

## **AF252-D012: Artificial Intelligence/Machine Learning (AI/ML) Driven Personnel Retention Platform**

### **ADDITIONAL INFORMATION**

N/A

### **TECHNOLOGY AREAS:**

Human Systems | Information Systems

### **MODERNIZATION PRIORITIES:**

Advanced Computing and Software | Mission Readiness & Disaster Preparedness | Trusted AI and Autonomy

### **KEYWORDS:**

Retention; data analysis; automation; optimization; readiness; talent; predictive analytics; AI, DAF, AFDW

### **OBJECTIVE:**

The Air Force District of Washington (AFDW) proposes to adapt an existing project - XEM Retention Project to implement an automated AI/ML platform that proactively analyzes personnel data to identify individuals at high risk of separation. The platform will help transition from manual exit interviews and anecdotal evidence to a data-driven approach that informs effective retention strategies. The platform will leverage its proprietary "Digital Twin" capability to generate predictions and recommend best actions to engage and retain critical personnel. The goal is to streamline the retention process through automated data labeling and analysis to enable faster and more effective interventions. The project seeks to reduce turnover in essential skill positions during a challenging recruitment period to ensure that the Air Force retains its vital talent.

### **ITAR:**

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with section 3.5 of the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

### **DESCRIPTION:**

The Air Force District of Washington (AFDW) proposes to adapt the existing XEM Retention Project to implement an automated AI/ML platform that proactively identifies individuals at high risk of separation. The platform will utilize its proprietary "Digital Twin" capability to generate predictions and recommend best actions to engage and retain critical personnel. The goal is to transition from manual exit interviews and anecdotal evidence to a data-driven approach that informs effective retention strategies. The platform aims to reduce turnover in essential skill positions during a challenging recruitment period to ensure that the Air Force retains its vital talent.

The proposed platform will leverage automated data labeling and analysis to enable faster and more effective interventions. The platform will proactively analyze personnel data to identify individuals at high risk of separation, allowing the Air Force to take early action to address their concerns and offer targeted retention incentives. The platform's "Digital Twin" capability will generate predictions and recommend best actions to engage and retain critical personnel. By implementing a data-driven approach to retention, the Air Force can improve its ability to retain critical personnel and ensure that it has the talent it needs to carry out its mission effectively. The platform's automated data labeling and analysis capabilities will enable faster and more effective interventions, improving the Air Force's ability to retain its vital talent during a challenging recruitment period.

### **PHASE I:**

Identification and Development of AI/ML Solutions: Demonstrate the ability to identify and develop innovative AI/ML solutions that can be potentially adapted to meet AFDW's operational needs.

**Feasibility Assessment:** Assess the integration feasibility and costs of these AI/ML solutions with existing AFDW-specific products.

**Stakeholder Engagement:** Conduct interviews with stakeholders, including AFIMSC A1, AFDW A1, and HAF A1 offices, to map current processes and understand unique challenges within the DAF personnel retention community.

**Solution Differentiation and Stakeholder Collaboration:** The proposal should highlight how the offered AI/ML solutions differ from existing non-Defense offerings and how they will specifically benefit the Air Force, ensuring engagement with various Air Force offices to understand the specific needs and challenges in personnel retention.

**Transition Planning and Cybersecurity Compliance:** Outline a clear transition path for the AI/ML solution, incorporating input from all relevant stakeholders such as end users, engineering, sustainment, contracting, finance, legal, and cybersecurity teams. Address the requirements for obtaining an Authority to Operate (ATO) and other cybersecurity needs to ensure the sustainability and scalability of the AI/ML solution, meeting stringent cybersecurity standards.

**Commercial and Governmental Interest:** The AI/ML solution should not only address the needs of the Air Force but should also have potential applications for other DoD or governmental customers.

Ensure that the proposed solutions are well-integrated, secure, and aligned with the strategic goals of the Air Force, facilitating effective innovation and adaptation of commercial technologies to military use.

During the Phase I feasibility study, key retention challenges for active duty personnel and civilians were discovered. These challenges were: High operational tempo, irregular duty hours, and frequent deployments strain work-life balance, leading to burnout. Solutions like flexible scheduling and enhanced family support can be supported by AI tools that optimize duty rosters and predict stress points.

Limited career progression and job satisfaction result from insufficient promotion opportunities and recognition. AI can personalize career development plans and facilitate mentorship. Compensation and benefits are uncompetitive, especially for high-demand roles, highlighting the need for better packages and retention bonuses. AI analysis of market trends can help align these with industry standards.

Organizational culture and leadership also impact morale. AI sentiment analysis can help leaders identify improvement areas through anonymous feedback. High deployment frequency and duration add stress, necessitating a balance between mission readiness and personnel well-being; AI can optimize scheduling and predict burnout.

Job location stability is a concern, with AI recommending optimal assignments based on preferences and career goals. Training opportunities are often outdated, and AI can create adaptive learning paths that personalize training. Expanding access to mental health and wellness resources is critical; AI can offer personalized health recommendations and monitor well-being.

Work environment improvements are necessary, with AI enhancing facility management for safe and effective workplaces. Finally, transitioning support for civilian life is often inadequate; AI can provide tailored plans and resources to help service members navigate post-military careers. AI presents significant opportunities to improve retention and enhance workforce satisfaction.

## **PHASE II:**

Phase II Technical Objectives and Key Results:

**Objective 1:** Enhance retention strategies by utilizing AI-driven insights to identify at-risk personnel and recommend targeted interventions.

- **Associated Tasks:**
  1. Develop and refine AI models to analyze retention risks based on operational tempo, duty hours, and deployment schedules.
  2. Integrate AI tools to optimize duty rosters and predict stress points, facilitating flexible scheduling and enhanced family support.
  3. Implement AI-driven recommendations for personalized career development plans and mentorship opportunities.
- **Outcome:** AI-driven models that identify personnel at high risk of burnout or attrition, enabling the A1 office to proactively address retention issues through tailored interventions.
- **Time:** 6 months from award. Task 1: completed month 1, Task 2: completed months 2 to 4, Task 3: completed months 5 to 6.
- **Key Results:**
  1. Reduction in attrition rates (TBD) within the first 6 months.
  2. Improved work-life balance through AI-optimized scheduling, resulting in increased job satisfaction and retention.

**Objective 2:** Improve job satisfaction and career progression by aligning compensation, benefits, and development opportunities with industry standards.

- Associated Tasks:
  1. Conduct AI-driven market analysis to assess the competitiveness of current compensation and benefits packages.
  2. Develop recommendations for aligning compensation and benefits with industry standards, particularly for high-demand roles.
  3. Implement AI tools to personalize career development plans and facilitate mentorship programs.
- Outcome: A comprehensive strategy that ensures AFDW A1's compensation, benefits, and career development offerings are competitive and aligned with industry trends, particularly in high-demand sectors.
- Time: 6-12 months from award. Task 1: completed months 1 to 3, Task 2: completed months 4 to 6, Task 3: completed months 7 to 12.
- Key Results:
  1. Enhanced employee satisfaction, with increase in retention among personnel in high-demand roles.
  2. Improved promotion rates and job satisfaction through AI-personalized career development plans.

Objective 3: Strengthen organizational culture and leadership effectiveness through AI-driven sentiment analysis and feedback mechanisms.

- Associated Tasks:
  1. Develop and deploy AI tools for conducting sentiment analysis on anonymous feedback from personnel.
  2. Identify key areas for improvement in organizational culture and leadership practices based on feedback analysis.
  3. Implement targeted leadership training and organizational development programs to address identified issues.
- Outcome: A data-driven approach to enhancing organizational culture and leadership within AFDW A1, leading to improved morale and retention.
- Time: 6-12 months from award. Task 1: completed months 1 to 2, Task 2: completed months 3 to 6, Task 3: completed months 7 to 12.
- Key Results:
  1. Increased employee engagement and morale by 10% within 6 months.
  2. Reduction in leadership-related attrition through targeted interventions.

Objective 4: Enhance training and development programs with AI-driven adaptive learning paths and personalized wellness resources.

- Associated Tasks:
  1. Integrate AI tools to create adaptive learning paths that personalize training for each individual.
  2. Expand access to mental health and wellness resources through AI-driven recommendations and monitoring tools.
  3. Implement AI-driven facility management enhancements to improve work environments.
- Outcome: A personalized and adaptive approach to training and wellness, ensuring that AFDW A1 personnel are well-equipped and supported in their roles.
- Time: 6-18 months from award. Task 1: completed months 1 to 6, Task 2: completed months 7 to 12, Task 3: completed months 13 to 18.
- Key Results:
  1. Improved training effectiveness, with a increase in skill acquisition and job readiness.
  2. Enhanced overall well-being, with a reduction in stress-related absenteeism.

Objective 5: Optimize assignment stability and transition support for AFDW A1 personnel.

- Associated Tasks:
  1. Develop AI tools to recommend optimal assignments based on individual preferences and career goals.
  2. Implement AI-driven transition support plans for personnel moving to civilian life.
  3. Enhance job location stability and satisfaction through data-driven assignment planning.
- Outcome: A strategic approach to assignment stability and transition support, leading to increased job

satisfaction and smoother transitions for personnel leaving the military.

- Time: 6-18 months from award. Task 1: completed months 1 to 6, Task 2: completed months 7 to 12, Task 3: completed months 13 to 18.
- Key Results:
  1. Increased job location stability, with a improvement in assignment satisfaction scores.
  2. Enhanced transition support, with a increase in successful civilian career placements.

### **PHASE III DUAL USE APPLICATIONS:**

The awardee(s) can expect to pursue commercialization of the modified/adapted platform with Air Force and broader DoD J1 retention directorates. The technologies may be transitioned by expanding mission capabilities to a broad range of potential government and civilian users. Direct access with end users and government customers will be provided with opportunities to receive Phase III awards for providing the Government with additional research, development, and diagnostic/performance testing. Additionally, direct procurement of modified/adapted platform will be in the form of licenses/seats. The expected Phase III outcome will be TRL 9.

### **REFERENCES:**

1. United States Government Accountability Office. (2023). DOD Active-Duty Recruitment and Retention Challenges. GAO-23-106551
2. Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence, <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/>.
3. National Strategy to Advance Privacy-Preserving Data Sharing and Analytics, <https://www.whitehouse.gov/wp-content/uploads/2023/03/National-Strategy-to-Advance-Privacy-Preserving-Data-Sharing-and-Analytics.pdf>.
4. National Institute of Standard and Technology (NIST), Draft Guidance on Evaluating a Privacy Protection Technique for the AI Era, <https://www.nist.gov/news-events/news/2023/12/nist-offers-draft-guidance-evaluating-privacy-protection-technique-ai-era>.
5. A New Military Retention Prediction Model: Machine Learning for High-Fidelity Forecasting, IDA, Reference - DTIC AD1122258

### **TOPIC POINT OF CONTACT (TPOC):**

TPOC-1: Jay Desai  
PHONE: 7039941134  
EMAIL: jay.desai.1@us.af.mil

TPOC-2: John Price  
PHONE: 6614006594  
EMAIL: john.price.25@us.af.mil