Joint Multirole Technology Demo (JMR TD)
Joint Multirole Technology Demo (JMR TD)

Description and Goals

**Description:** S&T demo utilizing Technology Investment Agreements with industry cost share

**Air Vehicle Demo (AVD)**
- Two TD aircraft for flight evaluation/characterization of advanced rotary-wing configurations and enabling technologies
- Technology demos of new component and manufacturing technologies
- Expanded/improved M&S capability

**Mission Systems Architecture Demo (MSAD)**
- Increasing complex architecture demos

**Increased Investment (I2)**
- Sub-system demos, studies and analyzes

**Goals:**
- Inform the development FVL Capabilities Development Document (CDD)
- Reduce FVL risk and mature technologies
- Enable the implementation of open architectures
JMR TD Schedule

Fort Rucker/FVL Study

Phase I

Phase II

Model Performance Specification (MPS)

Vehicle Config Trades

Scope:
- Design, fabricate and test 2 vehicles
- Performance demonstration and verification
- Technology characterization
- Test predictions and correlation
- Value and readiness assessments

Air Vehicle Demonstration (AVD)

Scope:
- Design, fabricate and test 2 vehicles
- Performance demonstration and verification
- Technology characterization
- Test predictions and correlation
- Value and readiness assessments

BAA
Award
IDRR
FDRR
1st flight

I2 Efforts

Trades and Analyses
- Architectures
- Communications
- Survivability
- Cockpit HMI Technologies
- Sensors and Sensor Fusion
- Weapons

Joint Common Architecture (JCA) Development

- Incremental efforts designed to investigate specific concepts / technologies
- Demonstrate benefits of Model Based Approach & Open Systems Architecture
- High level of collaboration between Government and industry

JCA Demo
ACVIP Shadow

- Specification for a full mission systems architecture
- JCA/FACE Validation

AIPD

MSAD Capstone Demo

Mission Systems Architecture Demo (MSAD)

Scope:
- Trade space description
- Prioritize critical attributes/capabilities
- Establish success metrics
- Assess value and affordability

Air Vehicle Demonstration (AVD)

Model Performance Specification (MPS)

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- Design, fabricate and test 2 vehicles
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AIPD

MSAD Capstone Demo
Mission Systems Architecture Demo (MSAD)

**Purpose:**
Investigate/Mature processes, tools and standards necessary to specify, analyze, design, implement and qualify a Mission Systems Architecture in support of emerging FVL PoR that meets Army business goals.

**Approach:**
- Leverage or develop the standards and tools necessary to successfully implement a mission systems architecture.
- Execute a series of increasingly complex demos - Learn by doing.

**Focus Areas:**
- Implementation of Open Systems Architectures (OSA)
  - Joint Common Architecture (JCA)
  - FACE™ Technical Standard
  - Hardware Open Systems Technologies (HOST)
- Application of Model Based Engineering (MBE)
  - Model-based specification/acquisition
- Execution of an Architecture Centric Virtual Integration Process (ACVIP)
  - Predictive performance assessment

Increasingly complex demonstrations using significant industry participation.
Future Long Range Assault Aircraft (FLRAA)
Future Long Range Assault Aircraft Description

- The Future Long Range Assault Aircraft (FLRAA) program will deliver the very best tactical assault aircraft in the world with First Unit Equipped: FY30.
- FLRAA enables multi-domain operations with increased speed, reach, and a more survivable tactical assault and MEDEVAC capability.
- Draft Capabilities Development Document requirements include:
  - Fly further and faster, in order to conduct an air assault with a maneuver force, to an objective in a contested and ever-changing environment
  - Improved survivability, reliability, and sustainability
  - Replace Army and SOCOM H-60 fleets
- JMR-TD Vendors: Bell, Sikorsky-Boeing, Karem, AVX
- Program of Record Vendors: TBD
- Proponent: Army Futures Command / Army Aviation Center of Excellence
- Milestone Decision Authority: Army Acquisition Executive
FLRAA Program Strategy

Science and Technology & Program of Record Technology Development
- TECHNOLOGY MATURATION
  - Current – FY21
    - 25 Efforts
    - Reduces Technical Risk

Joint Multi - Role (JMR) Technology Demonstration (TD) / Increased Investment
- AIR VEHICLE INNOVATION
  - Current – FY19
    - 4 Vendors
    - Existing Technical Interchange Agreement (TIA)

JMR TD Added Tasks
- Architecture Effort
  - REFINED MODULAR OPEN SYSTEM APPROACH
    - FY19-FY20
      - University Affiliated Research Center Contract Vehicle

COMPETITIVE DEMO
- VALIDATE DESIGN MODEL
  - FY20-FY21
    - Select to 2 Vendors
    - Leverage Existing Other Transaction Authority

DOWN SELECT SINGLE VENDOR
- INTEGRATE, QUALIFY, EVALUATE
  - FY21/22
    - CS3 Development Program of Record

Overlap of Effort Enables Seamless Transition
Future Attack Reconnaissance Aircraft (FARA)
Competitive Prototype (CP)
Future Vertical Lift Cross Functional Team

FARA CP Overview

Aircraft description
• Armed recon and security mission, lethal and non-lethal fires/effects
• Small form factor for mega-city operations
• Centerpiece of IADS breaching team
• Advanced teaming
• Focus on reliability and maintainability, extended maintenance free operating periods, reduced forward logistics burdens, affordable life cycle of sustainment
• Open architecture digital backbone for rapid capability advancement

Strategy
• Streamlined acquisition approach, prototype developed outside of DoD 5000.02 with 6.4 RDT&E funding – Not S&T
• CFT provides streamlined decision process, minimizes work-flow interruptions
• Other Transaction Agreements for Prototype (OTAPs) with industry cost share
• Anticipate follow-on Program of Record (PoR)
  • Complete CP by the end of FY23
  • Build in hooks for OTAP to continue
  • Develop data and knowledge for follow-on acquisition decisions/program
  • Obtain rights to data that supports PoR

Approach
• Few mandatory attributes, trade space defined
• Selections analysis/data based, criteria focused on risk
• Select and award to 5 company teams initially, down-select to 2 after Initial Design & Risk Review (preliminary design)
• Design, build, test two different aircraft
• Partial systems integration
• Industry/Government collaboration on cost models, analytical tools and systems engineering models
• Develop data to support airworthiness and acquisition planning
• Army-executed flight testing part of aircraft assessment
Future Vertical Lift Cross Functional Team

FARA CP Requirements

- Powered by Improved Turbine Engine (ITE) (provided GFE)
- Main rotor diameter not to exceed 40ft and overall aircraft width not to exceed 40 ft
- Maximum mission takeoff gross target weight of 14,000 lbs
- Minimum mission configured cruise airspeed at maximum continuous power and mission takeoff gross weight of not less than 180 KTAS
- Integration of 20mm turreted cannon (provided GFE) with 180 (T) and 360 (O) degrees of coverage
- Integration of Munitions/Air Launch Effects (ALE) Launcher (provided GFE)
- Modular Open Systems Approach (MOSA) inclusive of the digital backbone
- Maneuverability & Agility: Level 1
- Affordability Goal: fly-away cost of no greater than $30M and cost per flight hour no greater than $4,200, both in BY2018
- Survivability thresholds (ref. FARA CP Systems Specification Classified Appendix)

- Combat Radius of \( \geq 135 \) NM
- Payload: 1,400-2,000lb Reconfigurable w/ MEP, Aux Fuel, Weapons Systems, etc.
- Take Off: 4K/95 HOGE
- Tailorable Sensor/ASE MEP
- Capable of full range of scalable, lethal, and non-lethal effects
- Air Launched Effects (ALE)
- Endurance: \( \geq 2 \) hrs
- Responsiveness: 2 min automated rapid start, full systems at 8 min \( \geq 205 \) KTAS
- Optionally Piloted
- Capability 2 – MEP (Mission Equipment Packages)
- Capability 3 – Adaptive, Flexible Sustainment
- Capability 4 – Supervised Autonomy & Advanced Teaming
- Capability 5 – World Wide Operations

* Capabilities identified in the FVL FARA CP ICRD. Reference Sections 4.3.1 – 4.3.6.

** A balanced design within the trade space addresses a mix of desired attributes presenting the best value, not 100% of the first few attributes with none (or 0%) of the remaining lower-value attributes.

Baseline ICRD Priorities

Higher Value

Trade Space**
## Future Vertical Lift Cross Functional Team

### FARA Competitive Prototype Update

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### JMR TD

- **ITE**

### FARA PoR

### FARA CP

- **Concept Design, Trades & Analysis**
- **Proposals, Evals, Negotiations & Awards**
- **Concept refinement, Sys. Models, ICDs, Specs**
- **“Build-to” specs for HW & SW**
- **Build Prototypes (Assembly, Integration and Testing)**
- **Go/No Go Decision for Build and Test**
- **Strategy for MOSA Integration**
- **Long-Lead Schedule Risk Mitigation**
- **Down Select to 1 Contractor & Select Architect**

- **Release Program Solicitation**
- **Select 4 – 6 Contractors**
- **Down Select to 2 Contractors**
- **Select ITE or YT706 engines for prototypes**
- **Strategy for MOSA Integration**
- **Long-Lead Schedule Risk Mitigation**
- **Down Select to 1 Contractor & Select Architect**

### Schedule is king!

**UNCLASSIFIED**