Future Airborne Capability Environment (FACE)

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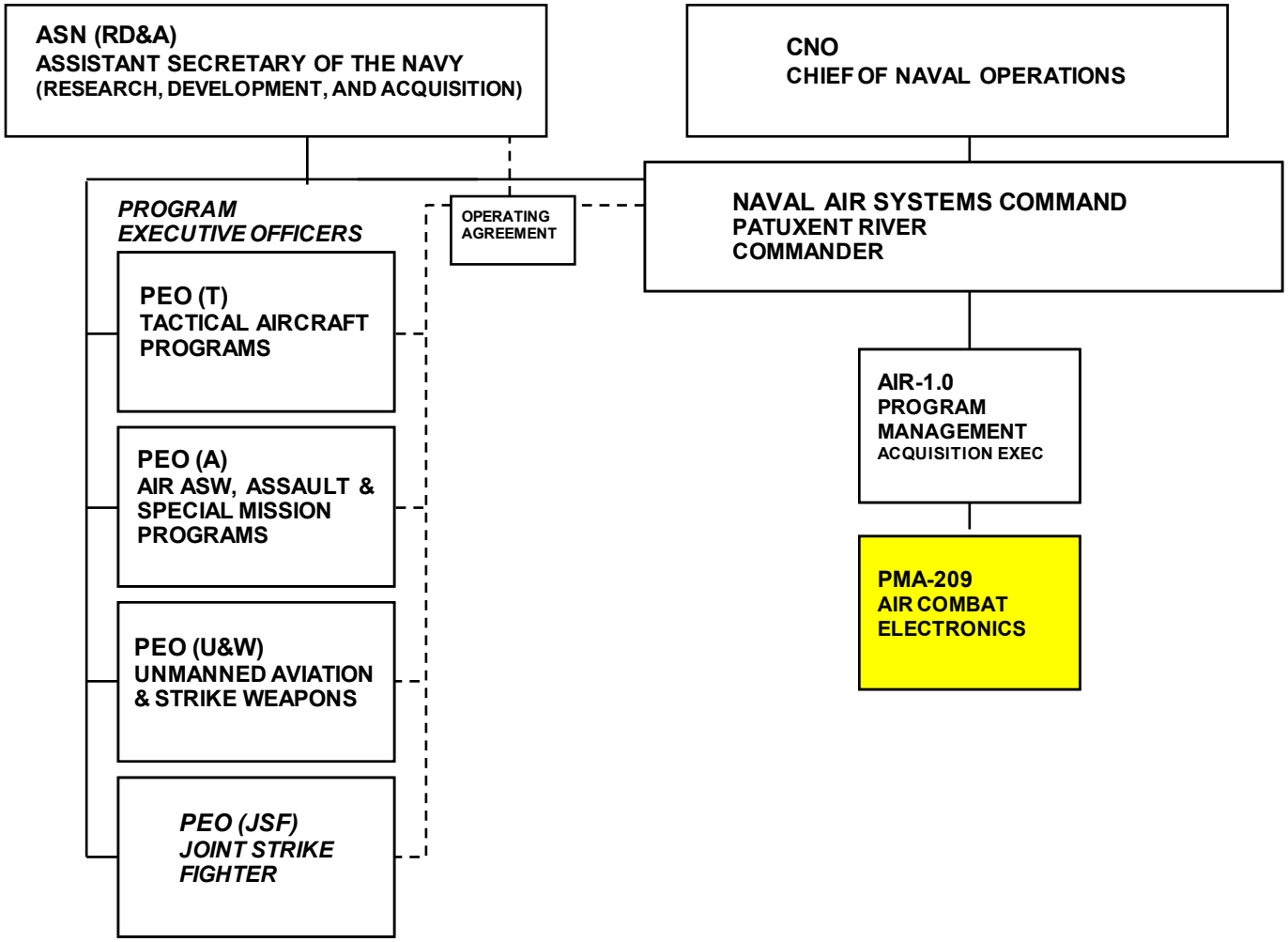
This briefing may contain references to projected U.S. Government plans and potential capabilities.

Mention of them in no way guarantees that the U.S. Government will follow these plans or that any of the associated system capabilities, if developed, will be available or releasable to foreign governments.

Who are we?


ASN (RD&A)
ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT, AND ACQUISITION)
CNO
CHIEF OF NAVAL OPERATIONS
PROGRAM
EXECUTIVE OFFICERS
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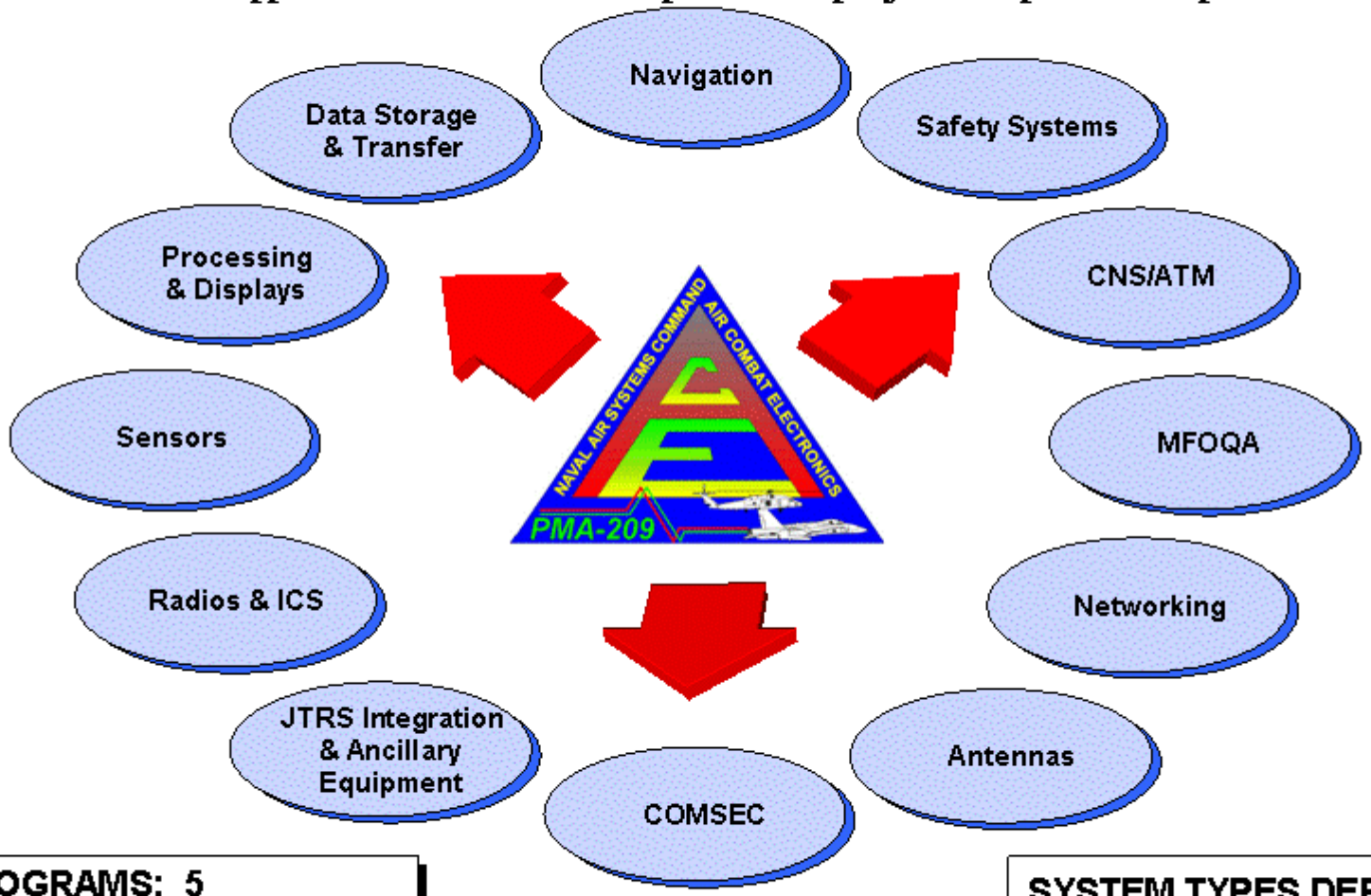
PATUXENT RIVER
COMMANDER
PEO (T)
TACTICAL AIRCRAFT
PROGRAMS
PEO (A)
AIR ASW, ASSAULT &
SPECIAL MISSION
PROGRAMS
PEO (U&W)
UNMANNED AVIATION
& STRIKE WEAPONS
PEO (JSF)
JOINT STRIKE
FIGHTER
AIR-1.0
PROGRAM
MANAGEMENT
ACQUISITION EXEC
PMA-209
AIR COMBAT
ELECTRONICS

PMA209 Summary

PMA209 champions development, integration and cradle-to-grave support for common avionics solutions in safety, connectivity, mission computing and interoperability. We do this by balancing multiple platform requirements into common or family of systems solutions that leverage prior platform investments, common architectures and interfaces, and coordinate opportunities across the enterprise when platforms require new capabilities.



ACAT PROGRAMS: 5
POTENTIAL ACAT PROGRAMS: 0
AAPs: 1
OTHER: 12

Resource Sponsor:
OPNAV N88-RADM Philman
OPNAV N88X-CAPT Lorentzen
OPNAV N6/N2-CAPT Tettelbach

SYSTEM TYPES DEPLOYED: 341
Total Obligation Authority FY09:
$403.0M

Problem Statement

- The majority of mission capability expansion for current platforms will come from integration of software or systems controlled by software interfaces.
- The lack of common systems and standards among aircraft platforms has decreased interoperability while increasing development and integration costs and development cycle times.
- Must develop modern architecture or environment to set up the foundation for the future.

FACE Overarching Requirements

- Common airborne computing environment
- Define standard architectures
- Addresses network interoperability
- Keep legacy aircraft relevant
- Affordable life cycle cost for avionics systems
  - Cost effective rapid insertion of new capabilities
  - Addresses expensive cockpit upgrades
  - Alleviate long lead times and extensive testing

HW/SW Considerations

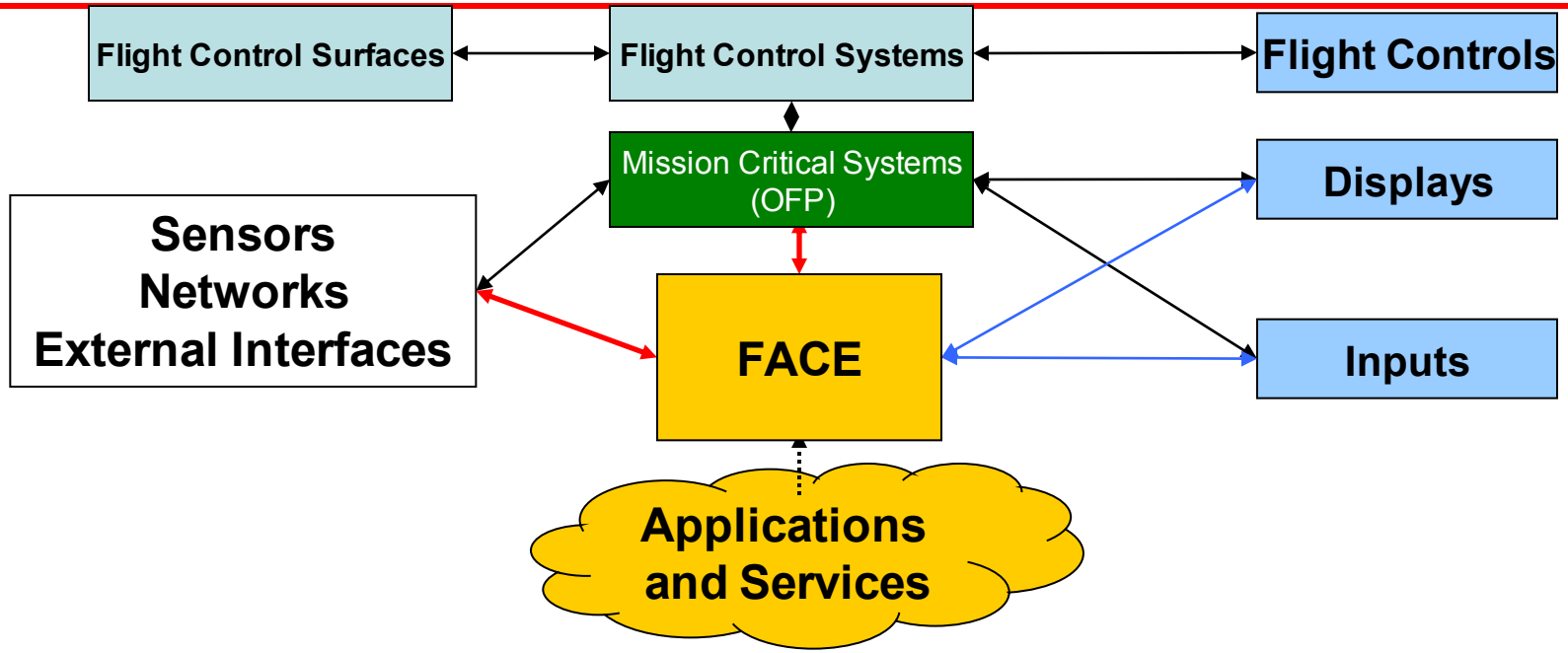
- Allows Plug and Play capability upgrades
- Open architecture
- Modular
- Robust partitioning
- Shared, configurable and managed resources
- Guest environments/operating systems
- Hardware independent
- Common APIs
- Real-time and deterministic environment
- Demonstrate software transportability
- MLS
- MILS
- Health monitoring
- Fault management

FACE Characteristics

- **FACE is based on:**
  - **Open architecture operating environment**
  - **Open, Modular, Partitioned, Scalable, Portable, Extendable, and Secure computing environments**
  - **A software library of cross-platform portable applications focused on capabilities**
  - **Government configuration management**

Future Airborne Capability Environment (FACE) provides an evolutionary approach to increased capability

Future Airborne Capability Environment (FACE)



KEY IDEAS

- Common Interpretation of Standards for Sensors and Networks
- Common Software Applications isolated from unique platform software

Common applications across platforms ensures interoperability and supportability

Building the Road to FACE

- **The easy part**
  - **Open, modular, partitioned software**
  - **Already being done**
    - **Commercial**
    - **CNS/ATM**
- **The hard part**
  - **Technical**
    - **Standards and interfaces**
    - **Security - MILS, MLS, IA, AT**
    - **DO-178B**
    - **Hardware Independent**
  - **Paradigm shift required**
    - **A Capability based requirement in a Platform Centric world**
    - **Cross-platform commonality**
    - **Industry cooperation**
    - **Establish a software focus**

CNS/ATM = Communications, Navigation, Surveillance / Air Traffic Management
MILS = Multiple Independent Levels of Security
MLS = Multi-Level Security
IA = Information Assurance
AT = Anti-Tamper

Current FACE Initiatives

- Academia Research
- Industry Discussions
- NAVSEA Initiatives
- Other Service Initiatives
- Draft Standards and Interfaces in work

Top-level Schedule

Activity	Completion Date	Players
Select Academic Partners	Feb 2010	Gov't team
Draft performance based SOW	Feb 2010	Gov't team
Solicit inputs to SOW	Feb-Mar 2010	Academia/Gov't team
Approve SOW	Mar 2010	Gov't team
Issue RFP	Apr 2010	Gov't team
Award contract	May 2010	Gov't team
Basic Research: innovation and discovery	May-Dec 2010	Academia/Gov't team
Applied Research: pair to real-world problems	Dec 2010-Mar 2011	Academia/Gov't team
Advanced Technology Development: conduct demonstrations	Nov 2011 or sooner	Academia/Industry/ Gov't team

Initiate FACE in FY-12

- **Compete:**
  - Initial computing environment
  - Initial hardware suite (Off the shelf, non proprietary, based on environment's needs)
  - Initial capability software applications
  - Toolset for software developers to use in writing software for this environment
- **Results:**
  - Efficient, rapid, reuse of software applications for the environment
  - Software Libraries
  - Ease of updating capabilities through software
  - Decrease in testing needed on software modifications

Summary

- Problem
  - Complex HW/SW configuration and interoperability
- Near-term studies
  - Research and identify possible solutions
- Present concept
  - White paper and supporting efforts
- Set the standards

- Long-term relationship

POCs

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