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**About Us**  
Karthik Consulting was founded in 2008 to be a reliable and trusted advisor to our customers, providing independent and unbiased recommendations and solutions that mitigate risk and help solve their IT problems. We bring the innovation, passion, and agility of the commercial IT industry to meet the unique challenges of the government.

Our specialties include agile software development, Operations & Maintenance (O&M), program management and cyber security.

We are a DOD Cleared Facility with a DCAA-approved accounting system.

CAGE: 56GH3  
DUNS: 828199880

**Primary NAICS Codes**  
- 541511 - 541512

**Prime Contract Vehicles**  
GSA OASIS Pool 1 and 3  
GSA 8(a) STARS III (via JV)  
GSA MAS  
NIH CIO-SP3 8(a) & SB  
Air Force SBEAS (via JV)  
Army RS3  
Navy Seaport-NexGen  
FAA eFAST



## CASE STUDY

# Modernizing A Mission Critical Legacy Enterprise System for the US Navy

### CUSTOMER

The Office of Naval Research (ONR), Acquisition department (Code 02) University Business Affairs (UBA) performs post-award administration of Contracts and Grants (Awards) issued to universities and nonprofit organizations. The business functions performed include payment administration, tracking deliverables, closeout, purchasing system reviews, negotiation of indirect cost rate agreements, quality assurance, and other efforts needed to facilitate performance of the Awards. ONR performs these functions for other Department of Defense (DoD) components such as Air Force Office of Scientific Research (AFOSR), Army Research Office (ARO), Army Research Lab (ARL), and other government agencies such as Defense Advanced Research Projects Agency (DARPA) and the National Aeronautics and Space Administration (NASA).



### CHALLENGES

As the post-award administration Center of Excellence (CoE) within the federal government, ONR is responsible for the administration of over 25,000+ active Awards worth over \$10B/year and to close-out an additional 10,000+ expired Awards. About 1000 Performers (Universities,

non-profit organizations, and research labs) perform on these Awards. Postaward administration also includes monitoring expenditures, approving invoices, tracking intellectual property, sub contracting, and government property purchased on these Awards.

### Improve access to Award documents:

Easy access to relevant documents are vital for ONR to be able to approve invoices and close-out the Awards within the terms of the Service Level Agreement (SLA). There are over 5 million documents with 200+ document types that support the post award administration process. ONR needed an efficient Document Management System (DMS) with integrated workflows to process the documents and load them with enhanced meta-data to improve search results.

### Eliminate manual invoice entries:

Thousands of invoices are being submitted by the Performers via an internal system or the DoD-wide Wide Area Work Flow (WAWF) system. These invoices need to be reconciled against the contractual requirements and funding lines prior to being approved. ONR wanted to eliminate the process to manually input the WAWF submitted invoices into the internal ONR system which has to be kept in-sync and reconciled with the official ONR and DoD financial systems.

### Eliminate stove-piped applications:

ONR had developed several stand-alone applications to support the post-award management functions. These systems ranged from a DMS (for the Award documents); to a transactional system to track invoices, payments, deliverables; to a reporting system; and a Performer invoicing system.

### Technology Obsolescence:

The stove-pipe applications were built on different technologies, architecture, and programming languages. They were expensive and cumbersome to maintain. In many cases the applications were nearing their technology shelf-life and were close to being not allowed to run on the DoD network.



KC' integrated ecosystem for CAMIS



Awards from other DoD components and federal agencies managed by CAMIS

### Size and Scope of the System

- \$10 Billion+ Portfolio
- 5 Million+ Documents
- 200+ Document Types
- 75,000+ Invoices Per Year
- 25,000+ Active Awards
- 1,000+ Performers

### Significant Accomplishments

- Modernized legacy systems
- Upgraded from Oracle10g-> 11g->12c; Windows 2003-> 2008 -> 2012; Linux 4->5->6
- Deployed 32 releases averaging 22.5 days/ release with no rollbacks
- Implemented EDI and XML based interfaces to Navy ERP, WAWF, and Electronic Document Access Systems
- Implemented CAC/PKI and ECA based authentication
- Obtained two consecutive ATO and supported successful FISCAM audit
- Implemented Business Intelligence (BI) dashboards

### SOLUTION

Developed a 5-year strategic architecture and application migration roadmap to modernize and consolidate the stove-piped legacy applications into an integrated product suite, Contract Administration Management Information System (CAMIS). Migrated the applications from obsolete technologies into a new common architecture and platform that can be supported by the managed services team that provides Operations and Maintenance (O&M) of the underlying infrastructure and is compliant with the DoD Enterprise Architecture Framework (DoDAF). Introduced Agile software development concepts and transitioned the customer to KC's Enterprise Disciplined Agile™ (EDA) Software Development Life Cycle (SDLC) methodology<sup>++</sup>. Implemented new interfaces to DoD systems to increase productivity, efficiency, and improve quality.

### RESULTS

**Transformation to Agile SDLC:** KC helped the customer adopt and transition to Agile software development. KC implemented its CMMI-DEV level 2 rated EDA methodology that is based on CMMI, PMI and ISO best practices. KC has released 4 major and 28 minor releases of CAMIS in a 24 month period delivering software that was deployed on the DoD network on average every 22.5 days, thereby reducing the release cycle from every 8-9 months under the previous waterfall methodology. The customer gained software development process efficiencies, more transparency of the system tracking the status of each change request and bug, and maintenance of source control.

**Integrated application suite:** Following a methodical process and aligning with the strategic roadmap, the stove-pipe applications built on various technologies such as Oracle Forms, Oracle Application Server 10g, APEX, Visual Basic, ASP and Java were systematically consolidated, modernized, and/or eliminated (by implementing interfaces to other authoritative systems). This resulted in an integrated web based product suite (CAMIS 2.0) that provided the functionalities of the various legacy systems while operating on a common platform and architecture built on Microsoft .NET framework,

C# programming language, and Oracle database. The client side utility used for sending emails was consolidated into the CAMIS suite providing history and tracking of emails.

**Direct XML interface to WAWF:** As part of its strategic roadmap implementation, KC eliminated the Java based legacy application used for submitting invoices by implementing a direct interface to WAWF, which is the official DoD system of record for submission of vendor invoices. Following the EDA methodology, KC implemented the XML based interface to WAWF allowing direct processing of various invoice types (Cost, Grant, and NPI vouchers) and actions (submit, void, recall, reject and approve). This allowed invoices to be processed within minutes with automatic business rules and data validation checks thereby eliminating data entry errors, faster financial posting and reconciliation, and more speedy and accurate tracking of Award expenditures.

### Integrated document in-take process:

The Electronic Document Access system is the official DoD central repository of acquisition documents. KC modernized the legacy application that downloaded documents from this DoD system by integrating it into the CAMIS suite with enhanced metrics and tracking capabilities. This streamlined the document in-take process and included additional meta-data about the documents which improved search capability in the DMS and provided enhanced visibility.

**Secure and accredited system:** To comply with the DoD security Certification and Accreditation (C&A) requirements and for CAMIS to obtain the Authority-to-Operate (ATO) on the DoD network KC implemented security best practices, developed standard operating procedures (SOPs), design documents, test plans, user guides, and applied DISA STIG recommendations. At the end of this process, CAMIS was designated as an official Defense Business System (DBS) and has obtained two consecutive full 3-yr ATOs. The DBS designation triggered a Federal Information System Controls Audit Manual (FISCAM) audit which CAMIS underwent successfully.

<sup>++</sup> Refer to the KC Enterprise Disciplined Agile™ SDLC Methodology white paper