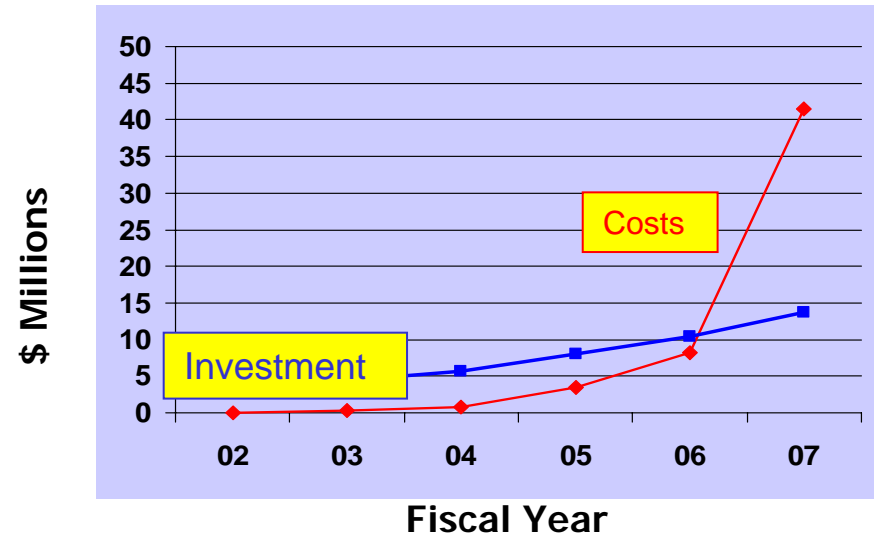
Ruggedized Laptop

Standing Wave Reflectometer - With Plain Text Display

Test Box/Expansion Units

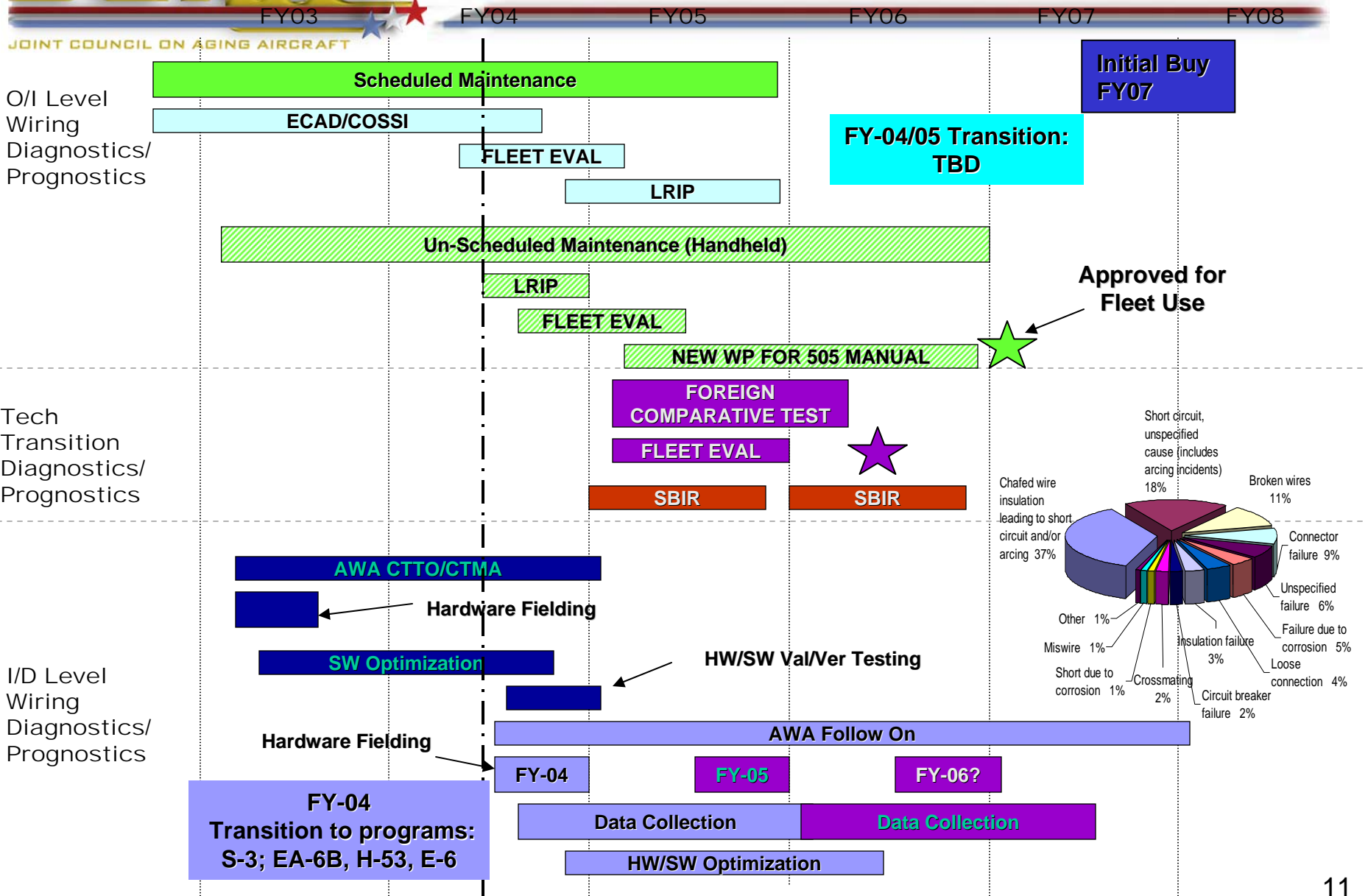
**Integrates:**

- Existing Off-The-Shelf Systems
- Interfaces To Communicate With Existing Maintenance Data Systems
- Technology Readiness Levels 6-8





# Wiring Diagnostics Efforts



**Cost of Aging**

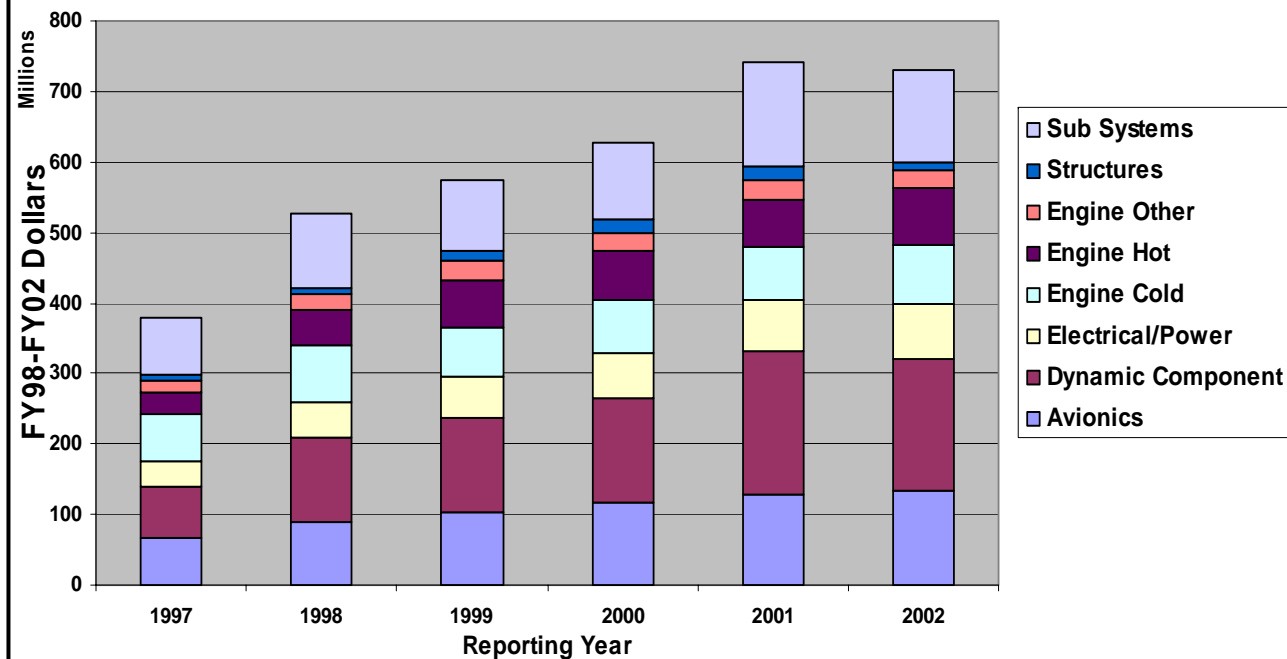
**Diminishing Manufacturing Sources**

**Joint Pubs and Tech Orders**

**Training**

**Managed by the Primary Members**

### All Navy Components Over Time By Category



- Component Repair growing by an average of 7.8% per year

- Age Appears As Primary Contributor to ALL DLR Categories

*• Obsolescence a Key Factor for Avionics Cost Growth*

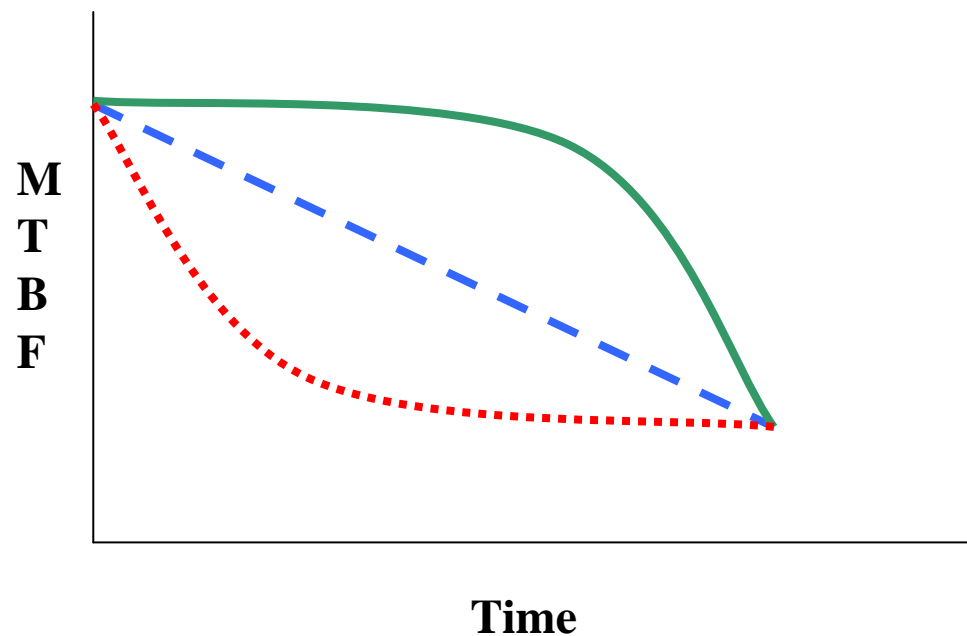
- Obsolescence impact to Naval Aviation alone = \$280M

Root Cause Analysis	Age	Obs	Vndr	Dsgn	Log	New Item	Maint Plan
Avionics	27.5%	45.0%	1.3%	8.1%	8.1%	9.4%	0.6%
Dynamic Component	61.0%	0.0%	7.3%	3.7%	11.0%	12.2%	4.9%
Electrical/Power	40.6%	4.7%	6.3%	37.5%	3.1%	3.1%	4.7%
Engine Cold	64.2%	0.0%	0.0%	0.0%	7.7%	28.2%	0.0%
Engine Hot	86.2%	0.0%	0.0%	0.0%	0.0%	10.3%	3.4%
Engine Other	46.7%	8.3%	0.0%	23.3%	20.0%	1.7%	0.0%
Structures	76.7%	3.3%	0.0%	13.3%	0.0%	3.3%	3.3%
Sub Systems	52.9%	5.9%	4.4%	10.3%	14.7%	10.3%	1.5%

## Problem: Mitigation of obsolescence is directly tied to marrying of component with system reliability

Avionics /COTS performance

- *Predict (Manage) wear-out of devices often unknown*
- *May require changes to way we test and screen components*
- *Adds cost to find component replacements*



## Currently Funded AVSI Projects

- 16 Mitigating Radiation Effect on Semi Conductors
- 17 *Accelerated Wear out of Semi Conductors*
- 18 Thermal Management of COTS Based Avionics

	Agency	2004	2005	2006	2007	2008	2009	2010	2011
<b>Corrosion Preventative Compounds (CPCs)</b>									
<b>CPC Military Specifications</b>	---	0	0						
MIL SPEC Performance Enhancements	NPRE Navy								
New SPEC Development (Next Gen CPCs)	NPRE Navy								
<b>MIL-L-87177</b>	---	0	0						
Evaluation of Reformulated Non-ODS Version (Navy)	NPRE Navy								
Dem/Val of Reformulated Non-ODS Version/F-16	AF								
<b>Next Generation CPCs</b>	---	0	0						
AF CPC R&D	AF								
AF CPC T&E	AF								
Advanced CPC Technology Demonstrations (AF)	AF								
New Inhibitors (AF)	AF			X	X	X	X	X	X
Optimize Inhibitors (CICs)	AF			X	X	X			
Tailored Inhibitors by Failure Mode	AF						X	X	X
Pigmented & UV Stable CPCs	NPRE Navy								
High-Temperature Resistant CPCs	NPRE Navy								
Next Generation HSS CPCs	NPRE Navy								
Internal CPC Demonstration	NPRE Navy								
Optimized Application of CPCs (Army)	Army								
Advanced CPC Technology Demonstrations (Navy)	NPRE Navy								

**Sustaining Efforts**  
 Prototyping, testing and logistics

**R & D Transition**



POM Dollar Inputs in \$K

-  < \$50K
-  \$50K - \$200K
-  \$200K - \$1M
-  > \$1M

- **The Older the Aircraft the More It Costs to Keep It Flying.**
- **Common Processes Fall Under Existing Requirements Documents**
  - **Cost Effectiveness, Reliability, Maintainability**
  - **Corrosion Treatment, Dynamic Components**
- **Everybody Benefits from Cooperation**
  - **Understanding Age Impacts/Costs**
  - **Establish Common Performance Requirements**
  - **Manage Common Process R&D/Transition**
  - **Increases “Power” of Investments**

## Aging Aircraft History

