KARTHIK CONSULTING
Beyond the expected

CASE STUDY

Upgrading the Microsoft .NET Framework for a Navy Business System

ONR Contract Administration Management Information System (CAMIS)

THE CUSTOMER

The Office of Naval Research (ONR), Acquisition Department (Code 02), University Business Affairs (UBA) performs post-award administration of contracts and grants issued to universities and nonprofit organizations. KC designed, built, and operated CAMIS — a designated Defense Business System (DBS) with Authority-to-Operate (ATO) on the DoD network — providing 360-degree visibility into awards, documents, financials, performers, and payments. The platform is built on the Microsoft .NET Framework, C#, and Oracle, with Visual Studio as the development IDE.

KEY STATS

.NET 4.7
Target framework upgrade

33
Production releases with zero rollback

100K+
Invoices/year via WAWF/PIEE

5
Legacy stacks consolidated:
Oracle Forms, APEX, VB, ASP, Java

200+
Acquisition document types automated from EDA

2
Consecutive 3-year ATOs achieved

THE CHALLENGE

CAMIS had grown from a portfolio of stove-pipe applications built on disparate, aging technologies — Oracle Forms, Oracle APEX, Visual Basic, ASP, and Java. Sustaining the platform required a coordinated modernization onto a single Microsoft .NET architecture: upgrading to .NET Framework 4.7 (the latest release in 2017), refactoring legacy forms into ASP.NET, lifting database-enforced business rules into an explicit .NET business layer, and replacing batch utilities with direct XML web services to DoD authoritative systems — all while preserving the ATO and integration with five external interfaces processing over 100,000 invoices annually.

THE SOLUTION

KC executed a sequenced, ATO-aware modernization on .NET Framework 4.7 using 2017 best practices — Visual Studio 2017 as the IDE, KC's Disciplined Agile (CMMI ML3) lifecycle, TFS / VSTS pipelines with MSBuild and gated check-ins, DISA STIGs for IIS and .NET, TLS 1.2 enforcement, and Fortify / Veracode in the build pipeline. The work was decomposed into four major workstreams executed in parallel:

Oracle Forms / APEX → ASP.NET

Each Oracle Form module, menu, and menu item was catalogued in a traceability matrix and mapped one-to-one to its replacement ASPX page (or MVC view/controller pair). The matrix tracked completeness by form, block, canvas, LOV, and PL/SQL program unit — giving ONR a verifiable burn-down of legacy functionality retired in each sprint.

Triggers Lifted to .NET Business Layer

Business rules previously enforced by Oracle database triggers and packaged PL/SQL were extracted, documented, and re-implemented as explicit C# business rules in a dedicated .NET business layer. Hidden logic was eliminated, rules became visible to developers and auditors, and unit/regression testing became possible across the rule set.

EDA Intake Web Services

.NET XML web services (WCF/ASMX with SOAP) built in Visual Studio automate hourly polling of the Electronic Document Access (EDA) repository — retrieving hundreds of contract and modification documents per cycle, persisting them into the CAMIS Document Management module, and tagging each with enriched metadata for enhanced search. WS-Security with PKI, async/await, retry with back-off, and idempotent intake.

WAWF / PIEE Invoice Services

.NET XML web services interface directly with the DoD Wide Area Workflow (WAWF) / PIEE, replacing a legacy Java utility. They consume and emit XML for Cost, Grant, and NPI vouchers and support the full action set: submit, void, recall, reject, approve. Hundreds of XML files are processed hourly through XSD-validated pipelines — eliminating data-entry errors and enabling near-real-time financial posting.

THE RESULTS

- CAMIS 2.0 consolidated onto a single .NET / C# / Oracle architecture, retiring Oracle Forms, APEX, Visual Basic, ASP, and the Java invoice utility.
- 33 production releases delivered with zero rollback, including the .NET framework upgrade, Windows/Linux OS and Oracle database upgrades, managed across three concurrent release trains.
- Hundreds of EDA documents and WAWF/PIEE invoice XML files processed hourly with full XSD validation — eliminating data-entry errors and accelerating financial reconciliation.
- Two consecutive 3-year ATOs achieved under NIST SP 800-53A; DASN kudos for software quality and audit readiness.