The Challenges of Fielding a System Across Services and Major Defense Acquisition Programs

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Agenda

• JPM-IP Mission

• Coordination with Major Defense Acquisition Programs

• Airworthiness Certification
Mission: The Joint Project Manager for Individual Protection (JPM-IP) is responsible for providing percutaneous, inhalation, and ocular protection against chemical and biological threats to our Nation's Warfighters.
JSAM Background

• JSAM is a joint program tasked with developing a chemical/biological (CB) respirator for fixed and rotary wing aviation personnel
  • Planned for Air Force, Army, Marine Corps, and Navy aircraft
  • Family of Systems includes 4 variants:
    - Apache
    - Fixed Wing (FW)
    - Rotary Wing (RW)
    - Joint Strike Fighter (JSF)
Coordination with MDAPs

JSAM-JSF
JSAM-JSF System Description

- JSAM-JSF is a chemical/biological (CB) protective respirator that will provide
  - Above the neck percutaneous, ocular and respiratory CB protection for JSF pilots
  - Simultaneous CB, hypoxia and anti-G protection (as required)
  - Minimized heat stress
- JSAM-JSF will integrate with the JSF
  - Below the neck CB protective ensembles
  - Life Support System
  - Helmet Mounted Display (HMD) system
  - Effectively employable by JSF pilots in the threat and operational environments
Coordinating Organizations
Program Risks

- JSAM-JSF is not a stand-alone program of record and is being executed by JPM-IP as a component of the JSF
  - JPM-IP leads and funds RDT&E
  - JSF PO leads and funds operational testing and procurement
- Interfacing equipment is still in development
  - JSF PO design decisions can impact JSAM
  - From JSF perspective, JSAM may be the preferred method for addressing an issue and could result in additional cost, schedule and performance risk
- Potential for JSF schedule to shift
  - Extended schedule could increase costs
  - JSF schedule shift to right post JSAM-JSF contract award may increase JPM-IP funding requirements
Mitigation Actions

• MOA between Joint Program Executive Office for Chemical/Biological Defense (JPEO CBD) and JSF PO
  • Signed January 2010
  • Documented agreements
    • Test and Evaluation Master Plan
    • Systems Engineering Plan
    • Performance Specification
  • JPEO CBD has established an MDAP Trail Boss (JPM Collective Protection)
    • Clarify requirements and determine what materiel solutions to provide the MDAP
    • Identify optimum capability set solution
    • Develop Integrated Master Plan
    • Identify and execute resources
    • Draft MOA between JPEO CBD and MDAP
CBRN MDAP Support Function

Managing Processes for Effective Collaboration
Airworthiness Certification

JSAM FW
JSAM FW System Description

• JSAM FW is a lightweight CB protective respirator that will
  • Be compatible with existing mission and life support equipment and CB ensembles
  • Integrate with all aircrew stations and existing life support equipment
  • Provide improved field-of-view, comfort, mobility, and reduced heat stress over legacy systems
  • Replaces AERP (USAF), M-45 (USA) and A/P22P-14(V) (USN)
Airworthiness Qualification/Certification

- Airworthiness Qualification or Certification - an analysis, design, test, and documentation process used to determine that an air vehicle system, subsystem, or component is airworthy
  - Process and terminology varies by service but the product is the same

- Airworthiness is a subjective process that is configuration specific and requires a high level of demonstration for each unique configuration, creating an untenable scenario
  - 1 product, 1 aircraft, 1 service = difficult
  - 1 product, 3 services, 130+ aircraft = extremely difficult

- JSAM FW and RW programs have experienced extreme difficulty executing individual airworthiness certification programs with each of the services

- Does it have to be this difficult?
  - Some of our problems were self induced but the scenario is extremely difficult at best
  - We have joint development programs, why not joint airworthiness programs?

Airworthiness Qualification is Independent of the Operational Test Agency
It’s just a mask, how complicated can it be?
JSAM FW Interfaces
Airworthiness Terminology

- Certification and Qualification – terms are synonymous; Air Force and Navy use certification; Army uses qualification
- Safe to fly – Air Force and Navy term for flight release for a new or non-standard aircraft configuration that has not achieved full airworthiness certification
- Airworthiness Release (AWR) - authorization to fly an aircraft in a non-standard configuration. Used for a/c that have not achieved full Airworthiness Qualification
- Test Flight AWR – flight release for a test aircraft
- Safety of Flight Release – Army term that pre-dates AWR
- Interim Flight Clearance (IFC) – Navy term for temporary approval for flight for a non-standard configuration or operation outside the envelope defined in NATOPS and NATIP
- Permanent Flight Clearance (PFC) – Navy term for fleet-wide approval for flight of a production configuration or an operational envelope that is published in NATOPS or NATIP
Policy Directives

- **Air Force**
  - Policy Directive 62-6, "USAF Aircraft Airworthiness Certification"
  - The aircraft single manager is the airworthiness certification official

- **Army**
  - AR 70-62, "Airworthiness Qualification of Aircraft Systems"
  - Commanding General, U.S. Army Aviation and Missile Command is the Army’s airworthiness approval authority. He has delegated airworthiness authority to the AMRDEC Aviation Engineering Directorate (AED)

- **Navy / Marine Corps**
  - NAVAIRINST 13034.1C "Flight Clearance Policy For Air Vehicles and Aircraft Systems"
  - COMNAVAIRSYSCOM has airworthiness cognizance
    - This cognizance is delegated to appropriate departments of AIR-4.0
    - AIR-4.0P is the single POC for issuance of Interim and Permanent Flight Clearances
Airworthiness Lessons Learned

• Each of the services have their own airworthiness processes and technical experts
  • Understanding these processes and the technical basis for requirements is essential for cost and schedule control of your program
• Airworthiness requirements are tailored for each program and are largely the call of the airworthiness authority
  • There is some room to negotiate requirements, but the negotiation will be based solely on technical issues, not cost or schedule
• Airworthiness Certification has significant cost and schedule implications
  • You can minimize these impacts by consulting with your airworthiness authority early in the program
  • Cost and schedule impacts grow as you delay the start of a coordinated, approved airworthiness program
  • These impacts can be show stoppers if ignored long enough

Engage Airworthiness Agencies Early and Continuously
Airworthiness Recommendations

- Engage the appropriate airworthiness authorities early in the program planning phase
- Have a defined (budget and schedule) airworthiness program agreed to by the airworthiness authority in your contract at initial award
- Formal, written documents describing required airworthiness analyses/testing/data are insurance for the PM
  - They define the scope of the airworthiness program
  - They serve as a record of agreements
- For Joint programs where two or more services are involved, a coordinated AW program (across services) is a worthy goal
  - No known successful examples
    - JSAM is running parallel programs for each service’s aircraft
  - Difficult at best
    - The services are not mandated to develop joint airworthiness programs
- Impossible if you wait until after program start
  - Small successes can lead to larger successes
In Conclusion - Keys to Success

- Expectation Management
- Clear and open communication
- Collaboration with all Stakeholders
- Formal coordination and documentation of all agreements
- Adhere to sound SE principles
  - Test and Evaluation Strategy
  - Requirements Traceability
  - Risk Management
QUESTIONS/COMMENTS?

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