



# 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**



# JPM-IP

**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)



JSAM Apache



JSAM FW



JSAM RW



JSAM-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



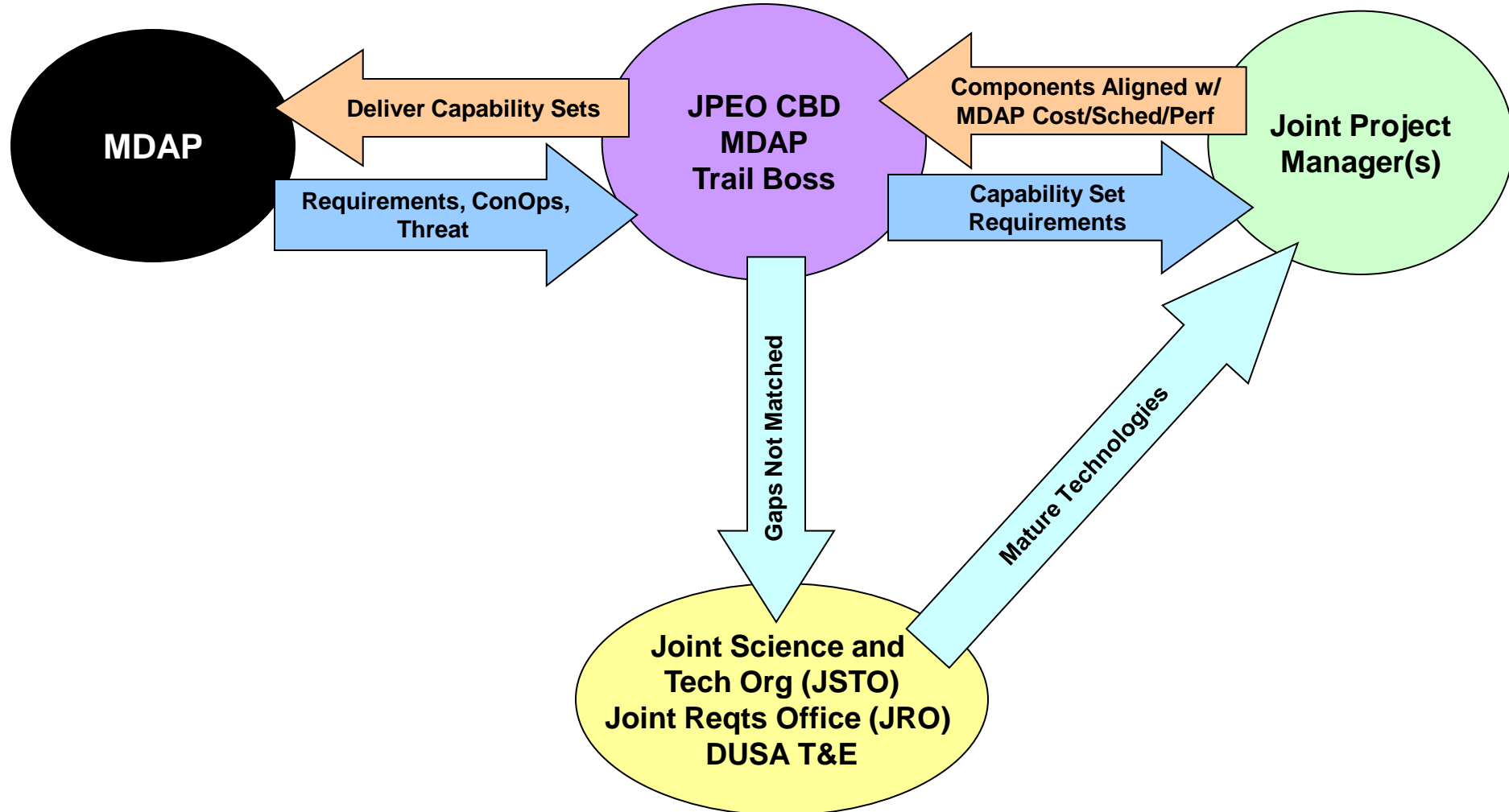


# Mitigation Actions

- **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)**





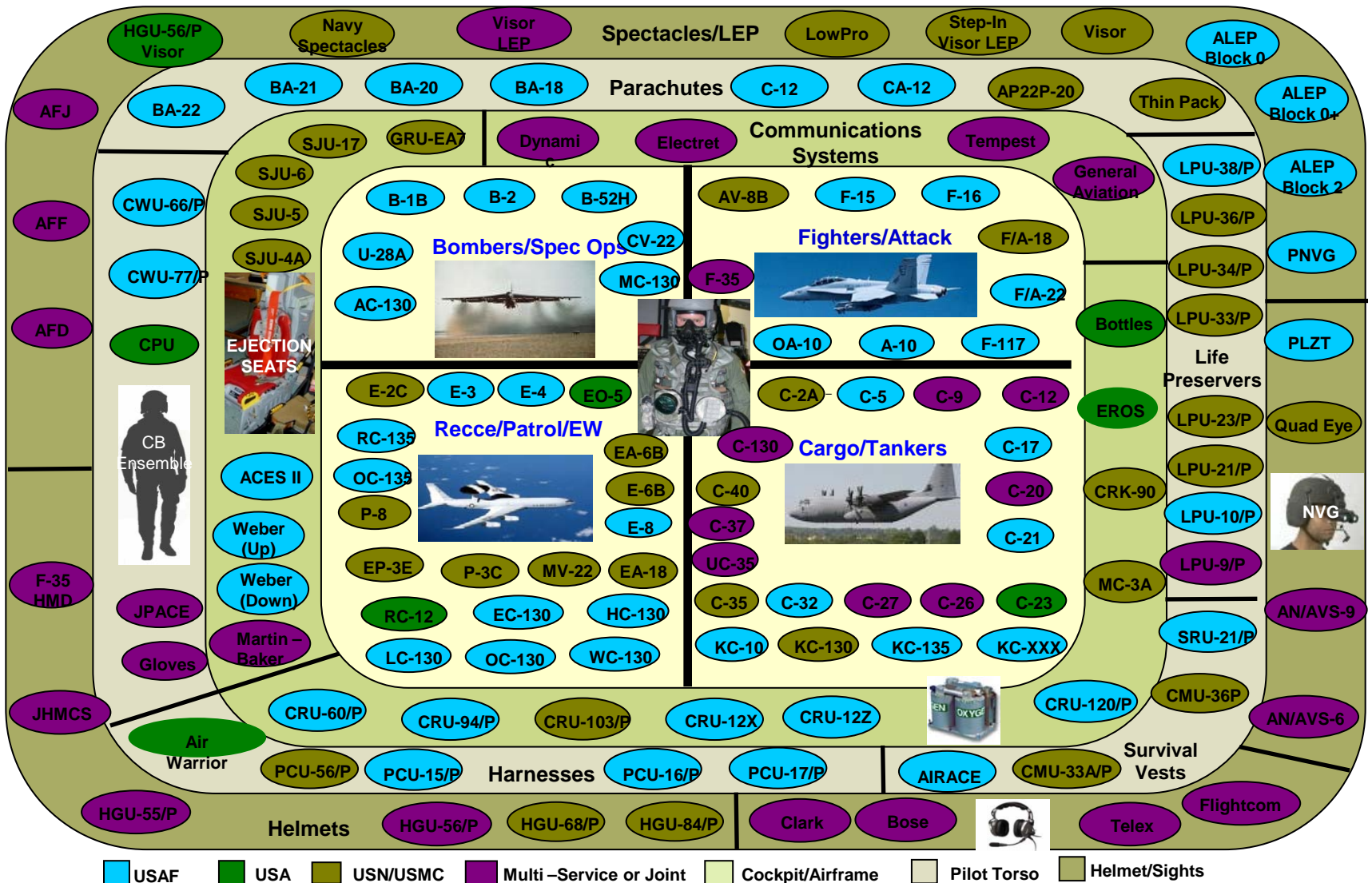
# Airworthiness Qualification/Certification

- **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



**101 Aircraft Platforms / 80 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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