

12<sup>TH</sup> ICCRTS  
“Adapting C2 to the 21<sup>st</sup> Century”

**Using JCIDS DoDAF Architecture Primitives  
to Assemble a Repository for  
Enterprise-wide Analysis and Decision-Making**

Topics:

Track 1: C2 Concepts, Theory, and Policy  
Track 8: C2 Technologies and Systems  
Track 3: Modeling and Simulation

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As part of the Joint Capabilities Integration and Development System (JCIDS) process, the Department of Defense (DoD) has mandated development of DoD Architecture Framework-compliant architectures in support of the Net-Ready Key Performance Parameter used in both requirements (Initial Capabilities Documents, Capabilities Development Documents, Capabilities Production Documents) and acquisition documentation (Information Support Plans). With this requirement, the DoD is recording vast amounts of information, including data flows that move on and off from the described platforms, with uses far exceeding the sphere of JCIDS. However, this information is not being gathered into repositories that will enable reuse of this information not only in the JCIDS process, but for myriad other uses including Modeling and Simulation.

This paper will propose a methodology for capturing and amalgamating information collected during the JCIDS process, enabling true enterprise architectures to be built using their constituent parts, with far-reaching application beyond the realm of JCIDS. Additionally, the paper will recommend a governance process by which this information can be maintained throughout the life cycle of the various programs for use in the JCIDS process, as well as other applications, including Modeling and Simulation supporting analyses for acquisition, operations, and simulation of operations.

# Outline

## 1. Introduction

### 1.1. Abstract

As part of the Joint Capabilities Integration and Development System (JCIDS) process, the Department of Defense (DoD) has mandated development of DoD Architecture Framework-compliant architectures in support of the Net-Ready Key Performance Parameter used in both requirements (Initial Capabilities Documents, Capabilities Development Documents, Capabilities Production Documents) and acquisition documentation (Information Support Plans). With this requirement, the DoD is recording vast amounts of information, including information flows that move on and off from the described platforms, with uses far exceeding the sphere of JCIDS. However, this information is not being gathered into repositories that will enable reuse of this information not only in the JCIDS process, but for myriad other uses including Modeling and Simulation.

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### 1.2. Thesis

DoDAF Architecture artifacts, developed in support of the JCIDS process, contain a plethora of information about individual systems. When properly structured, this information can be used to develop enterprise architectures representing the amalgamation of several systems in a coherent and executable framework.

The data compiled in the DoDAF architectures are also very useful in establishing the structure and baseline functional environment for modeling and simulation (M&S) efforts. Architectures describe system functionality, how they are used operationally, and what information and data flows between components. M&S provides an operational laydown in which the disparate architectures are interconnected and exercised.

Interrelated information is compiled via DoDAF architectures, the M&S community, and any of a number of efforts across the spectrum of DOTMLPF,

as well as the testing and financial communities. This information should be made available in searchable, updatable data stores made available to the disparate communities who will use the data, using a governance policy enforceable through technical means. Technologies to bring this to fruition are beginning to make themselves available, especially when one considers the cost-of-entry threshold; these will be discussed in subsequent sections of the document.

### 1.3. Architecture “primitive”, a definition

As defined by the Encarta Dictionary: English (North America), a primitive is a “a simple element of a computer program or graphic design from which larger programs or images can be constructed” or “something such as a concept, feature, or formula from which something else is derived”.

Architectures are composed using discrete parts, including activities, system functions, business processes, and ties to doctrine (UJTL, Service Task Lists, CSFL, NCOW RM, etc.). These composable parts are what we are addressing when we speak of architecture primitives, and these primitives can be used and reused across multiple architectures in multiple domains.

## 2. Background

2.1. Summary of Net Ready-Key Performance Parameter (NR-KPP) architecture requirements

2.2. Relation to Joint Capability Integration & Development System (JCIDS) documents

2.2.1. The Initial Capability Document (ICD) and the Capability development Document (CDD): helps to define what is to be built (requirements).

2.2.2. The Capability Production Document (CPD): defines what has been built.

2.2.3. The Information Support Plan (ISP): defines how the platform will affect the environment from a communications perspective, as well as the platform’s needs from the environment in order to operate correctly.

2.3. Platform Architecture Primitives Collected in NR-KPP

2.4. Platform vs. Enterprise Architectures

## 3. Difficulties in the Development of Enterprise Level Architectures

3.1. Architecture primitive consistency across the enterprise.

3.2. There’s no facility being employed to “check the homework” of the programs.

3.3. There’s no facility being employed that can pull disparate platform architectures into a coherent enterprise.

3.4. Vast amounts of information is being collected via several different disciplines (M&S, OT&E, etc.) with none of it going into a federated data store for use across multiple disciplines (PfM, Manpower, Doctrine, etc.)

4. Enterprise Primitive Amalgamation Process
  - 4.1. How the platform data can be the source for enterprise data
    - 4.1.1. Pulling in architecture information in a federated manner
    - 4.1.2. Scrub or bridge data? Discussion and implications of turning “dirty” data into useable data.
    - 4.1.3. Requirement for facilities, governance, and funding to accomplish.
  - 4.2. Additional sources for primitives to be amalgamated (M&S [DIFs], OT&E data, etc.)
  - 4.3. Devil in the details: it’s not a technology issue so much as a political issue regarding the data.
5. Governance Process
  - 5.1. Why governance?
  - 5.2. Data Administration and Stewardship.
  - 5.3. The need for useable interfaces and tools.
6. Enabling Technologies: a discussion of technologies enabling creation and management of enterprise repositories.
7. Application to Other Fields
  - 7.1. How the same data collected can be used for modeling and simulation
  - 7.2. The value beyond JCIDS: Manpower, Doctrine and/or Tactics/Techniques/Procedures analysis, and Portfolio Management.
  - 7.3. ISP analysis: the collection of issues and critical mission threads across multiple platforms.
8. Other Useful Work on This Concept
9. Conclusion