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For more information on Conquest, Inc. please check:
<http://daffy.conquestnet.cncdsl.com>

Note. C4ISR was the original name for the Dept. of Defense architectural framework. C4ISR is defined as Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance framework, developed under the auspices of the C4ISR Integration Task Force (ITF) Integrated Architectures Panel.

In 1996 the US Congress mandated that U.S. government agencies develop enterprise architectures that established standards for software development and integration. Most US agencies are still working on this assignment. This case study considers an enterprise architecture developed under that program.

Problem

Conquest, Inc., is a consultancy that develops solutions for federal and commercial customers. In 1999, Conquest began working with a major federal intelligence agency that collects, synthesizes and analyzes information, then distributes it to other agencies. The client's goal was to develop an enterprise architecture that would help them improve their technology planning at the enterprise level. The agency faced a simple, if challenging, goal: defining current technology programs and future technology development so that it could (1) make better decisions about systems acquisition or development and (2) use it as a capital planning system for making budget decisions.

The agency faced several formidable challenges because of the size and complexity of its operations. Islands of "stovepipe" systems could not intercommunicate, were not reusable and were costly to replace. Data was not easily interchangeable because information was being captured in incompatible formats and assigned different meanings. Information to build an enterprise architecture and create models for the various operational pieces was inconsistent or unavailable. Systems did not support a coordinated set of processes that in turn supported overall agency goals. Some systems performed redundant functions.

Regulatory pressures also drove some aspects of the project. The Clinger-Cohen Act (1996) and recent Office of Management and Budget (OMB) mandates require that agencies be accountable for technology expenditures to secure funding. The agency was required to support the Dept. of Defense Architectural Framework (DoDAF) (formerly C4ISR), a standard framework that the DoD had mandated affiliated agencies use. The DoDAF was a brand new guideline when the project began and the first version left a lot of latitude for interpretation.

As enterprise architecture experts, Conquest plays a key role acting as a lead contractor for product and view definitions and functional knowledge. Conquest acts as part of a larger team offering domain insight/experience as well as modeling/enterprise architecture experience. At the start of the project, the contractors worked with the agency to understand some unique requirements for its architecture, including:

- Developing a new business approach that incorporated enterprise-wide business requirements and technology needs into an integrated way to run the business.
- Adopting a systems engineering approach that interpreted and implemented

the Dept. of Defense's standard DoDAF. (Note: The DoDAF features three different views: systems, operational and technical.)

- Integrating multiple architectural efforts into one enterprise architecture, including those that had been built and were in the process of being built by internal departments as well as customer groups. The team had to secure the feedback and approval of the owners of these subordinate efforts.
- Although not an initial requirement, concordance between diagrams quickly emerged as a vital piece of the requirements.

Conquest began its involvement by focusing on the functional analysis of the core mission. They talked with domain experts (data gatherers, information manipulators and information producers) as well as system architects and agency management. Architects began by developing the approach to modeling the enterprise, reviewing and selecting the appropriate tools and methods and then architecting the models by interpreting DoDAF guidelines and agency goals.

In the end, Conquest recommended a comprehensive modeling strategy for building the architecture by defining which views were to be used, in which order, which diagram types and architectural elements to include, how to achieve concordance and how to interpret the DoDAF framework guidelines. Conquest also defined the "to be" architecture. In addition, the customers and subject matter experts were encouraged to examine and appraise the models.

Solution

Conquest architects needed a tool that could be easily customized to meet DoDAF requirements and could help them understand how the various processes and systems fit together. After an extensive evaluation, Conquest and the architecture team chose Popkin's System Architect as the primary enterprise modeling tool. System Architect offers complete support for DoDAF operational, systems and technology views to produce the required government framework deliverables. System Architect offers integrated support for DoDAF, the Treasury Enterprise Architecture Framework (TEAF), Federal Enterprise Architecture Framework (FEAF), Zachman framework and IDEF (Integrated Computer-Aided Manufacturing (ICAM) DEFINition).

"System Architect helps users understand how all the pieces of this complex environment fit together through building a comprehensive enterprise architecture," said Tom Dalpini, senior architect, Conquest Inc. "We were able to choose the best modeling approach for the goals we were trying to achieve because the tool was so flexible in supporting a wide variety of modeling techniques."

System Architect's built-in flexibility enables Conquest to easily customize the views to the unique needs of the agency. For example, using System Architect's USRPROPS (user properties) feature, architects can add fields or attributes for any diagram or object and add nonstandard architecture

For more information on the various U.S. Government architecture initiatives, please check: www.cio.gov and then select architectures.

For more information on Popkin Software's System Architect product, please check: www.popkin.com. For specific information on Popkin's support for government frameworks, select Federal Systems on the Popkin site.

elements to a diagram (such as observations for a diagram).

Most importantly, System Architect's built-in concordance allows team members to update individual models and have confidence that the changes are reflected throughout the architecture. To help users share data and views, System Architect supports a server-based central repository. In addition, diagrams can be exported from System Architect into PowerPoint, Word or Excel for review and approval.

"System Architect makes it easy to document how information flows within an organization," said Dalpini. "An enterprise architecture in a strong modeling tool like System Architect offers an ideal communication vehicle for the many people involved—contractors and internal business process and IT teams—to communicate, collaborate and keep the organization on track."

Benefits

More than two years into this multi-year project, the agency has already benefited from the implementation of an enterprise architecture. The standard DoDAF has facilitated consistent comparisons, including a glossary of terms with definitions to ensure a common understanding. The architecture has helped the agency's sub-organizations coordinate technology initiatives. Modeling helps facilitate feedback from throughout the agency so that comments can be more easily incorporated into the development process. Participants can more easily see and understand the potential impact of changes.

Conquest's architecture design helped the agency begin to understand its future operations and processes. Model-driven architecture helped facilitate communication by graphically representing vast amounts of data into discrete views that could be reviewed and understood across different organizational groups and business areas. Modeling also encouraged collaboration between groups, helping them identify redundant and non-mission enhancing activities, and driving significant cost savings. To help federal agencies jumpstart their development process, Popkin now offers an integrated DoDAF option for System Architect.

The agency views the project as a wise long-term investment. The architecture has been embraced by its sub-organizations and customers, fostering communications and a shared drive to meet business goals. In the long term, the architecture will enable the agency to make better budget decisions on current and future technology programs. Eventually, groups will need to show how their technology fits into the enterprise architecture before receiving funding. Conquest will continue to play a key role in the entire life of the architectural effort, providing leadership in the areas of modeling the business and providing functional expertise.

For more information on this case,
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