# Agile Transformation of a Defense Business System (DBS)

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CMMI-DEV Level 2 Certified

ISO 9001: 2008 Certified

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# AGENDA

- Karthik Consulting (KC) Corporate Overview
  - Corporate Highlights
  - Capabilities
- Agile Transformation of a Defense Business System (DBS)
  - Customer
  - Challenges
  - Approach
  - Solution
  - Results
  - Transformation Highlights
    - Accomplishments
    - Metrics
- Questions

# CORPORATE HIGHLIGHTS

- Founded in 2008, Karthik Consulting (KC) is a SBA certified 8(a) Small Disadvantaged Business (SDB). Valid in the 8(a) program until 12/10/2018

- ISO 9001:2008 and CMMI-DEV Level 2 certified

- Top Secret Facility Clearance

- DCAA approved accounting system

- Experience performing on several types of concurrent prime IDIQ task orders and contracts (CPFF, FFP, and T&M)

- Capabilities in multiple technologies, platforms, architecture, and programming languages

- Excellent Customer Satisfaction (from CPARs and Open Ratings)

- CAGE/DUNS: 56GH3/828199880

- Small Business NAICS Codes
  - 541511 – Custom Computer Programming Services
  - 541330 – Engineering Services
  - 541690 – Other Scientific & Technical Consulting Services

# CAPABILITIES

- Program and Project Management

- Agile Software Development/Legacy application migration

- Independent Verification and Validation (IV&V)

- CIO Support – Business Case Analysis (BCA), Return on Investment (ROI), Total Cost of Ownership (TCO) studies, Project Management Office (PMO)

- Cyber Security – FedRAMP, Certification & Accreditation (C&A) Audits, FISMA/NIST Compliance, PIV/CAC/ECA  PKI implementation

- IT Operations and Maintenance (O&M)

- SETA Support

# CUSTOMER

## US Navy - Office of Naval Research (ONR)

- ONR acquisition department performs post-award administration of Contracts and Grants (Awards) issued to universities and nonprofit organizations.

- The business functions performed include:

  - Contract and Payment administration

  - Monitoring expenditures

  - Award closeout

  - Tracking intellectual property, sub-contracting goals, and physical property (GFP)

  - Purchasing system reviews  and negotiation of indirect cost rate agreements

  - Quality assurance  and monitoring performance of Awards

- Performs these functions for other DoD components and agencies such as:

  - Air Force Office of Scientific Research (AFOSR)

  - Army Research Office (ARO)/Army Research Lab (ARL)

  - Defense Advanced Research Projects Agency (DARPA)

  - 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:

- 25,000+ active Awards and Awards in closeout

- 5 million+ Acquisition documents (200+ document types)

- 75,000+ invoices a year submitted by 1000+ Performers

- **Improve access to Award documents**

  - Easy access to relevant acquisition documents to be able to approve invoices and close-out the Awards within the terms of the Service Level Agreement (SLA)

- **Eliminate manual invoice entries**

  - Thousands of invoices were being submitted by the Performers that needed to be reconciled against the contractual requirements and funding lines prior to being approved

- **Eliminate stove-piped applications**

  - Several stand-alone applications were developed over time to support the post-award management functions (document management, tracking invoices/payments, reporting)

- **Technology Obsolescence**

  - The stove-pipe applications were built on different technologies, architecture, and languages, were expensive to maintain, and were nearing their technology shelf-life

# APPROACH

- Developed a 5-year strategic application and architecture modernization roadmap to consolidate the 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 is easy to support and maintain

- Introduced Agile concepts and transitioned to our *Enterprise Disciplined Agile$^{TM}$* (EDA) Software Development Life Cycle (SDLC) methodology

- Implemented new interfaces to DoD systems to increase productivity, efficiency, security, and improve quality

# SOLUTION

KC built integrated system for Contract and Grant Management

# RESULTS

## AGILE TRANSFORMATION

- **Transition to Agile methodology**
  - Help adopt and transition ONR to Agile software development. Implement our CMMI-DEV level 2 rated and industry standards based SDLC methodology
  - Released <u>1 major, 4 minor and 22 maintenance releases</u> of CAMIS in a 24 month period delivering software that was deployed on the DoD network, on average <u>every 23 days</u>

- **Integrated application suite**
  - Aligning with the strategic roadmap consolidate/eliminate legacy applications built on technologies such as Oracle Forms, APEX, and VB/ASP into a common framework.
  - Create an integrated web based product suite (CAMIS 2.0) built on Microsoft .NET framework, C# programming language, and Oracle database.

- **Direct XML interface to WAWF**
  - Implemented an XML based interface to WAWF allowing direct processing of various invoice types (Cost, Grant, and NPI vouchers) and actions (submit, void, and approve)
  - Invoices <u>processed within minutes</u> with automatic business rules and data validation checks, eliminating data entry errors and providing accurate financial reconciliation

# RESULTS (CONT'D)

- **EDI interface to Navy ERP Financial System**
  - Implemented an EDI based interface to Navy ERP allowing <u>processing within minutes</u> of various financial and contract actions including new Awards and modifications

- **Integrated document in-take process**
  - The Electronic Document Access system is the official DoD central repository of acquisition documents.
  - Integrated the legacy software that downloads thousands of documents into the CAMIS suite with enhanced metrics, tracking capabilities and additional meta-data.

- **Secure and accredited system**
  - The consolidated and integrated CAMIS suite resulted in being classified as a Defense Business System (DBS).
  - Implemented security best practices, developed SOPs, software documentation, Enterprise Architecture artifacts, system security plan, and applied DISA STIGs.
  - Obtained <u>two consecutive full 3-year Authority-to-Operate (ATO)</u> on the DoD network.
  - Successfully underwent the Federal Information Security Controls Audit Manual (FISCAM) audit, triggered by the DBS designation.
  - Delivered over 20,000 pages in documentation for software API, data model/dictionary, Enterprise Architecture artifacts, and Standard Operating Procedures (SOPs)

# TRANSFORMATION HIGHLIGHTS

## SIGNIFICANT ACCOMPLISHMENTS

- Modernized legacy systems now fully compliant with DoD security regulations

- Upgraded from Oracle10g->11g->12c; Windows 2003->2008->2012

- Developed and deployed software at ~23 days/release with no rollbacks

- Implemented source code control with full traceability of changes in each release

- Managed up to three concurrent releases of software development (major, minor, and maintenance) with full source code integrity and traceability

- Zero instance of system outage due to software issues

- Implemented EDI and XML based interfaces to Navy ERP, WAWF, and Electronic Document Access systems

- Implemented Common Access Card (CAC)/Public Key Infrastructure (PKI) and External Certification Authority (ECA) based authentication

- Obtained two consecutive ATOs
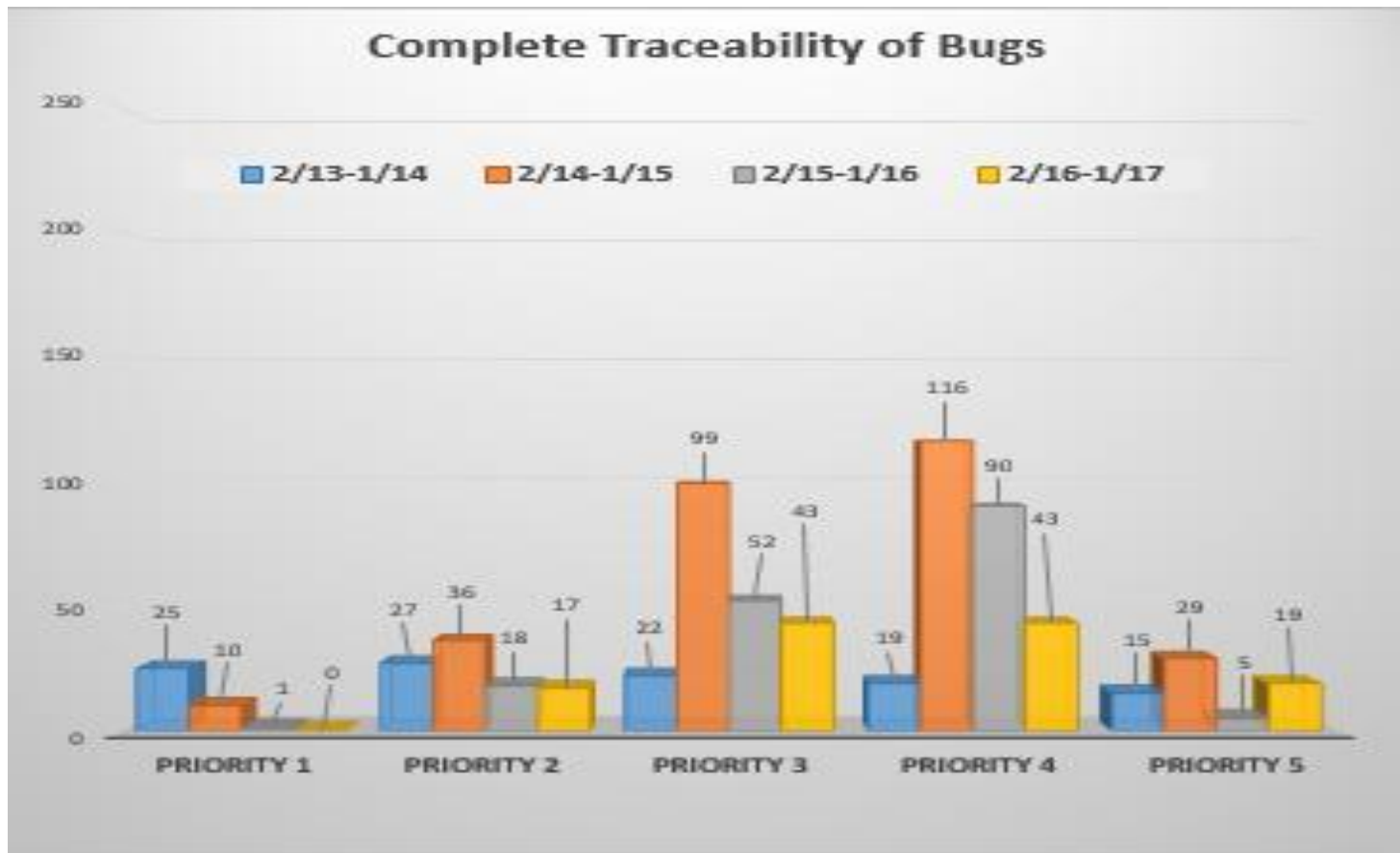
- Implemented Business Intelligence (BI) dashboards

## RELEASE METRICS

## RELEASE METRICS (CONT'D)



Detailed Tracking of Software Metrics

Legend: Number of Releases, Number of bug fixes
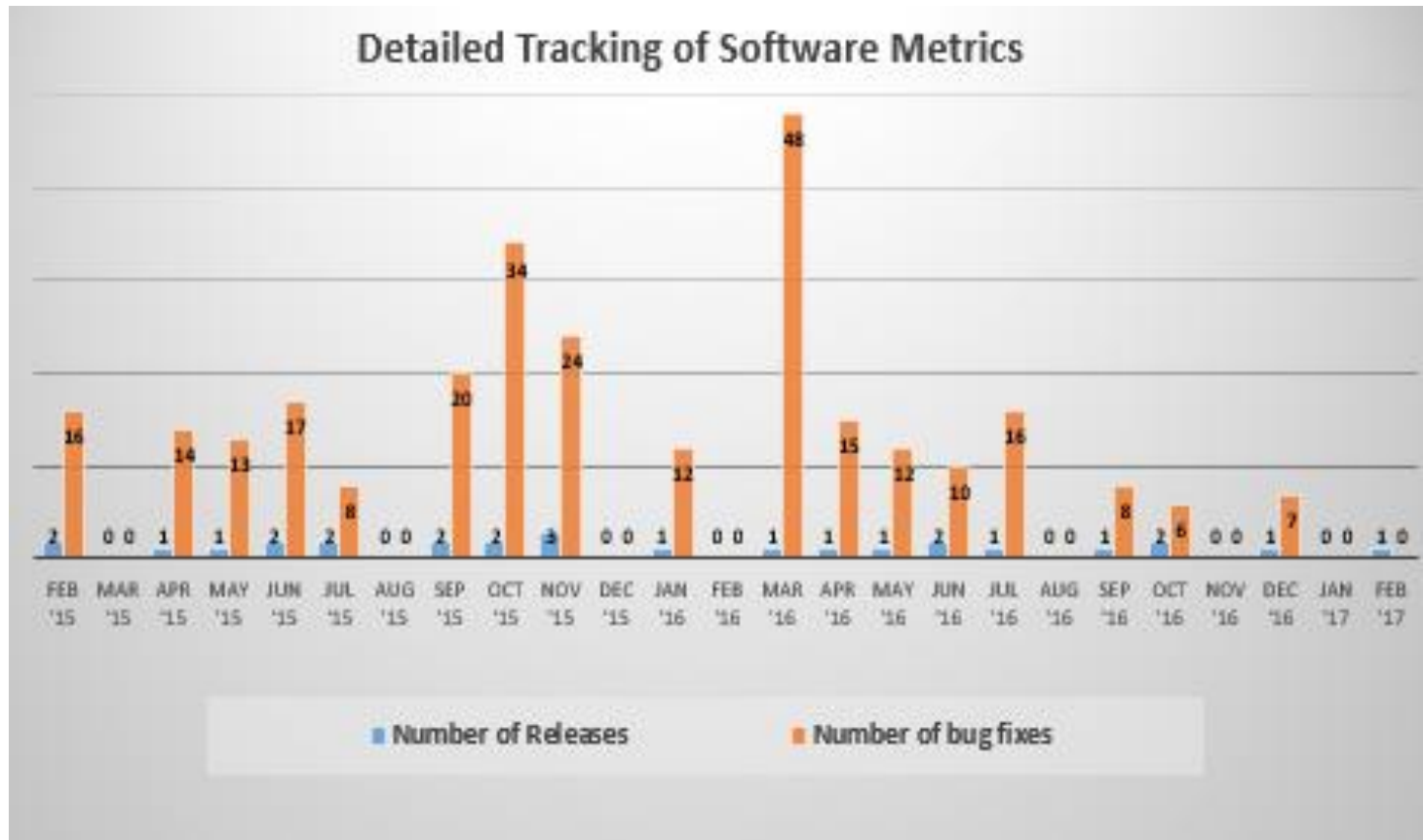
## RELEASE METRICS (CONT'D)



Software Development with Multiple Concurrent Releases

Legend: Maintenance Release · Minor Release · Major Release
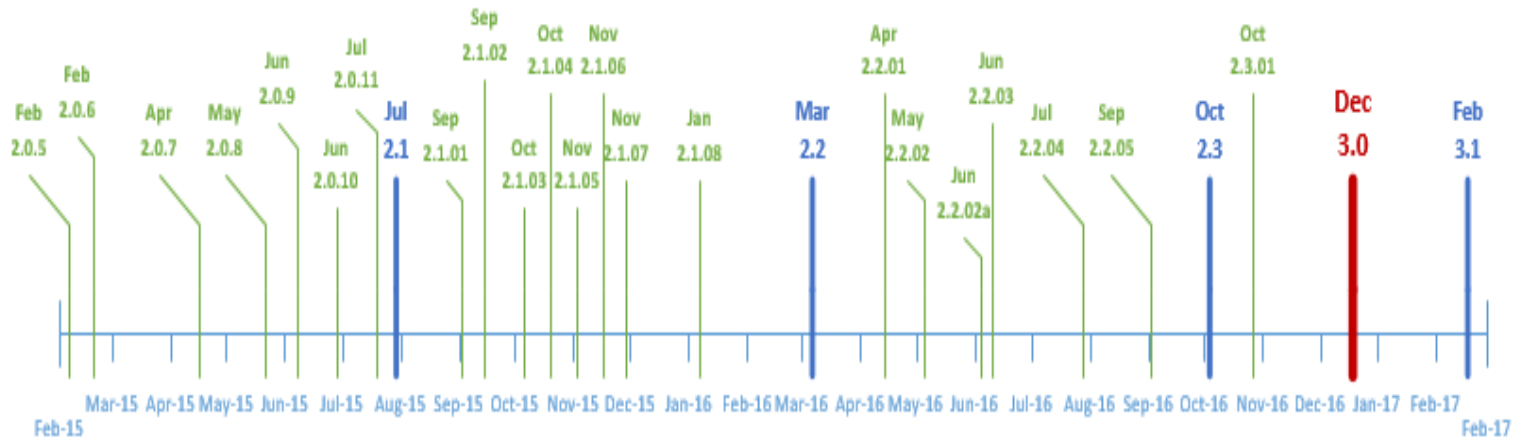
# QUESTIONS?

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