



ARCHER

THE CHALLENGE

The ability to conduct clear, concise and unambiguous communications is one of the key enablers desired by any organization tasked with development of complex, integrated software-based systems. CSCI developed a method to quickly generate efficient and effective visual documentation from the onset of a product's conceptual definition. In order to accomplish disciplined system engineering activities with a broad set of stakeholders a diverse set of attributes must be documented including business operations, information exchanges, constraints, external interfaces, user types, system design and physical location implications. The CSCI method provides the tools, expertise and best-practices to enable any customer to quickly communicate multiple aspects of the desired/actual system design with any interested party as well as provide a comprehensive set of documentation against which assessments and analysis can subsequently be performed.

THE STRATEGY

Advanced Requirements Characterization and Enterprise Representation (ARCHER) is a defined process to simplify or abstract system engineering and integration tasks. The process utilizes a data-centric approach to system definition and documentation. ARCHER applies high-level system design concepts and methodologies to large scale software application definitions and enables the capture of software capability and system-to-system integration requirements.

ARCHER is a scalable, multi-level, multi-functional data and activity modeling method. It utilizes an integrated package of diagramming methods and viewpoints that can be as lean or robust as needed to fulfill the needs of a given customer.

The models can be visually navigated by utilizing a "homepage" view. This page graphically depicts the relationships between the entities (diagrams, matrices, documents, etc.) in the model and provides links between all views for easy review. Standard Microsoft Office products are used in the development of these

models and each model is delivered in full-functioning Adobe PDF files for complete portability.

The ARCHER method delivers a unique combination of DoD and commercial industry-recognized diagramming standards and techniques. The method aims at utilizing the best diagramming or documentation techniques for the communication need fulfilled by each view and results in a cohesive system definition package. These techniques include: Business Motivation Modeling (BMM), Workflow and Dataflow analysis, DoDAF V2.0 viewpoints as needed, System Use Case Modeling (UML) and Business Process Modeling Notation (BPMN 2.0).

This method is applied at four levels of abstraction within a system. These levels are: Conceptual or Operational Workflows, System Design, User Interaction and Business Process Rules and Logic. The various techniques are used throughout the levels where they provide the best fit and most benefit.

THE RESULTS

ARCHER was developed to illustrate the development of models that can communicate across the vast landscape of system stakeholders (end users, engineers, managers, senior leadership), regardless of operational or engineering background. It utilizes various graphical techniques to help stakeholders intuitively grasp system requirements, architectures, constraints, etc.

ARCHER provides mechanisms for documenting all aspects of system definition including business and/or operational work, system design, user interaction, rules placed on the system and processes. The resultant package provides an integrated, understandable view of all aspects of the system in one, easy-to-navigate model.

At the time of contract with a customer, the scale of the model can be determined and therefore the appropriate views that will be developed can be defined. The ARCHER method does not dictate the quantity, types or usage of views to be developed, but rather remains flexible to fit the needs of the customer.