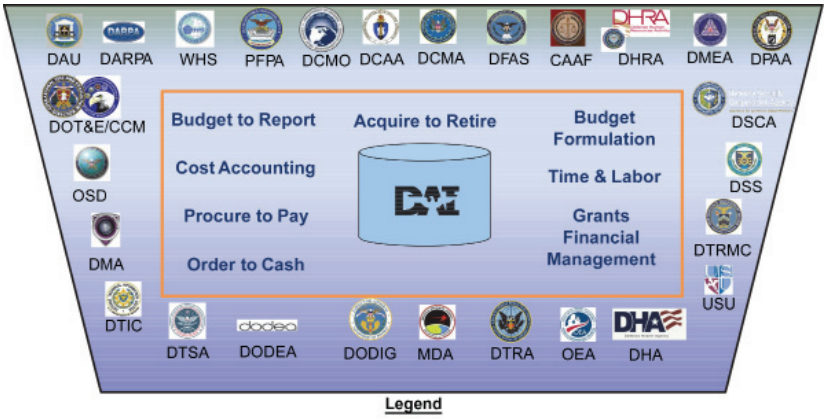
Defense Agencies Initiative (DAI)

Executive Summary

- The Joint Interoperability Test Command (JITC) conducted FOT&E of Defense Agencies Initiative (DAI) Increment 2 from March 5 through April 6, 2018.
  - During the FOT&E, JITC evaluated new and existing capabilities implemented by DAI-equipped defense agencies, DOD field activities, and other defense organizations (collectively referred to here as Agencies).
  - JITC also evaluated new functionality for Agencies that recently migrated to DAI (Washington Headquarters Services and Defense Contract Audit Agency).
- DAI is operationally effective. The system successfully completed 99 percent of all critical tasks within 7 business process areas throughout all operational testing.
- Operational suitability for DAI is marginal. Overall system availability was high and DAI supported the audit readiness of the DOD; however, usability and system responsiveness ranged from marginal to not acceptable.
  - Limited regression testing of a security patch to address an Information Assurance Vulnerability Alert (IAVA) led to increased sporadic system latency during FOT&E.
  - Based on the System Usability Scale Survey for 7 out of 22 Agencies using DAI, Agencies that migrated to DAI during Increment 1 assessed DAI usability as marginal and Agencies that migrated to DAI during Increment 2 assessed DAI usability as not acceptable.
  - DAI exceeded system availability requirements with 99 percent system availability.
  - Agency representatives responsible for audit readiness agree that DAI supports audit readiness through its financial reporting and transaction traceability.
  - Help desk metrics indicate the DAI system is sustainable. However, most Agencies provide additional funding to sustain Tier 1 (local) help desk support, functional and system training, and support for new capability development, which masks the true cost of DAI sustainment for the DOD enterprise.
- JITC and the Defense Logistics Agency Information Operations, Cybersecurity (J61) Penetration Test Team conducted a modified Cooperative Vulnerability and Penetration Assessment (CVPA) from February 12 to March 16, 2018, to verify remediation of open findings from previous cybersecurity testing.
  - Based on previous testing and the remediation of five of six open findings, DAI is secure against a cyber threat having limited to moderate capabilities. However, the overall survivability assessment remains undetermined until the final open finding is remediated and verified.



Legend

CAAF - Court of Appeals for the Armed Forces
DAI - Defense Agencies Initiative
DARPA - Defense Advanced Research Projects Agency
DAU - Defense Acquisition University
DCAA - Defense Contract Audit Agency
DCMA - Defense Contract Management Agency
DCMO - Deputy Chief Management Officer
DFAS - Defense Finance and Accounting Service
DHA - Defense Health Agency
DHRA - Defense Human Resources Activity
DMA - Defense Media Activity
DMEA - Defense Microelectronics Activity
DODEA - Department of Defense Education Activity
DODIG - Department of Defense Inspector General
DOT&E/CCM - Director, Operational Test & Evaluation including Center for Countermeasures (CCM)
DPAA - Defense Prisoner of War/Missing In Action Accounting Agency
DSCA - Defense Security Cooperation Agency
DSS - Defense Security Service
DTIC - Defense Technical Information Center
DTRA - Defense Threat Reduction Agency
DTRMC - Defense Test Resource Management Center
DTSA - Defense Technology Security Administration
MDA - Missile Defense Agency
OEA - Office of Economic Adjustment
OSD - Office of the Secretary of Defense
PFPA - Pentagon Force Protection Agency
USU - Uniformed Services University of the Health Sciences
WHS - Washington Headquarters Services

System

- DAI is an integrated financial management solution that provides a real-time, web-based system of integrated business processes used by defense financial managers, program managers, auditors, and the Defense Finance and Accounting Service. The DAI core functionality is based on commercially available enterprise resource planning solutions.
- DAI subsumes many systems and standardizes business processes for multiple DOD Agencies. It modernizes these business processes by streamlining management capabilities to address financial reporting material weaknesses, and support financial statement auditability.
- The Defense Information Systems Agency (DISA) provides facilities, network infrastructure, and the hardware operating system for DAI servers at DISA data centers.
- Agencies employ DAI worldwide and across a variety of operational environments via a web portal using each Agency's existing information system infrastructure.
- The DAI program is delivering capability incrementally:
  - Increment 2 had four software releases, each adding capabilities and deploying to additional Agencies. With the completion of Increment 2 Release 4 fielding in October 2017, DAI provides services to 22 Agencies with 39,342 users at 1,148 locations worldwide.

  - The DAI Program Management Office (PMO) has begun development and fielding of Increment 3 to provide additional capabilities to existing Agencies and to add DISA, the Defense Commissary Agency, and potentially other Agencies from FY18 through FY23. DISA went live with Time and Labor capabilities in June 2018 as part of Increment 3 Release 0.1, and increased the DAI user base to 45,725 users at 1,834 locations worldwide.
- DAI supports financial management requirements in the Federal Financial Management Improvement Act and DOD Business Enterprise Architecture and is a key tool for helping DOD Agencies have their financial statements validated as ready for audit.

Mission

Financial Managers in defense agencies use DAI to transform their budget, finance, and accounting operations to achieve accurate and reliable financial information in support of financial accountability and effective and efficient decision-making.

Major Contractors

- CACI – Arlington, Virginia
- International Business Machines – Armonk, New York
- Northrop Grumman – Falls Church, Virginia
- Intellipoint Consulting, Inc. – Ashburn, Virginia

Activity

- On October 3, 2017, the USD(AT&L) issued a Full Deployment Decision for DAI Increment 2 and a development Authority to Proceed for DAI Increment 3.
- The DAI PMO conducted six developmental test events in FY18:

  DAI Increment 3 Release 0.1
  - Development integration test from December 22, 2017, through March 2, 2018
  - System integration test from March 12 through April 6, 2018
  - User acceptance test from May 7 through June 1, 2018

  DAI Increment 3 Release 1
  - Development integration test from March 30 through June 12, 2018
  - System integration test from June 25 through July 27, 2018
  - User acceptance test from August 6 through September 7, 2018
- In coordination with DISA, the DAI PMO conducted its annual Continuity of Operations (COOP) tabletop exercise on January 19, 2018. Both JITC and DOT&E observed the event and assessed the DAI COOP capability as meeting requirements. DAI PMO briefed the COOP results to all Agencies with no concerns noted.
- From March 5 through April 6, 2018, JITC conducted an FOT&E of DAI Increment 2 in accordance with a DOT&E-approved test plan. Interoperability Certification data were collected from November 2017 through May 2018.
- From February 13 through March 16, 2018, JITC and the Defense Logistics Agency (DLA) Information Operations, Cybersecurity (J61) Penetration Test Team conducted a modified CVPA to verify that actions taken by the DAI PMO successfully corrected open findings from IOT&E. The DAI PMO deferred the data fraud analysis portion of the Cyber Economic Vulnerability Assessment (CEVA) until Increment 3 testing.
- DOT&E published its "Defense Agencies Initiative Increment 2 Release 4" FOT&E report in November 2018.
- JITC and the DAI PMO are planning an operational assessment (OA) and cybersecurity testing during 2Q-3QFY19 for Increment 3 Release 1. The OA will focus on new Agencies, new functionality, and those measures of performance that were not tested or that were inconclusive at the end of Increment 2 testing. The cybersecurity testing will consist of a validation of corrected actions based upon findings from Increment 2 testing, a CVPA, an Adversarial Assessment, and a COOP exercise.
- On September 26, 2018, the USD(A&S) issued an Acquisition Decision Memorandum delegating Milestone Decision Authority to DLA for DAI Increment 3 and all future program increments.

Assessment

- DAI is operationally effective and has made significant improvements compared to previous T&E events.
  - During the Increment 2 FOT&E, IOT&E, and two OAs combined, DAI successfully completed 2,447 of 2,466 critical tasks (99 percent). The 19 unsuccessful tasks included hardware, software, or system errors that the PMO has corrected, and user errors that better training and user documentation could address.
  - The DAI Increment 2 Business Case defines the High Level Outcomes (HLOs) that establish the rationale for DAI Increment 2. During the FOT&E, DAI reported on 11 of 18 HLOs. In some cases, Agencies are not using the full suite of Increment 2 capabilities, are not monitoring the HLO dashboard, or have not achieved the HLO thresholds. DOT&E will reassess the HLOs during Increment 3 testing.
  - DAI Increment 2 added functionality for Budget Formulation and Grants Financial Management Accounting, but the PMO has yet to measure the effectiveness of those functionalities. DAI Budgeting Formulation is still maturing with five Agencies leveraging the capability.
- The operational suitability for DAI is marginal. Auditability, reliability, availability, maintainability, and sustainability of the help desk support were all acceptable. However, the

mission effects from periods of high system latency resulted in not acceptable user experiences.

- The DAI PMO introduced a software security patch in January 2018 that resulted in sporadic system latency. Correcting the system required several planned and unplanned maintenance outages during the test period, negatively affecting users. Automated regression testing and performance testing could reduce the risk of future patches negatively affecting the production environment.
- DAI exceeded system availability requirements with 99 percent system inherent availability. System inherent availability is the percentage of time a system is available, while operational availability is the percentage of time that a system is capable of performing its mission. DAI also exceeded the performance requirements for other reliability, availability, and maintainability measures during FOT&E. Ten system failures occurred over a 6-month period from November 2017 to April 2018 and the mean time between system failures was 410 hours. The mean time to repair the 10 system failures was 4.5 hours. The 11 scheduled maintenance periods and the 10 unplanned maintenance periods averaged 14 hours each and resulted in an operational availability of 93 percent.
- The DAI PMO has a goal of one 27-hour maintenance period completed during one weekend per month. Achieving that goal would improve operational availability to 96 percent. This would better support worldwide operations and improve weekend operations during peak periods, especially during the critical closeout period near the end of the fiscal year.
- In spite of the improvements in the DAI system, users continue to give the program a marginal System Usability Scale score. Users from the three Increment 1 Agencies surveyed assessed usability as marginal, whereas users from the four Increment 2 Agencies surveyed assessed usability as not acceptable. Factors causing the not acceptable user ratings include:
  - Experience is a statistically significant factor. Four out of seven Agencies surveyed during FOT&E had used DAI for less than 3 years. Users at those four Agencies assessed usability to be not acceptable (less than 50 percent). Agencies with more experience scored DAI higher.
  - Frequent user comments on DAI functionality related to system slowness and difficulty of entering data and generating DAI reports, queries, and search requests.
  - Sporadic system latency during January and February 2018 from an operating system security patch to address an IAVA resulted in poor user experiences.
- DAI Help Desk support for the Agency help desks is acceptable, but most Agencies provide additional funding to obtain additional staff for help desk support, training, and support for new capability development. This user funding masks the true cost of DAI sustainment for the DOD enterprise.
- The DAI Help Desk processed 6,850 service requests between November 1, 2017, and May 1, 2018, with the number of open tickets increasing from 697 to 821 during that period. Although the DAI Help Desk is sustainable, the DAI PMO needs to allocate more resources so that the ticket resolution rate (37 per day) is on par with the ticket submission rate (38 per day).
- Customer satisfaction with the DAI Help Desk was 77 percent, compared to 75 percent for the local Agency help desk support.

- DAI is secure against a cyber threat having limited to moderate capabilities, but the overall survivability assessment remains undetermined since more testing is required.
  - During the modified CVPA, JITC and the DLA Information Operations, Cybersecurity (J61) Penetration Test Team verified that the DAI PMO had corrected five out of the six findings from the IOT&E Adversarial Assessment.
  - JITC did not test the cybersecurity defender's ability to detect and mitigate Red Team activities; therefore, net defense will remain unassessed until the Adversarial Assessment during Increment 3 testing.
- During the Increment 2 CEVA, Agencies' financial experts concluded that the existing technical checks would make it difficult to exploit known or potential vulnerabilities to commit fraud. DOT&E is monitoring the DOD Inspector General FY18-19 Financial Audits of Agencies on DAI to assist with CEVA requirements.
- Per DISA and DLA Chief Information Officer policy, the DAI PMO conducts a remote recovery exercise once every 3 years, with a tabletop exercise conducted in the years between.
- During both the FY17 and FY18 COOP exercises, the DAI PMO and DISA conducted a tabletop exercise where personnel reviewed and updated the Information Security Contingency Plan. Previously in FY16, DAI PMO testers successfully executed selected business functions on alternate site servers, which verified that the alternate site could restore mission essential business functionality. DAI will test select business functions at the alternate site in January 2019.

Recommendations

The full list of recommendations is available in the November 2018 DOT&E DAI FOT&E report.
The DAI PMO should:

1. Improve both regression and performance testing in order to reduce the risk of introducing misconfigured code into the production environment.
2. Work with the Office of the Under Secretary of Defense (OUSD) Comptroller to mature DAI budget formulation capabilities.
3. Work with DISA to improve system responsiveness.
4. Along with OUSD Comptroller and the Agencies, track the progress of the Agencies and the Department to achieve HLO thresholds.
5. Allocate more resources so that the ticket resolution rate is at least on par with the ticket submission rate.

6. In conjunction with JITC, measure system responsiveness during operational testing to quantify the latency problems identified through user survey responses during Increment 2 testing.