Defense Enterprise Accounting and Management System (DEAMS)
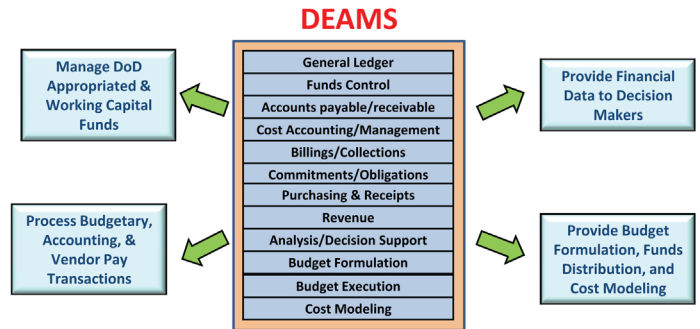
Executive Summary

- In November 2019, the Program Management Office (PMO) deployed the Defense Enterprise Accounting and Management System (DEAMS) Oracle Release 12 (R12) software upgrade to thousands of Air Force users worldwide to address software obsolescence that was driving increased operational risks and maintenance costs. The FOT&E started in December 2019 and remains ongoing due to continuing problems with the system and delays related to the coronavirus (COVID-19) pandemic.
- Upon deployment of the DEAMS R12 Software Upgrade, operational users began reporting numerous major system deficiencies, greatly reducing the system's operational effectiveness and suitability. For months, the PMO's attempts to fix these deficiencies only resulted in additional deficiencies, and in July 2020, DOT&E issued an Early Fielding Report recommending the Air Force delay full deployment until all major deficiencies are addressed.
- As of September 30, 2020, the PMO has eliminated all of the critical software deficiencies.
- To prevent major fielding problems such as DEAMS experienced, DOT&E's report recommended the Air Force always fund adequate developmental and early operational testing of systems in operationally representative test environments prior to deployment to operational users.

System

- DEAMS is a Defense Business System that uses commercial off-the-shelf (COTS) enterprise resource planning software to provide accounting and management services.
- The DEAMS PMO is following an agile acquisition strategy that adds additional capabilities and users incrementally. DEAMS serves an estimated 16,600 end-users across approximately 3,900 organizations at nearly 170 locations worldwide.
- DEAMS is intended to deliver accurate, reliable, timely, and auditable financial management information through the implementation of COTS enterprise resource planning software. DEAMS performs the following core accounting functions:

DEAMS

Manage DoD Appropriated & Working Capital Funds

Process Budgetary, Accounting, & Vendor Pay Transactions

General Ledger
Funds Control
Accounts payable/receivable
Cost Accounting/Management
Billings/Collections
Commitments/Obligations
Purchasing & Receipts
Revenue
Analysis/Decision Support
Budget Formulation
Budget Execution
Cost Modeling

Provide Financial Data to Decision Makers

Provide Budget Formulation, Funds Distribution, and Cost Modeling

- Core Financial System Management
- General Ledger Management
- Funds Management
- Payment Management
- Receivable Management
- Cost Management
- Reporting
- DEAMS interfaces with approximately 40 other systems that provide travel, payroll, disbursing, transportation, logistics, acquisition, and accounting support.
- DEAMS supports financial management requirements in the Federal Financial Management Improvement Act of 1996 and the DOD Business Enterprise Architecture.

Mission

Air Force financial managers and tenant organizations use DEAMS to do the following across the Air Force, U.S. Transportation Command, and other U.S. component commands:

- Compile and share accurate, up-to-the-minute financial management data and information.
- Satisfy congressional and DOD requirements for auditing of funds, standardizing of financial ledgers, timely reporting, and reduction of costly rework.

Major Contractor

CACI – Dayton, Ohio

Activity

- In November 2019, the PMO deployed the DEAMS R12 software upgrade to thousands of users worldwide to address software obsolescence that was driving increased operational risks and maintenance costs.

- The Air Force Operational Test and Evaluation Center (AFOTEC) started the FOT&E in December 2019 with a cooperative vulnerability and penetration assessment cybersecurity test. Due to a combination of COVID-19

limitations and difficult to fix software deficiencies, FOT&E is not forecasted to complete until 2QFY21.

- Upon deployment of the DEAMS R12 Software Upgrade, operational users began reporting numerous system deficiencies. Due to COVID-19, AFOTEC adapted a hybrid test approach to include remote data collection using the Microsoft Teams application and on-site visits.

- AFOTEC observed DEAMS usage to complete Air Force accounting of End of Year financial closeout. Observations were conducted both virtually and in-person from September 24 to October 2, 2020. AFOTEC gathered data in-person at MacDill and Eglin AFBs in Florida; Microsoft Teams and other remote connectivity tools facilitated data collection with the Financial Management "War Room" at Wright-Patterson AFB, Ohio.

- DOT&E issued an Early Fielding Report in July 2020 that informed this report.

Assessment

- Since the deployment of the DEAMS R12 Software Upgrade, the discovery of software deficiencies grew at a rate that exceeded deficiency resolution and peaked with 22 severity 1 (Critical) and 105 severity 2 (Major) software deficiencies. After months of deficiency resolution efforts, which early on were creating numerous additional deficiencies, the PMO reached zero severity 1 software deficiencies on September 14, 2020. The PMO is implementing agile developmental efforts to stabilize and reduce the level of severity 2 software deficiencies. As of September 30, 2020, zero severity 1 and 82 severity 2 software deficiencies remain in the operational system. The significant number of major software deficiencies has compromised the operational effectiveness of DEAMS.

- One example of a critical problem that resulted in a major operational impact and many software deficiencies is the DEAMS interface with the Defense Travel System (DTS). The problem affected a significant number of Air Force personnel by delaying payment of travel vouchers. The DTS functionality had previously passed integrated testing, which indicates that the developmental testing was not robust enough to find this critical, high visibility problem. The PMO has since resolved the DTS-related deficiencies.

- A significant number of DEAMS cyber deficiencies remain based upon the findings from the December 2019 CVPA.

- A major reason the PMO's attempts to fix DEAMS problems generated new problems is the lack of an operationally representative test environment in which to test new DEAMS software patches. Configuration differences create uncertainty in test results, preclude effective verification of the root causes to functionality issues, and cause delays in the release of critical software fixes.

- The DEAMS agile development team continues to track and resolve the major deficiencies and needs to focus on improving user mission effectiveness and trust in the system prior to continuing deployment to the remaining 4,600 additional users.

- From the DEAMS Operational User Evaluation in February and March 2018 to the present, users have commented that training does not adequately prepare them for site-specific nuances in workflow. AFOTEC is evaluating training on the effectiveness of using site-specific workflows in the ongoing FOT&E.

Recommendations

- For DEAMS, the Air Force should:
  1. Address cybersecurity vulnerabilities that present a high risk to DEAMS missions.
  2. Continue to improve DEAMS training, with a focus on site-specific workflows.

- For all Air Force programs in agile development, to avoid fielding systems that do not support critical missions, the Air Force should resource programs adequately so that they can:
  1. Conduct robust, integrated developmental testing in an operationally representative test environment using operational users and end-to-end mission thread scenarios to reduce the risk of discovering significant software deficiencies after deployment.
  2. When functional and/or regression testing fails, correct the failures and verify the corrections with subsequent testing prior to proceeding with the release.
  3. Minimize customization of COTS software to help avoid problems during software upgrades. Keep track of any customization and ensure the upgrades are funded to account for customization. Fund adequate business process reengineering training to enable users to complete missions using the upgrade.