Analysis of MOSA Implementation in Navy Acquisition Programs

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Overview

- Background
- Policy
- Current Research
- Initial Findings
- Preliminary Conclusions

Background

- Modular Open Systems Approach (MOSA)
  - An integrated business and technical strategy that employs a modular design…. (OSJTF)
- MOSA Principles
  - Enabling Environment
  - Modular Design
  - Key Interfaces
  - Open Standards
  - Conformance

Background

- Open Architecture (OA)
  - A Navy initiative for a multi-faceted strategy providing a framework for developing joint interoperable systems that adapt and exploit open-system design principles and architectures…. (Naval OA website)

MOSA Policy

- "A modular open systems approach shall be employed where feasible…" *(DoD Directive 5000.1, May 2003)*

- "All programs…shall brief their MOSA implementation status to the Milestone Decision Authority to determine compliance…" *(USD (AT&L) Memo, April 2004)*

OA Policy

- "…Enterprise team shall prepare, staff, and promulgate a Navy wide OA business strategy…" *(ASN (RD&A), 5 Aug 2004)*

- "…establishes the requirement to implement Open Architecture (OA) principles across the Navy enterprise…" *(Deputy Chief of Naval Operations (Warfare Requirements and Programs), 23 Dec 2005)*

Current Research

Analyze how the Navy is monitoring the implementation of MOSA in its defense acquisition programs.

Assessing MOSA Implementation

- Assessment of acquisition program's level of "openness" conducted using Open Architecture Assessment Tool (OAAT)

- Assessment results reflected in the Open Architecture Assessment Model (OAAM)

Open Architecture Assessment Tool (OAAT)

- Excel-based tool designed to provide a quantifiable estimate for a program or system with regard to its level of "openness"

Open Architecture Assessment Tool

- "Openness" refers to both programmatic and technical characteristics of a program that support
  - Modular design
  - Easy interoperability with other systems
  - Extensive employment of commercial standards
  - Enhanced competition for development and support
  - Facilitates rapid technology insertion

Open Architecture Assessment Tool

- The OAAT provides an assessment of the user's responses to questions about the programmatic and technical practices of the program and plots its "as-is" state on the Open Architecture Assessment Model (OAAM)

- OAAT, version 1.1 includes OSJTF's MOSA PART questionnaire, which the Department of Defense requires all Acquisition Category (ACAT) programs to complete

OAAT Assessment Areas
(Version 1.1)

<u>Technical Areas</u>

- Design Tenet: Interoperability

- Design Tenet: Maintainability

- Design Tenet: Extensibility

- Design Tenet: Composability

- Design Tenet: Reusability

- Design Tenet: MOSA

30 Questions

(Includes 13 MOSA PART questions)

OAAT Assessment Areas
(Version 1.1)

Programmatic Areas

- Open Systems Approach

- Open Architecture

- Open Modular Design

- Interface Design and Management

- Treatment of Proprietary Elements

- Open Business Practices

- Peer Review Rights

- Technical Insertion

- Commercial Standards

- Compliance

29 Questions

(Includes 10 MOSA PART questions)

Area or Section	Section	Total Questions Applicable	Total Questions Not Applicable	Max Score	Achieved	Normalized
A	Open Systems Approach	2	0	8	2	25.0%
B	Open Architecture	2	0	8	2	25.0%
C	Open Modular Design	3	0	12	3	25.0%
D	Interface Design and Management	4	0	16	4	25.0%
E	Treatment of Proprietary Elements	4	0	16	4	25.0%
F	Open Business Practices	4	0	16	4	25.0%
G	Peer Review Rights	3	0	12	3	25.0%
H	Technical Insertion	4	0	16	4	25.0%
I	Commercial Standards	1	0	4	1	25.0%
J	Compliance	19	0	76	19	25.0%
	Combined Programmatic Rating	**40**	**0**	**136**	**34**	**25.0%**
K	Design Tenet: Interoperability	6	0	24	0	0.0%
L	Design Tenet: Maintainability	2	0	8	0	0.0%
M	Design Tenet: Extensibility	3	0	12	0	0.0%
N	Design Tenet: Composability	2	0	8	0	0.0%
O	Design Tenet: Reusability	4	0	16	0	0.0%
P	General Design Tenets	13	0	52	0	0.0%
	Combined Technical Rating	**30**	**0**	**120**	**0**	**0.0%**

Open Architecture Maturity Matrix

Programmatic Levels

4: Open and Net-Centric

3: Common

2: Migrating to Openness

1: Connected
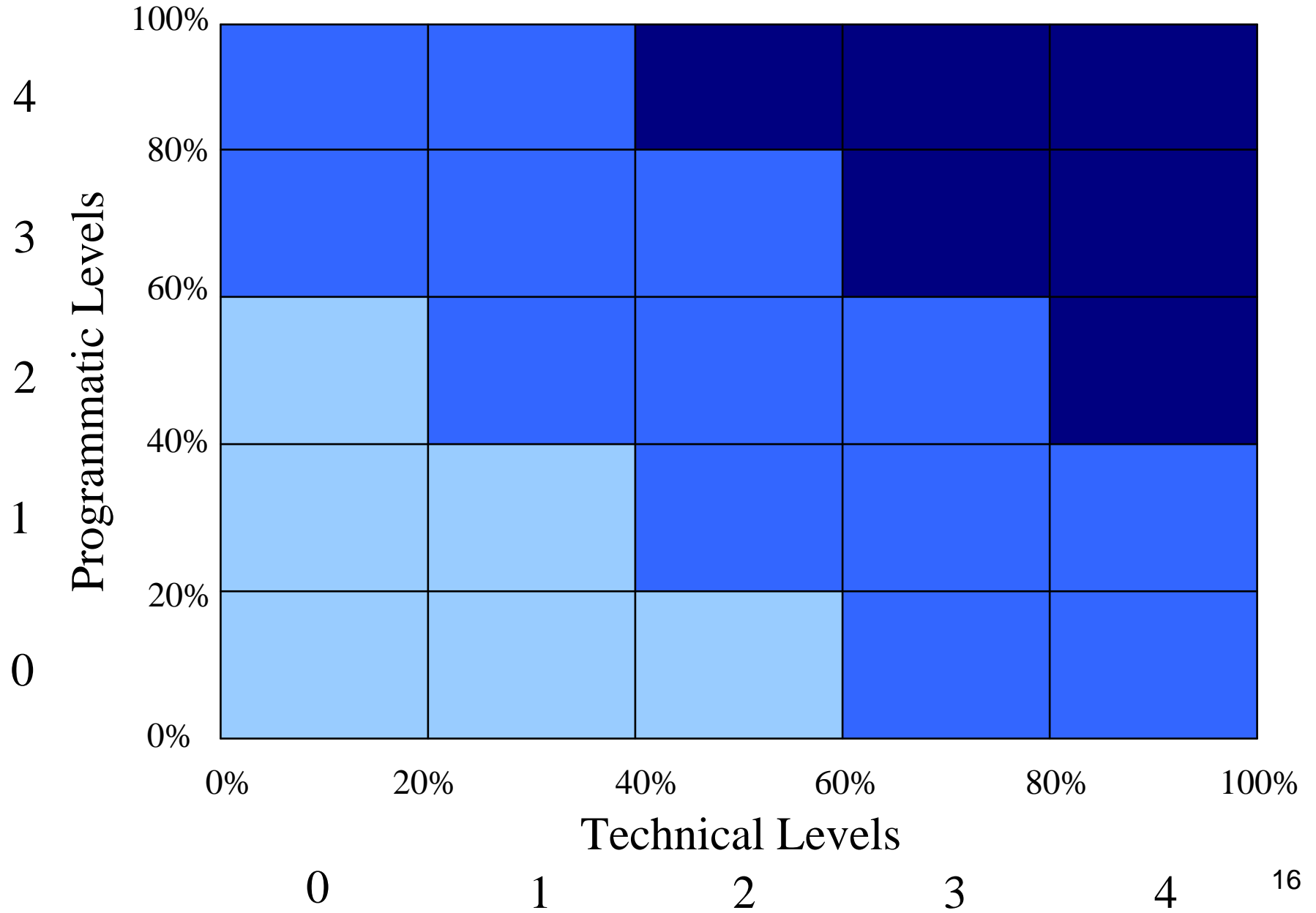
0: Isolated

Technical Levels
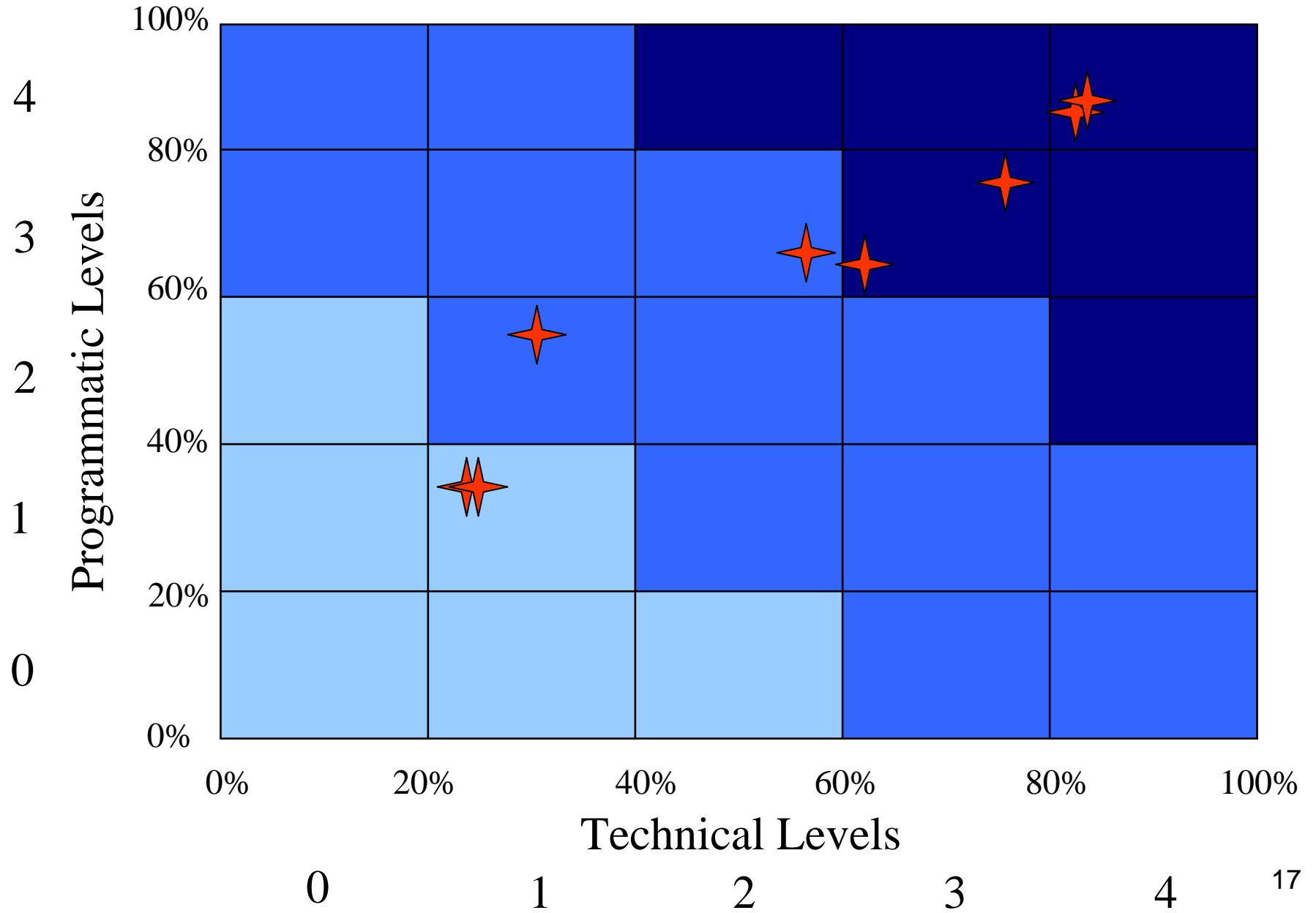
4: Enterprise

3: Common

2: Layered & Open

1: Layered
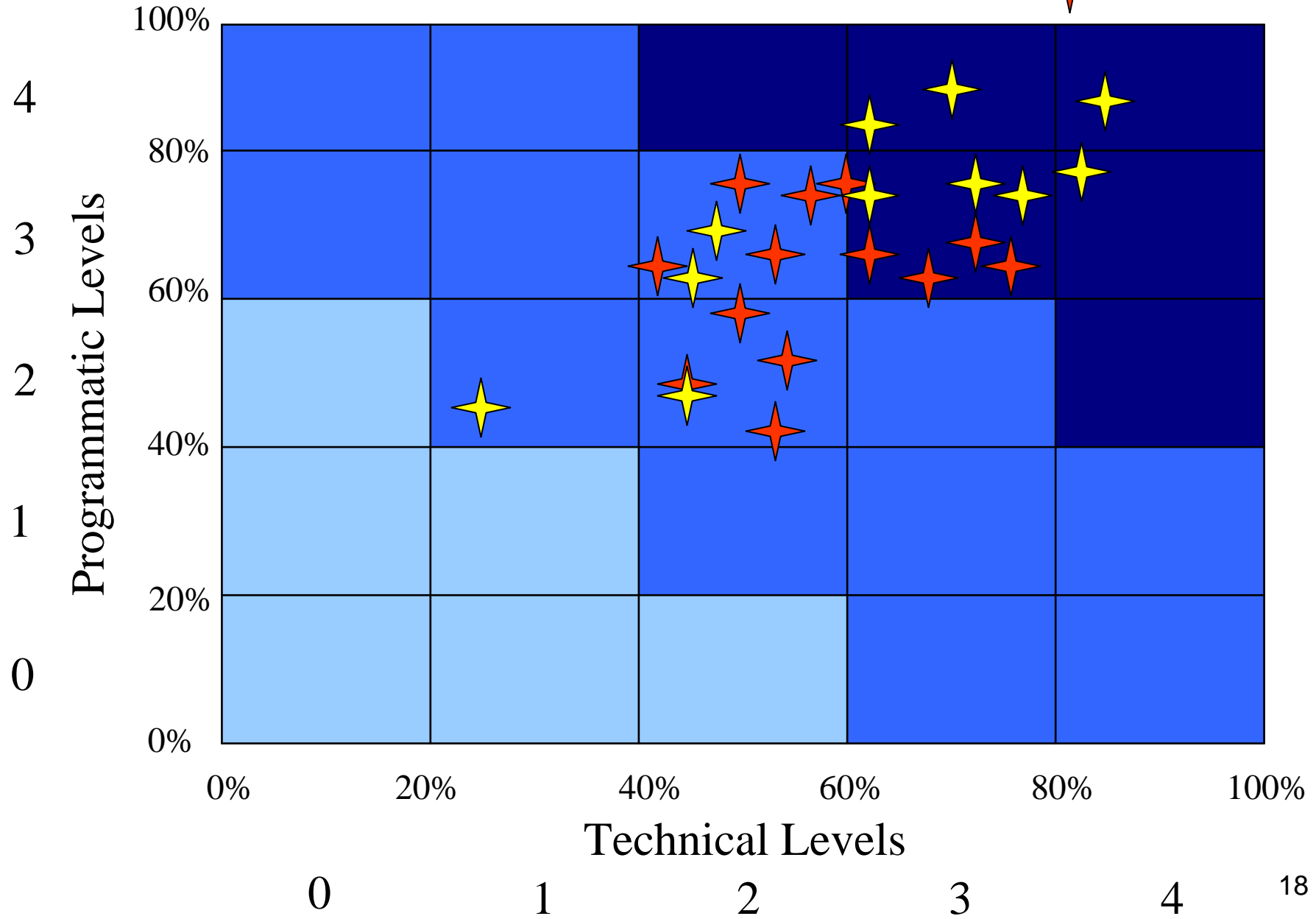
0: Closed

OAAT Assessment Matrix

Sub Domain OAAT Assessments

Air Domain OAAT Assessments

Reporting Assessment Results

- PMs are directed to assess and provide written reports on compliance with OA policy using the OAAM
  - "As-is" level of openness
  - "To-be" level of openness

Reporting Assessment Results

- PMs conduct a BCA to determine the cost and benefits of appropriate level of openness

- Domains report assessment results to PEO IWS 7.0

Conclusion

- Compliance with MOSA policy is reflected in Navy's OA initiative

- Navy's OA requirement is assessed using the OAAT and reflected in OAAM

- OAAM score summaries reflect the various levels of openness for Naval programs and systems

Back-Up Slides

Previous Research Findings

- MOSA strategy has specific implications to the contracting process
  - Industry involvement
  - Shared roles between government and industry
  - Best value acquisition strategy
  - Contract incentive structure
  - Emphasis on contractor past performance

Characteristics of MOSA Based Contracts

- Early involvement and participation of industry in developing requirements and acquisition strategy

- Shared roles between government and contractors in development of system specification and statement of work (SOW)

- Best value source selection strategy, with higher weights given to non-cost evaluation factors such as technical performance and past performance

Characteristics of MOSA Based Contracts

- Contract structure that includes incentives for meeting higher levels of openness (Incentive fees, Award fees, Award term)

- Documentation of contractor's performance in meeting openness requirements (Past performance evaluation)

File Edit View Insert Format Tools Data Window Help

Type a question for help

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User Guide

The Open Architecture Assessment Tool (OAAT) is designed to provide a quantifiable estimate for a program or system with regards to its openness. There are two "Implementation Question" worksheets contained in this workbook; the Technical Questions worksheet assesses technical issues and the Programmatic Questions worksheet examines programatic issues. The answers to the questions are used to provide the user with numeric scores that can be used to determine the program's or system's openness. Below is an overview of the question layout.

Explain: Pressing the Explain button causes the explanation and rationale boxes to appear. Information entered into the Rationale box is saved in the spreadsheet for reporting.

Section Name

Question

B	Design Tenet: Maintainability						
B1_1	What architectural characteristics address obsolescence and provide for timely technology refresh, fixes and upgrades?						Explain
	N/A	Architecture is fixed and unchangeable.	Monolithic architecture	Layered and modular architectural structure and interface standards specific to the system/subsystem	Layered and modular architectural structure utilizes domain level assemblies and interface standards	Layered and modular architectural structure utilizes enterprise level assemblies and interface standards	Current Status

Answers to Question

choose the answer that best fits the program/system being evaluated (n/a means not applicable)
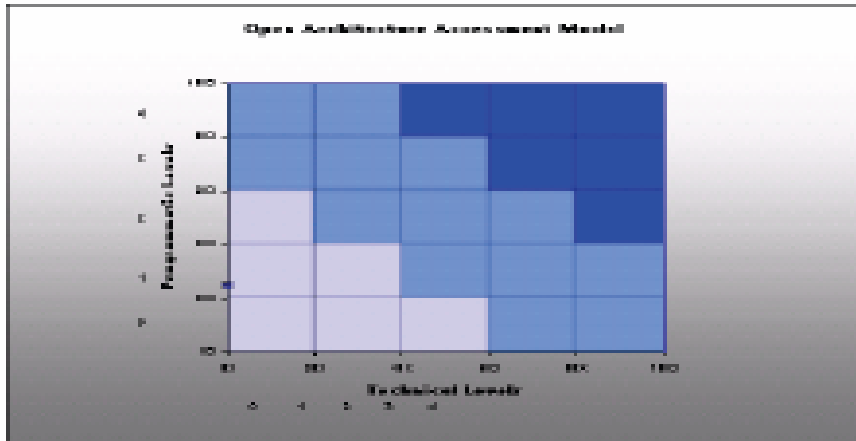
Current Status

These move the box selection and change the text to Red to identify the answer that has been selected to reflect the current state of the program in this area.

Explanation

This panel displays an explanation of the question and suggestions on the kind of information that should be provided in the rationale for the selected answer.

Rationale

This section allows for a textual explanation for selecting the specific answer to the Question. Relevant documentation can be cited. The documentation must be available for review.

Distribution Statement A: Approved for Public Release; distribution is unlimited.

Naval Open Architecture Assessment Tool

Assessment Score Summary

Program Name:	
Unit of Assessment:	
Acquisition Milestone:	
Next Review Date: 5/07/2009	

Combined Programmatic Rating

Combined Technical Rating

Open Architecture Assessment Model

- An **Assessment Score Summary**, which shows data such as the program name, milestones, a breakdown of the Programmatic Rating and the Combined Technical Rating

- A plot on the **Open Architecture Assessment Model** (referred to as the **Open Architecture Maturity Matrix** in the OAAT), the 5x5 matrix that displays the program's "as-is" state with respect to Programmatic (or business) openness and Technical openness, each on a scale of 0 to 4