

NAVAIR

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Software Acquisition Process Improvement

Topics

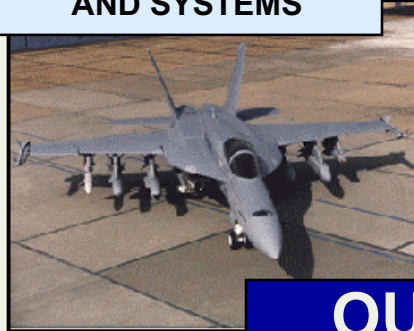
- Background
- Process Improvement Journey
- NAVAIR Acquisition Improvement Plan

NAVAIR Products & Capabilities

AIR ASW / ASUW



SEA BASED AIRCRAFT AND SYSTEMS



MARITIME WEAPONS



MARINE EXPEDITIONARY AVIATION SYSTEMS



AIRCREW / MAINTENANCE TRAINING SYSTEMS



OUR CORE PROCESSES . . .

. . . WE EXECUTE (ON BEHALF OF THE USER)

ACQUISITION
MANAGEMENT

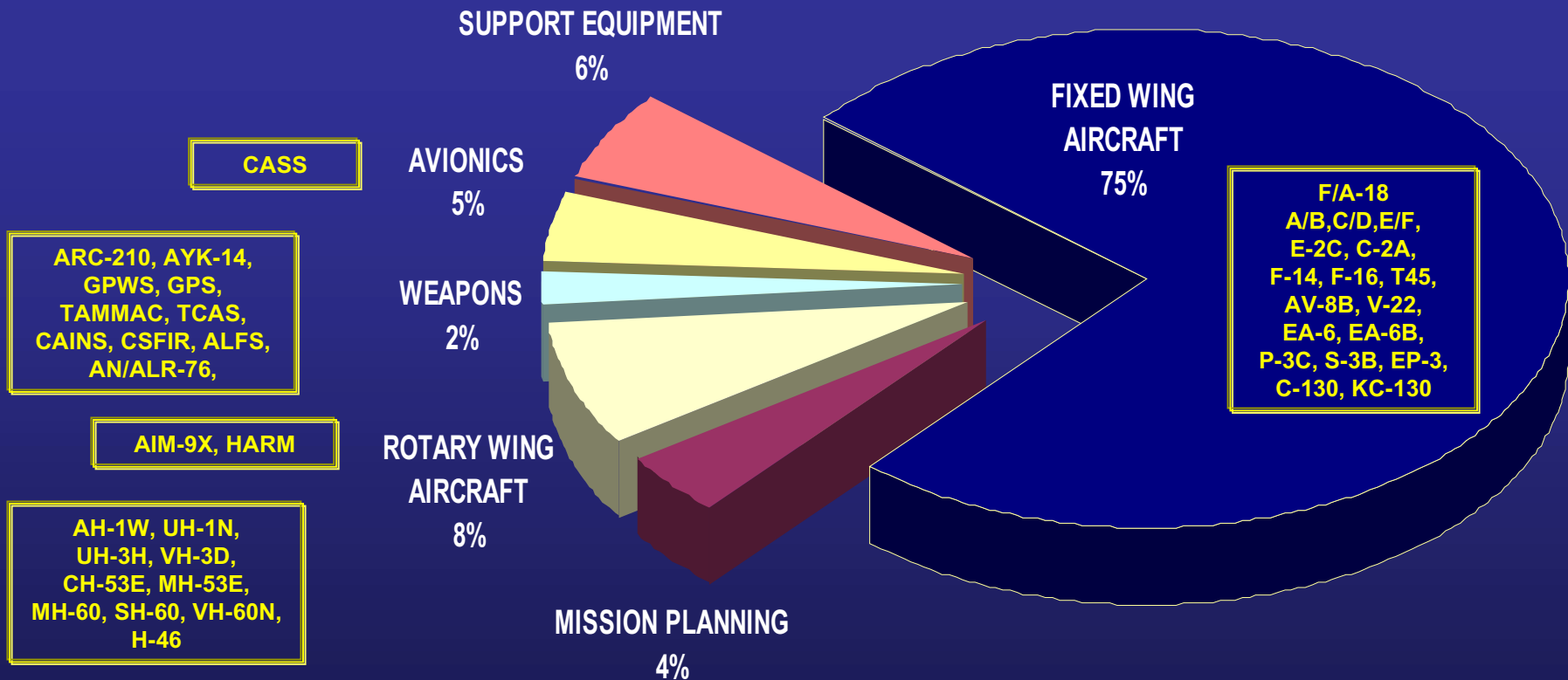
REPAIR /
MODIFICATION

TEST AND
EVALUATION

IN-SERVICE ENGINEERING
AND LOGISTICS SUPPORT

TECHNOLOGY, RESEARCH & DEVELOPMENT,
HARDWARE & SOFTWARE PRODUCTS

**. . . MORE THAN AIRCRAFT AND WEAPONS,
TOTAL SYSTEM CAPABILITY AND SUSTAINMENT**

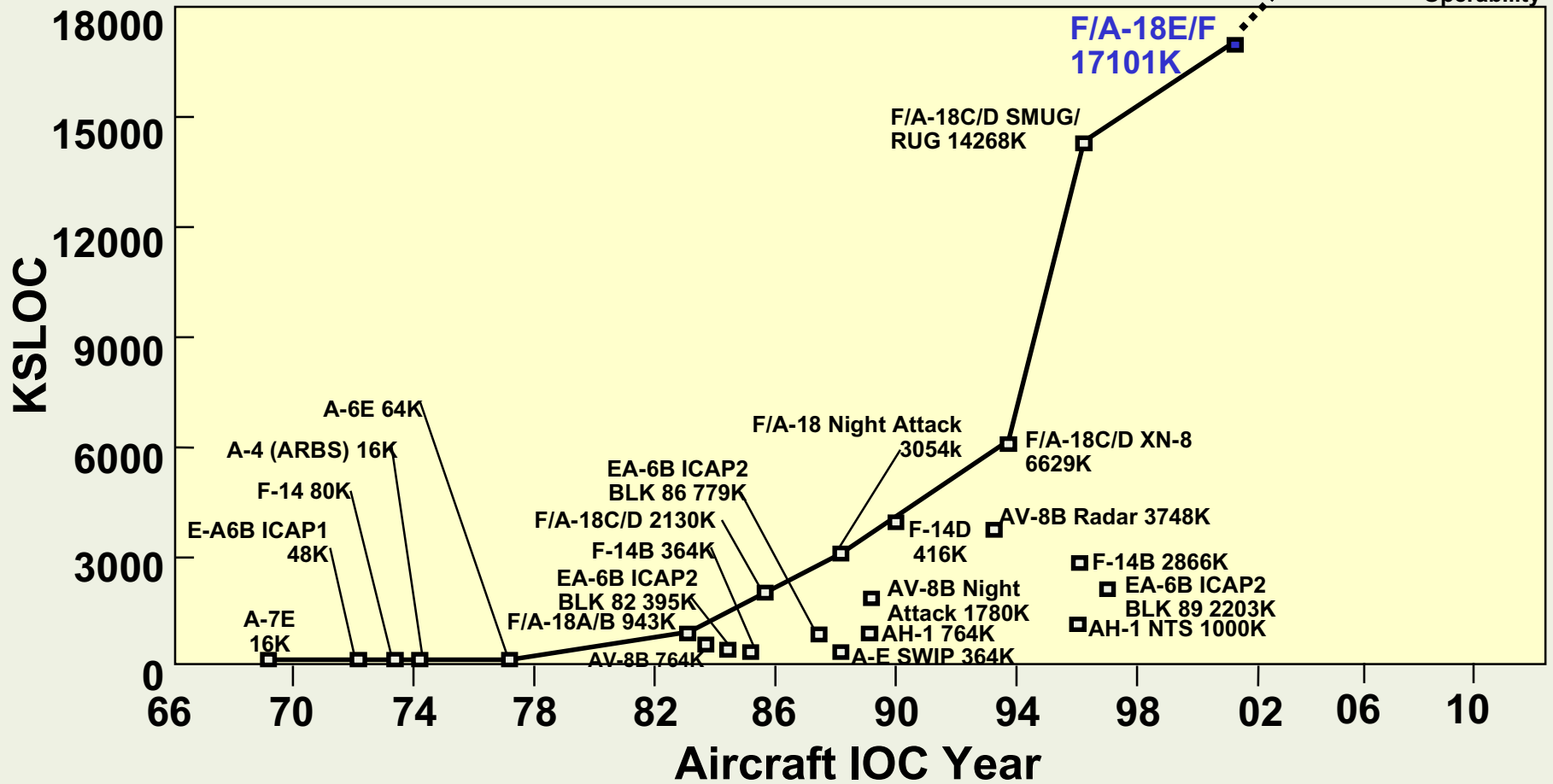


Over \$2B on Software Development and Related Activities Per Fiscal Year

65M SLOC Operational Software
31M SLOC Support Software

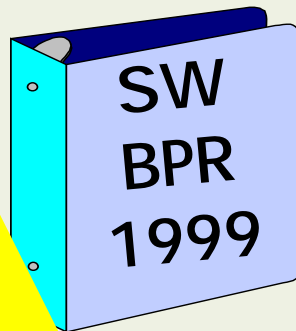
*Represents Approximately 50%
 Of NAVAIR Software*

System Environment



- JSF
- UAVs
- NCW
- Inter-System Operability

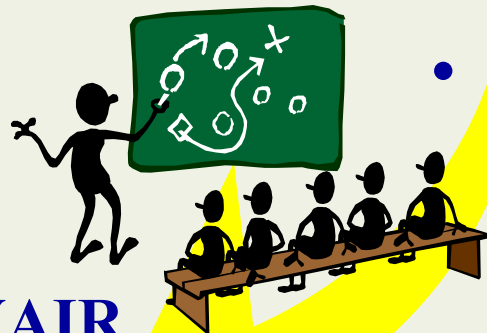
Setting the Stage



- Software Business Process Engineering Study
 - The compelling reason to change



- System Leadership Council
 - The Enablers & Policy Makers



- Software Leadership Team
 - The Facilitators & Planners

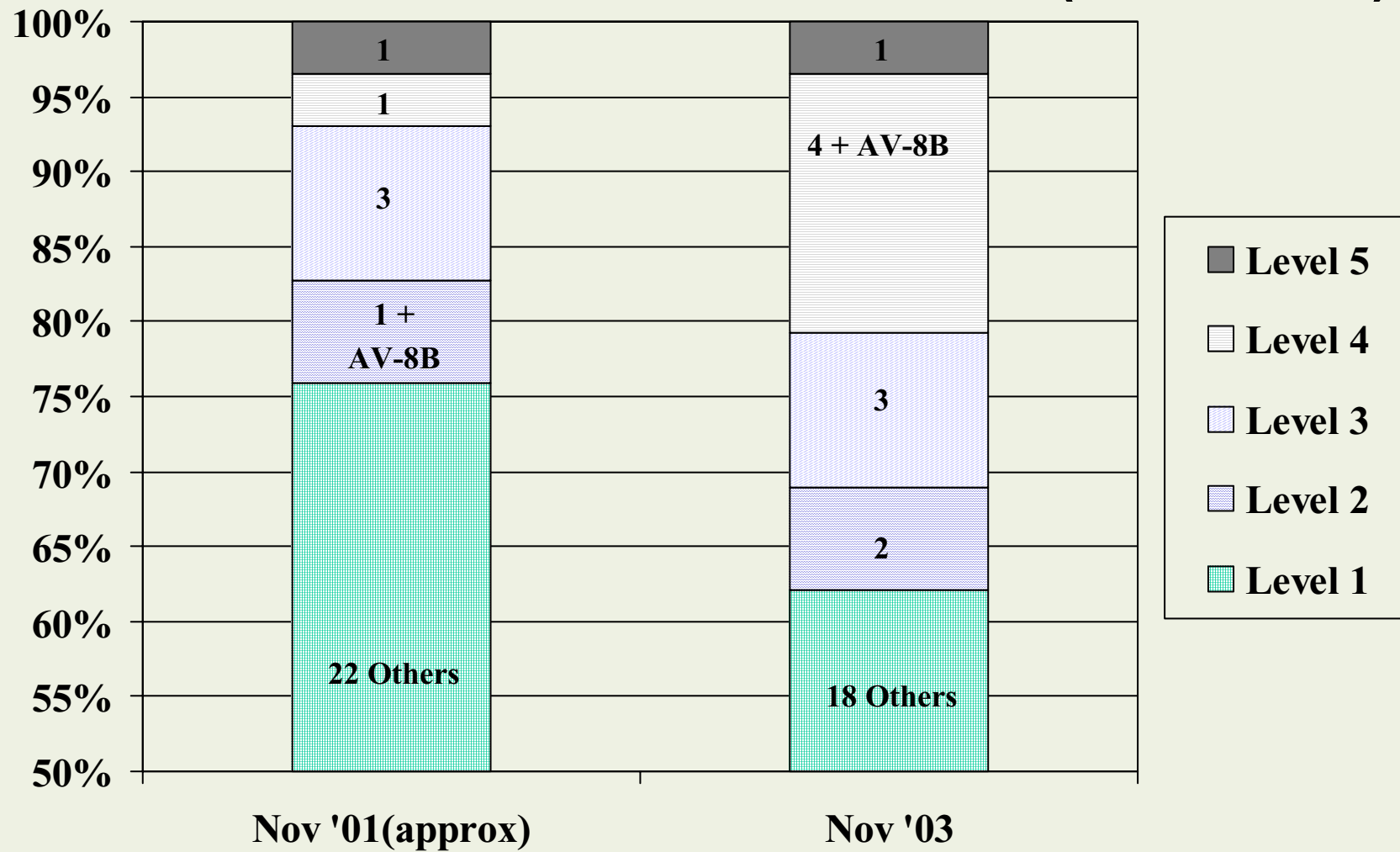
**NAVAIR
Software
Strategic
Plan**



- Software Resource Center
 - The Coaches & Doers

SW-CMM LEVEL RATINGS

SOFTWARE SUPPORT ACTIVITIES (29 TOTAL)



Team Software Process

Used by organic maintenance and developer programs

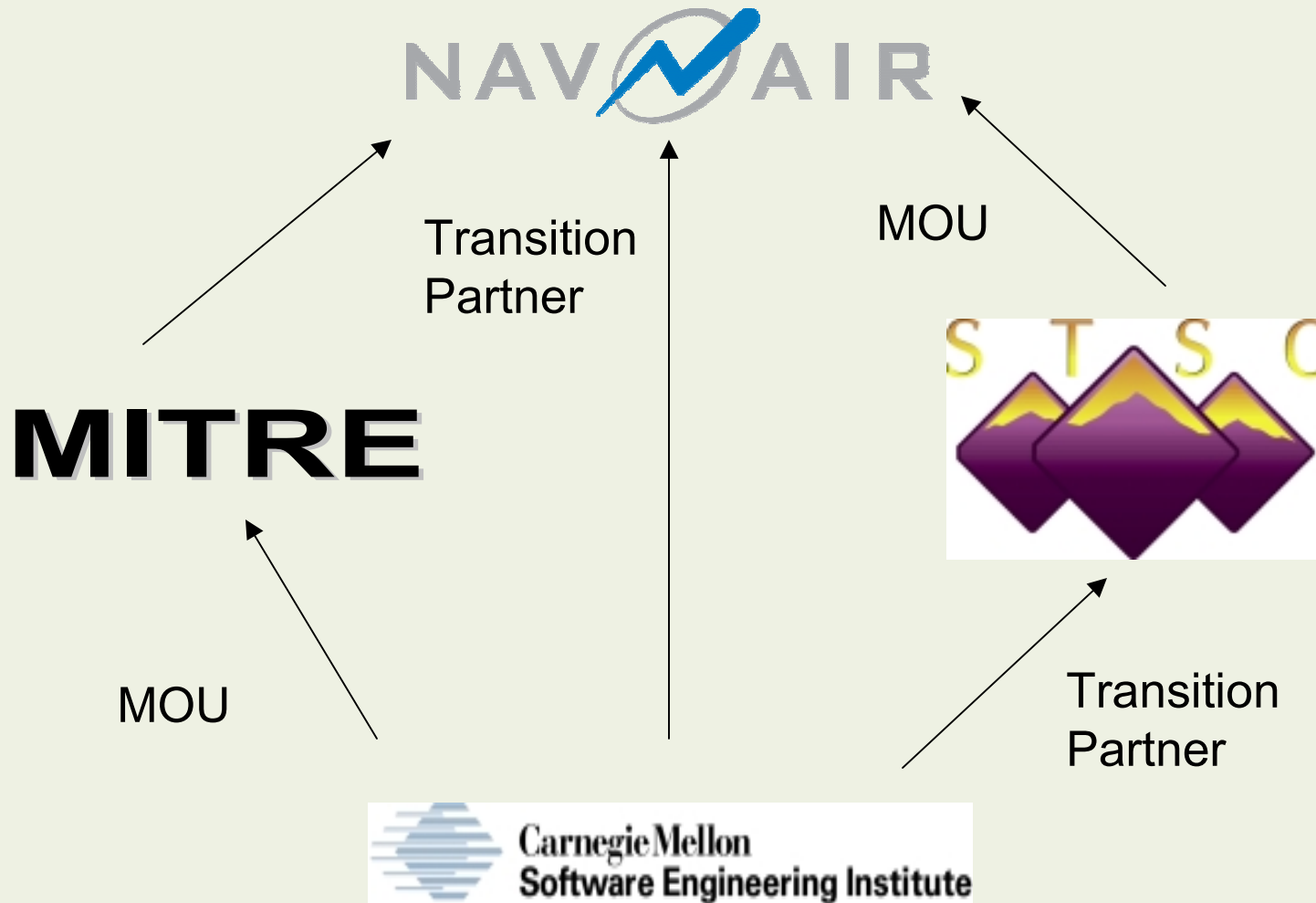
11 projects ongoing

7 projects planned

Resulted in improved predictability of cost, schedule and quality

Four NAVAIR personnel have been trained as PSP instructors and TSP coaches

NAVAIR MITRE SEI STSC Collaboration Integration



NMSS Collaboration Objectives

- Support NAVAIR activities with the implementation of disciplined and rigorous software and system engineering practices.
 - to the acquisition of software intensive systems
 - To meet the requirements of Public Law 107-314, Section 804
- Enhance and accelerate technology transition to NAVAIR organic resources
- Assist in the continued development of current organic acquisition process improvement capabilities and expertise
- Positively impact NAVAIR's ability to acquire near defect free software intensive systems on time, every time.

The Software Engineering Institute

- DoD R&D laboratory FFRDC sponsored by the Undersecretary of Defense for Acquisition, Technology, and Logistics
- Situated as a college level unit at Carnegie Mellon University, Pittsburgh, PA
- Mission is to provide leadership in software engineering and to transition new software engineering technology
- Encouraged to support industry in pre-competitive technology R&D and in technology transition activities

Best Practices Used

- Software Acquisition CMM
- Software Acquisition Planning
- Source Selection Technical Reviews
- Appraisals and Assessments (SCAMPI)
- Training
 - Executive Overviews
 - Model
 - Appraisal Methodology
- Measurement Programs

Best Practices Used -2

- PSP/TSP
- CMMI
- S/W Architecture
- Pre-RFP Strategies (Documentation, Acquisition Strategy, Technical Advisors to Source Selection)

The MITRE Corporation

- Operates three FFRDCs
 - Systems engineering and integration work for Department of Defense C3I.
 - Systems research and development work for the FAA and other civil aviation authorities.
 - Strategic, technical and program management advice to the IRS and Treasury Department.
- A not-for-profit corporation combining systems engineering and information technology to address issues of critical national importance.

Multi Mission Maritime Aircraft (MMA)

- Program early in the life cycle
- RFP development – included systems & software engineering verbiage
- SCAMPI appraisals of contractor process capability
- Introduced process-based philosophy in the acquisition
- Prepared government integrated program team for appraisals
- Future architecture focus anticipated

Software Technology Support Center (STSC)

- US Air Force at Ogden Air Logistics Center, Hill AFB
- Provides best software practice consulting services
 - CMMI
 - Software Acquisition
 - Assessments
 - Project Management
 - Test Engineering
 - Systems Engineering
 - Personal Software Process (PSP)
- An SEI Transition Partner

STSC NAVAIR Partnership

- China Lake, CA
 - AV-8B
 - PSP I/II for Engineers
 - CMM Snapshot
 - F-18
 - CMM Snapshot
 - Intro to CMMI
- Jacksonville, FL
 - PSP I/II for Engineers
 - PSP/TSP for Executives/Managers

STSC NAVAIR Partnership

- Orlando, FL
 - PSP/TSP for Executives/Managers
- Patuxent River, MD
 - P-3
 - Intro to PSP
 - PSP I/II for Engineers
 - PSP/TSP for Executives/Managers
 - TSP

STSC NAVAIR Partnership

- Pt. Mugu, CA
 - F-14
 - Intro to PSP
 - PSP I/II for Engineers
 - PSP/TSP for Executives/Managers
 - CMM snapshot
- San Diego, CA
 - PSP I/II for Engineers
 - PSP/TSP for Executives/Managers

Lessons Learned – Developer-focused SW Improvement Experiences

- **Senior management support & involvement**
 - Set policy, vision, strategies & goals
 - Identify measures & monitor performance
- **Dedicated resources to execute the strategies**
 - Educating project team leaders on benefits
 - Educating practitioners on methods
 - Seed funding for project team SW improvement initiatives
 - Improvement initiatives must be run like a projects

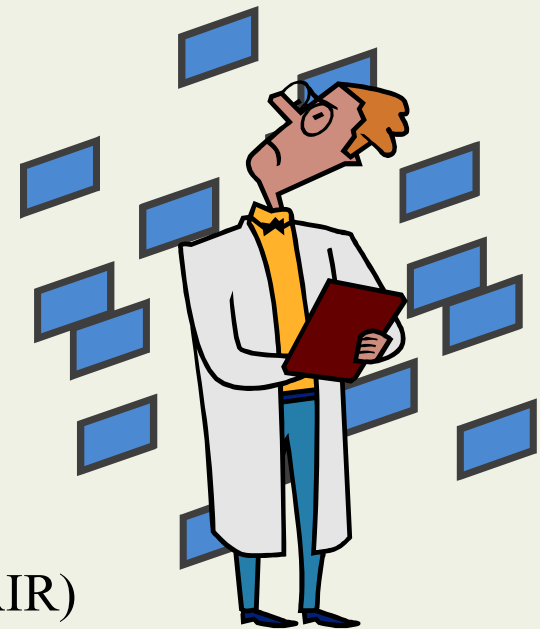


Defense Authorization Act of Fiscal Year 2003, Section 804

- A new public law
 - Enacted by Congress December 2002
 - DoD guidance issued March 2003
 - Requires military departments and select defense agencies to establish software acquisition process improvement programs
- Focus is on improving how the DoD acquires software

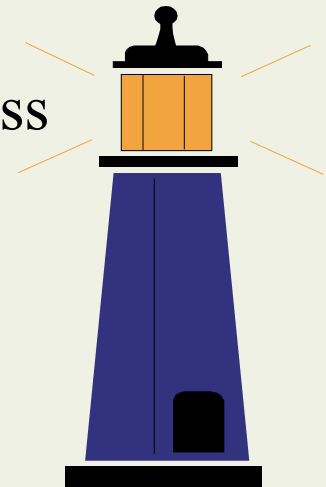
Required Software Acquisition Improvement Process Areas

- DoD's initial minimum set
 - Acquisition planning
 - Requirements development & management
 - Configuration management
 - Risk management
 - Project management & oversight
 - Test & evaluation
 - Integrated team management
 - Solicitation & source selection
 - Performance measurement (added by NAVAIR)
- Processes must be documented, performed and continuously improved



NAVAIR's 804 Implementation

- **Phase 1 – Requirements (done 12/03)**
 - A. Build an SW acquisition process improvement CoP
 - B. Identify NAVAIR Instructions that map to 804
 - C. Communicate 804 requirements
 - PEO(A) 11/17; PEO(W) 11/24; PEO 1.0 12/2; PEO(T) 12/5
- **Phase 2 – Gap Analysis & Planning (mostly by 4/04)**
 - A. Revise NAVAIR Instructions as necessary
 - B. Develop a NAVAIR Software Acquisition Process Improvement Program (SAPIP)
 - C. Build or identify a support infrastructure
- **Phase 3 – Implementation**
 - A. PMs execute to NAVAIR Instructions



NAVAIR Plan

(Software Acquisition Process Improvement Program – SAPIP)

- Owned by the Program Mgmt Competency
- Approved by the SLC (target March '04)
- Implemented by Assistant PEOs
- Supported by the SRC & Competencies
- SAPIP status
 - Phase 1 of plan has been implemented
 - Outstanding tasks: Continue orientations, define compliance measurements, execute & track progress

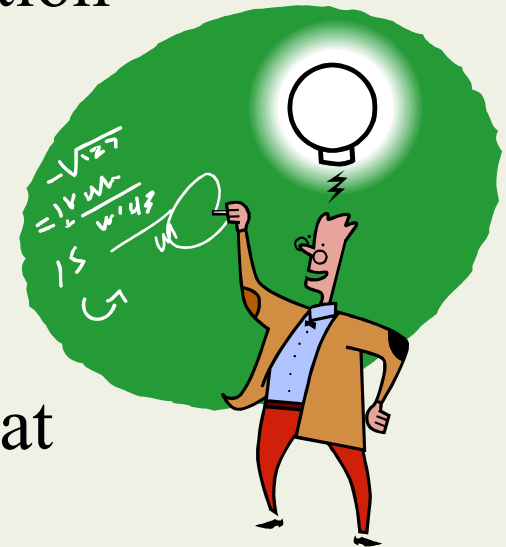
Implementation Steps for NAVAIR PMs

- Gauge whether you comply with the updated NAVAIR Instructions
- Validate and document your acquisition processes
 - Processes include entry criteria, steps, exit criteria and measurements
 - Competencies are responsible for any additional how-to processes
- Develop and implement software acquisition process improvement plans and measurement programs

[per NAVAIRINST 5234.2 & 5234.5]

Acquisition-focused SW Improvement Hypotheses

- Do what makes sense for your organization (Section 804 is not prescriptive)
 - No clear, singular improvement model for benchmarking; pick one that supports your business goals
- Need to emphasize and re-emphasize that Section 804 is about the acquirer
- Lessons learned from SW development improvement are directly applicable



Support for Software Acquisition Process Improvement

- NAVAIR's Software Resource Center (SRC) will help acquisition programs to:
 - Identify their improvement goals and performance measures
 - Identify, document and baseline their current processes against best practices
 - Develop a measurement program and process improvement POA&M
 - Define their improvement program training and support needs
 - Find resources to help satisfy those needs



Acquisition Improvement Is Underway Within NAVAIR

