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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
- 541513   - 541330
- 541618   - 541690

Prime Contract Vehicles
GSA 8(a) STARS II
GSA IT-70 (SINs 132-51; 40; 45)
NIH CIO-SP3 8(a)
Air Force SBEAS (via JV)
Army RS3
Navy Seaport-e
Navy Seaport-NexGen
FAA eFAST

Subcontract Vehicles
Army ITES-3S
DLA JETS (8a, SB)
DISA ENCORE III
DHS EAGLE II

CMMIDEV/3℠
Exp. 2021-10-13 / Appraisal # 1351

![ISO 9001:2015 certification] ![afaq ISO 20000-1 IT Service Management] ![afaq ISO 27001 Information Security]

METHODOLOGY

KC Enterprise Disciplined Agile™ Software Development

Karthik Consulting's (KC) *Enterprise Disciplined Agile*TM (EDA) Software Development Life Cycle (SDLC) methodology is built on the following four foundational components, (see Figure 1): **Agile software development** for its ability to quickly adapt and respond to changes; **Capability Maturity Model Integrated-Development (CMMI-DEV)** for its rigor and enterprise scalability; **International Organization for Standardization (ISO) 9001, 27001, and 20000-1** for its Quality, Security and IT Service Management, and **Project Management Institute (PMI)** for its project management best practices. KC's EDA SDLC methodology is CMMI-DEV maturity Level 3 rated and incorporates best practices from the PMI Project Management Body of Knowledge.

Our *EDA methodology* is a hybrid approach that extends the typically "Construction" focused lifecycle of Scrum to address the full, end-to-end delivery lifecycle from project initiation to deploying the solution into production. In addition to software, we create supporting documentation including Information Assurance (IA) Certification and Accreditation (C&A) related documents. This means that we are producing solutions, defined by the customer as acceptable, that solve a larger business

Figure 1: KC EDATM SDLC FRAMEWORK

need. Since the customer is engaged in every stage of the process, they can easily understand, adopt, and support the solution to help them achieve their goals.

Figure 2 shows the *KC EDA SDLC* methodology. At project initiation, we develop a Project Management Plan (PMP) describing the overarching program charter, sponsors, scope as well as subsidiary management plans such as schedule, cost, quality, configuration control, risk, human resources, communications, metrics, procurement, and integration with the customer's program or project portfolio. Our Quality Manager (QM) monitors the adherence to these plans, escalating non-compliance issues to KC senior management.

Software development
Each iteration begins with a short requirements analysis phase, followed by design, implementation and testing phases. The testing includes several types such as integration testing, regression testing, performance/load testing, etc. After the features in the iteration are tested, the iteration is deployed to a "First Look" site accessible to the users for additional User Acceptance Testing (UAT). The process will repeat for each iteration until all the requirements are met and the software is ready for final production release. KC's SDLC processes inherently address documentation requirements. All material for user guide and Standard Operating Procedures (SOP) are incrementally collected and developed during each iteration of the software. KC follows customer specific change control process, as appropriate, (i.e., Change Management Board (CMB)) and will work with the operations and IA teams to provide the required documentation for the changes to be deployed on the network. All source code is under Configuration Management (CM) control using tools such as Git, PVCS, Microsoft Team Foundation Server (TFS).
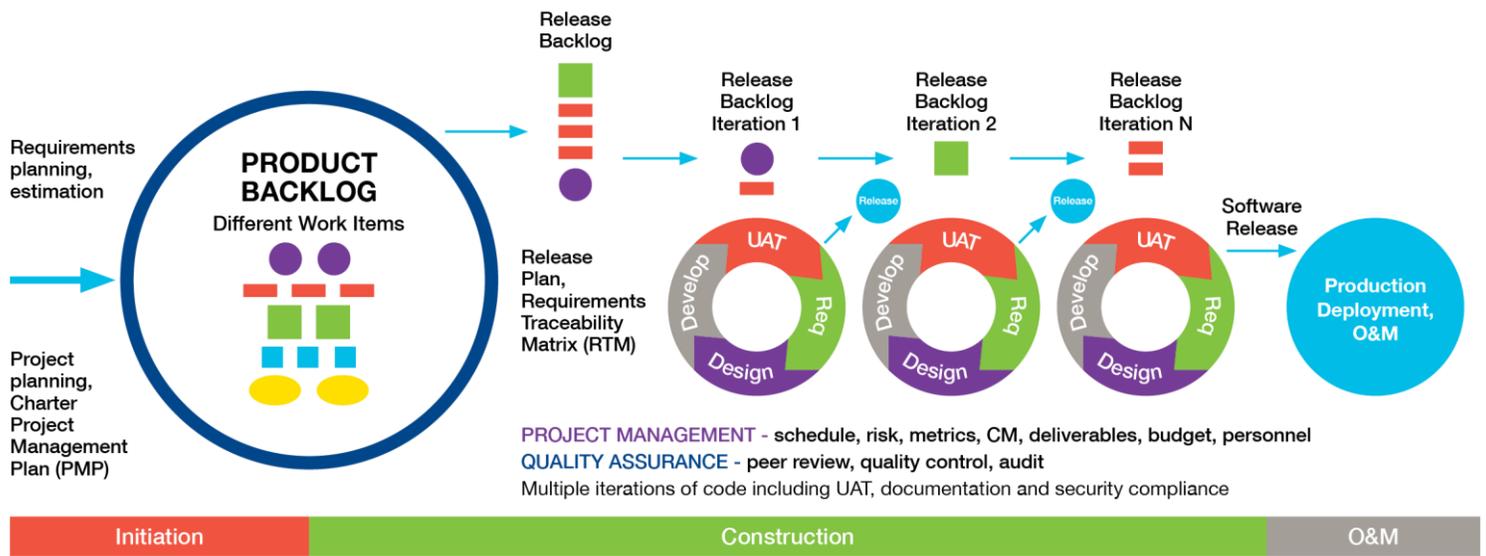
Figure 2: KC EDA™ METHODOLOGY

Requirements Analysis, Design, Coding, and Testing

Requirements Analysis: We work with the product owner, government Contracting Officer Representative (COR), stakeholders and Subject Matter Experts (SMEs) to capture the requirements and develop the Requirements Traceability Matrix (RTM). We follow our requirements management process conducting requirements analysis and develop the level of effort (LOE) for each requirement. As part of the requirements analysis process we will take into account not only the functional requirements, but also requirements related to other areas such as database, security, performance, and interfaces. Once the total set of requirements have been identified and LOE's developed for them, a schedule will be developed by the Project Manager (PM) that is based on multiple iterations of 30 days or less each. The requirements to be implemented in each iteration will be based on the LOE of the requirements, their priority, and dependencies on other requirements.

Design: In each iteration, we perform detailed analysis and develop a design. Particularly for major releases or in earlier iterations it's important to consider alternate design approaches. We evaluate the design alternatives and choose the "best-fit" for implementation.

Coding: We use the CM/source code control tool to create a new code "work set" or "branch" for new releases. Software development will continue using the development tools such as Visual Studio, Eclipse, and JDeveloper. Unit testing is an integral part of our SDLC process. All code is unit tested before being "checked" into the selected source code control tool. The code is "built" frequently and published/deployed to the test environment. Best practices such as continuous integration are implemented.

Testing: A standard definition of bug severity is coordinated with the COR and stakeholders so that each bug is classified for severity and prioritized based on this scale.

We develop test scripts for each iteration and release of the software. Our developers perform unit level testing for any changes they make.

UAT is conducted to confirm acceptability of software changes. Any defects identified during UAT are recorded in the Bug Tracker. The defects are fixed and re-tested as prioritized by the COR. Bugs are tracked using a tool such as JIRA. Once all the high priority bugs are tested and closed the software will be either scheduled for release or proceed to the next iteration.

Once all known bugs are resolved a Test Readiness Review (TRR) is conducted to deploy the software in the production network. At the end of each iteration and release, we conduct an Agile retrospective session discussing the lessons learned and changes for the future releases of the software.

Production Deployment
Once all known high priority bugs are closed and the software is accepted, the release is ready to be deployed into production following our CM processes. We comply with any customer specific change management requirements and obtain formal approval prior to deploying the release into production.

Corporate Processes
KC has mature processes supporting overall Quality Assurance (QA), Project Planning (PP), Project Monitoring and Control (PMC), Measurement and Analysis (MA), Risk Management (RM), and CM. All software development projects we execute follow these processes and are audited by the independent KC QA team. The PM and the QM participate in monthly Integrated Program Review (IPR) meetings with the KC senior leadership to present the project status and discuss the project schedule, risks, metrics, financials, staffing, subcontractor, and quality.