Chapter V
Activity-Based Methodology for Development and Analysis of Integrated DoD Architectures

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ABSTRACT

This chapter describes the activity-based methodology (ABM), an efficient and effective approach toward development and analysis of DoD integrated architectures that will enable them to align with and fully support decision-making processes and mission outcomes. ABM consists of a tool-independent disciplined approach to developing fully integrated, unambiguous, and consistent DODAF Operational, System, and Technical views in supporting both "as-is" architectures (where all current elements are known) and "to-be" architectures (where not all future elements are known). ABM enables architects to concentrate on the Art and Science of architectures—that is identifying core architecture elements, their views, how they are related together, and the resulting analysis used for decision-making purposes. ABM delivers significant architecture development productivity and quality gains by generating several DoDAF products and their elements from the core architecture elements. ABM facilitates the transition from integrated "static" architectures to executable "dynamic" process models for time-dependent assessments of complex operations and resource usage. Workflow steps for creating integrated architecture are detailed. Numerous architecture analysis strategies are presented that show the value of integrated architectures to decision makers and mission outcomes.

INTRODUCTION

This document provides guidance in developing fully integrated, unambiguous, and consistent DoD architecture framework (DoDAF) and architecture descriptions in supporting both "as-is" domains (where all current elements are known) and "to-be" domains (where not all future elements are known). It presents a disciplined approach in identifying core architecture data elements, their

views, how they are related together, and how they compare with other architectures developed according to this guidance. The resulting analysis based on common, integrated architecture data can then be used for decision-making purposes. The associations between these core elements form the basis of an integrated architecture data model. Using these core architecture data elements and their associations, significant architecture development productivity and quality gains can be obtained by providing a standard means for comparing and relating architecture descriptions. Workflow steps in creating an integrated architecture are detailed.

Architectures are a means to an end and not an end to themselves. They need to be aligned with and support the decision-making process and ultimately mission outcomes and objectives. Figure 1 depicts this process where mission outcomes are determined by mission decisions, chosen from among a set of courses of actions, based on analysis and assessments of architecture data, coming from both integrated and executable architectures. Having a disciplined process that ensures quality architectures raises the potential for quality and consistency in their descriptions and minimizes discrepancies. Consequently, the analytics will produce quality results, not be prone to misinterpretations, and thus, be of high value to decision makers and mission outcomes.

BACKGROUND

The DoD architecture framework (DoDAF) provides DoD commands, services, and agencies with the rules and guidance for describing architectures for both warfighting operations and business processes (DoDAF, 2003). DoDAF's purpose is to ensure that the architecture descriptions contain related architecture entities and relationships that can be used (1) for understanding, comparing, and integrating families of systems (FOSs) and systems of systems (SoSs) and (2) to enable in-

Figure 1. Role of architectures in the decision-making and mission outcome processes