JADPACT II BAA (SOO)

1.0 OBJECTIVE

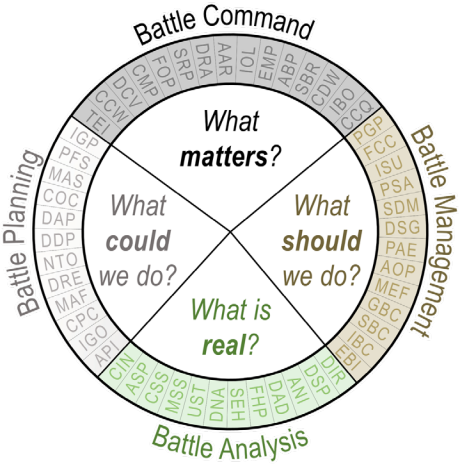
The Joint All Domain Persistent Adaptive Collaborative Technologies Project is exploring command and control (C2) concepts that enable use of AI/autonomy. C2 Decision Advantage Events provide support for C2 associated decisions and an opportunity to learn about and explore many different AI/ML/automation approaches for C2. Furthermore, the events and R&D aim to ensure warfighter involvement in the development of AI/ML/automation and Human-Machine Teaming (HMT) concepts to further identify areas where autonomy would help warfighters. Including industry is critical to ensure we can leverage work being done to develop and adapt the latest, cutting-edge AI/ML/automation approaches to support C2.

2.0 SCOPE

The Combined Joint All-Domain Command and Control (CJADC2) Campaign Plan 2030 defines decision advantage as the ability to consistently make better, timelier decisions than the adversary. Current DAF C2 systems and processes are optimized for low intensity conflict and do not address decision advantage over the pacing challenge. Deriving effective C2 capability development toward decision advantage requires a clear understanding of what C2 decisions are. The DAF Advanced Battle Management System (ABMS) Cross Functional Team (CFT) provides a quantitative model for the Joint Warfighting Function of C2 as the Command, Plan, Analysis, and Battle Management decision domains. Each of these decision domains are decomposed in the Transformational Model for Decision Advantage (TM) using model-based systems engineering which bring these C2 decisions to light in a detailed manner.

2.1 Transformation Model

The TM describes military decisions being made within a human-machine team (HMT), including specific choices within these domains and the battlespace information needed to inform said choices. Therefore, the TM provides foundational requirements for C2 decision-making that are universal (agnostic to time epoch, process, geography, organization, doctrine, among others). Battle Planning, Battle Command, Battle Management, and Battle Analysis hold 52 discrete Decision functions where there are opportunitites to leverage exisiting and emerging technologies to optimize human-machine teaming for collbaroative decision-making. Additional information on two of the TMs can be found at: SAM.gov



For example, The Transformational Model – Battle Management (TM-BM) is comprised of 13

distinct and orthogonal subfunctions (Figure 1) deduced from the following operational environment (OE) assumptions/axioms:

- No entities exist in identical states simultaneously.
- Force distributions in the OE are not uniform.
- The OE evolves over time.
- Information is incomplete and uncertain.
- Missions are difficult and resources are constrained.

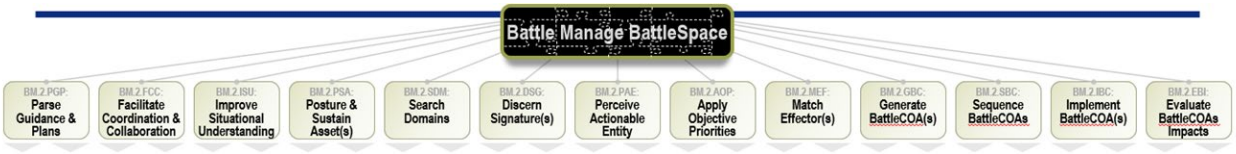


Figure 1: Transformational Model – Battle Management Subfunctions.

In OEs where these assumptions apply (which will be the case for the pacing challenge), the TM subfunctions explain the comprehensive set of battlespace information elements and decisions an HMT must make. Consequently, TM reveals measures of performance and gives structure to a design of experiments that best characterize a C2 HMT. The resulting analysis delivers C2 decision advantage requirements to military capability developers and acquisition professionals through rigorous defensible analysis.

3.0 TECHNICAL REQUIREMENTS

Emerging C2 solutions focus on decision support (i.e., system interoperability, information exchange, and information presentations, i.e., battlespace awareness/display) and do not directly address decision advantage (i.e., software that machine-assists/automates battle management decision-making). To win against a peer adversary, the joint force must achieve decision advantage by equipping C2 HMTs with automation to sort through complex and high-volume battle management decisions with faster tempo and improved decision quality.

3.1 Battle Management Decision Advantage Events

The Air Force Research Laboratory, 711 Human Performance Wing (711 HPW) will host a series of events to conduct Research and Development surrounding the Transformational Model.

During these events the contractor shall accomplish the following: Teams will receive a deep-dive of the Transformational Model (the functional description of C2 decision-making) and how their work can be applied to supporting the creation of HMT concepts that can be applied to C2 decisions. Warfighters with relevant experience will be available to provide operational perspective and feedback. At the end of the event, each development team will have the opportunity to demonstrate how their software affects overall human-machine team decision making. Invited participants will retain their intellectual property (IP). Government stakeholders reserve the right to analyze all collected data (including software performance and technical integration insights) to derive, refine and mature functional and technical C2 software requirements.

3.2 REPORTING

At the conclusion of each event, the Contractor shall compile findings within and deliver a presentation that includes a summary of the work that was conducted, any relevant metrics, and lessons learned, via a Test Scientific and Technical reports (CDRL A001).

4.0 DELIVERABLES

4.1 At the conclusion of each event, the Contractor shall compile findings within and deliver a presentation that includes a summary of the work that was conducted, any relevant metrics, and lessons learned.

5.0 OTHER REQUIREMENTS

SECUIRTY AND OPSEC

5.1 General Operations Security (OPSEC) procedures, policies and awareness are required in an effort to reduce program vulnerability from successful adversary collection and exploitation of critical information. OPSEC will be applied throughout the life cycle of the contract. The Critical Information and Indicator List (CIIL) and the 711th HPW OPSEC Plan will be provided upon request by AFRL/711HPW Information Protection Office. While working on the government installation, OPSEC guidance and OPSEC training will be provided by AFRL/711HPW Information Protection Office. This training will ensure contractors are familiar with 711th HPW's CIIL and OPSEC Plan as it pertains to their contract. The contractor shall apply OPSEC in their management of their current program IAW AFI 10-701 Operations Security.

5.2 All contractor personnel require a minimum of a Tier 1 background check (T1)/SF85 for any position that requires access to the internet, use of automated information systems to cover standalone computers or unescorted entry into restricted or controlled areas prior to reporting for duty in support of any requirement. The investigation is not for a security clearance; it is for a position of trust. This is a mandatory requirement set forth in DoDM 5200.02_AFMAN 16-1405, Air Force Personnel Security Program. All documentation required for security certification shall be the responsibility of the contractor.

5.3 All documents, including papers, abstracts and posters shall be cleared by AF prior to public release.

5.4 Highest Secuirty Classification [Unclassified]

6.0 SAFETY REQUIREMENTS

6.1 The Contractor shall comply with all applicable federal, state, and local safety, occupational health and environmental regulations.

7.0 AFRL POLICY ON EMPLOYMENT OF NON-US CITIZEN CONTRACTORS

7.1 Contractor employees requiring access to USAF bases, AFRL facilities, and/or access to U.S. Government Information Technology networks in connection with the work on this contract must be U.S. citizens. Possession of a permanent resident card ("Green Card") does not equate to U.S. citizenship. This requirement does not apply to foreign nationals approved by the U.S. Department of Defense or U.S. State Department under international personnel exchange agreements with foreign governments. Any waivers to this requirement must be granted in writing by the Contracting Officer prior to providing access. The above requirements are in addition to any other contract requirements related to obtaining a Common Access Card (CAC).

8.0 FEDERAL HOLIDAYS

8.1 The prices / costs in Section B of the contract include holiday observance; accordingly, the Government shall not be billed for such holidays, except when services are required by the Government and are actually performed on a holiday. The following days are contract holidays: New Year's Day, Birthday of Martin Luther King, Jr., Washington's Birthday, Memorial Day, Juneteenth, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, and Christmas Day.