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2008

## Standardized Documentation for Verification, Validation and Accreditation / Paper 08S-SIW-003

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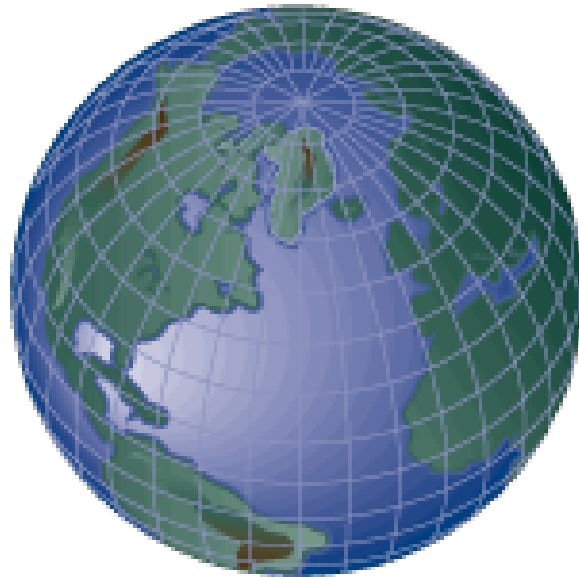


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# Standardized Documentation for Verification, Validation, and Accreditation



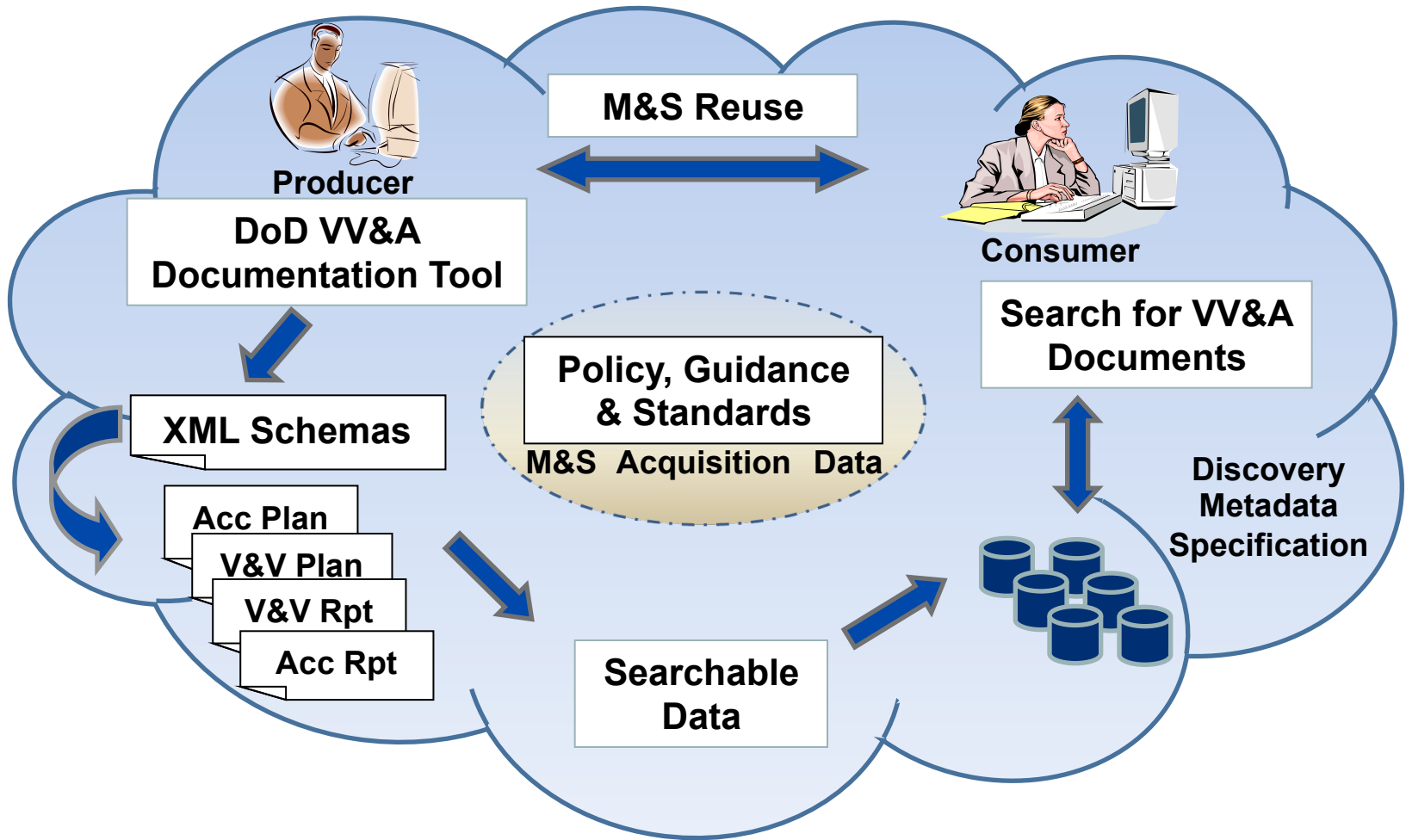
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# Outline

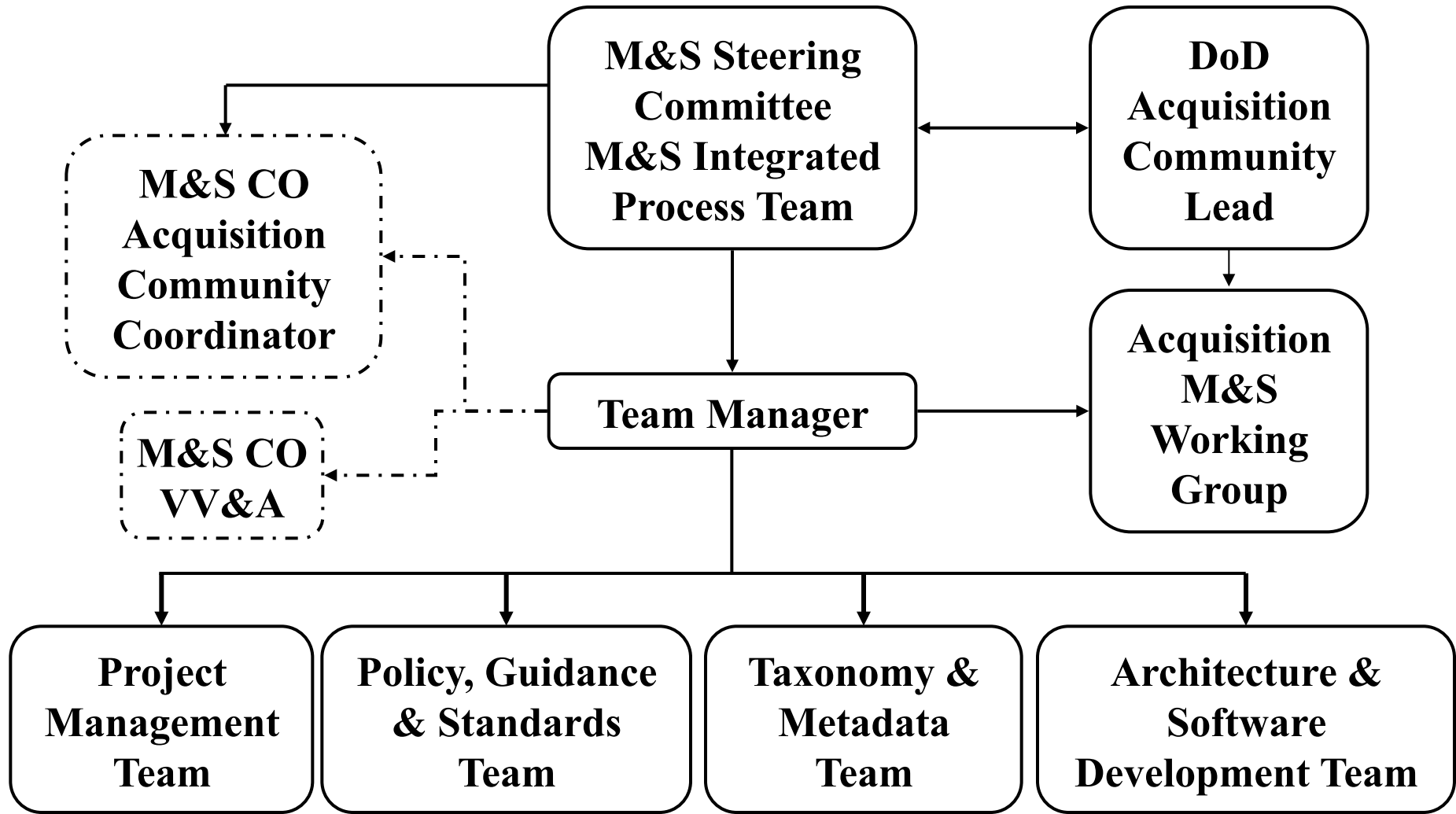
- Concept of Operations Overview
- Project Organization
- Acquisition Project Synergy
- Policy, Guidance, & Standards Process
- Recommendation Process
- XML Schema Documents
- Requirements Traceability
- Test Plan Traceability
- Proposed Use Cases
- Plan of Actions and Milestones
- Summary
- Contact Information



# Concept of Operations Overview



# Project Organization



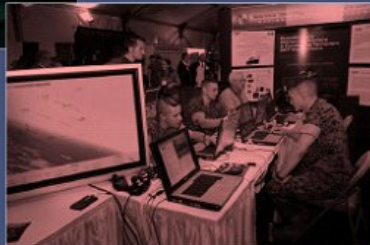
# Acquisition Project Synergy

## M&S Education for the Acquisition Workforce

Department of Defense

Modeling and Simulation

HUMAN  
CAPITAL  
STRATEGY



### M&S Challenges

- Challenge 4 - Need for Information Traceability and Associated Documentation
- Models and simulations are developed based on a requirement for a specific use. Historically simulations were developed without all the formal documentation required for traceability. **Without formal documentation it is difficult to determine what the original requirement and data pedigree were and if the model or simulation can be utilized for additional applications. Documentation is the core concept behind information traceability for the purpose of achieving successful proliferation of M&S throughout DoD.**

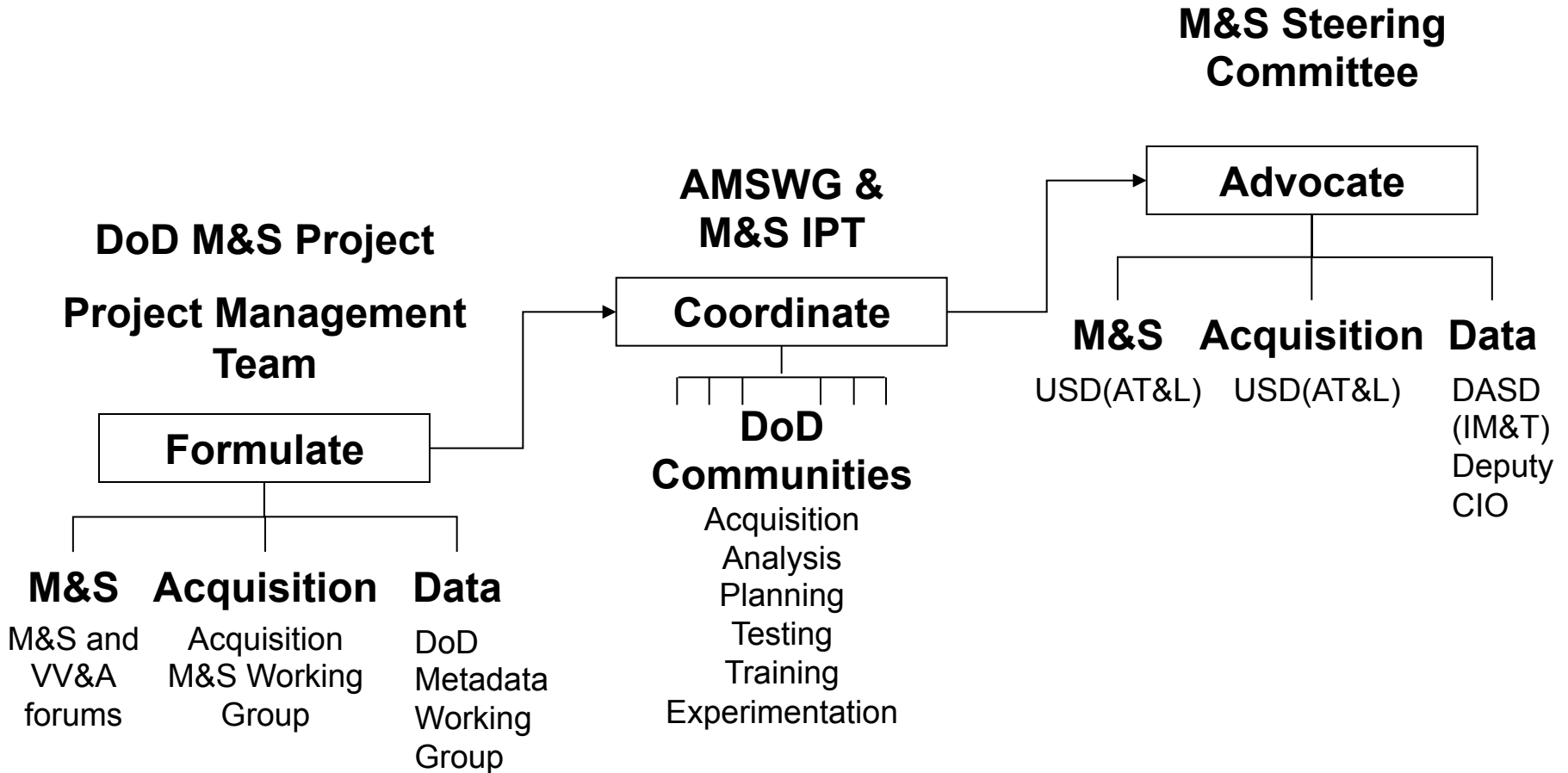
### Addressing M&S Challenges

- Challenge 4 – Need for Information Traceability and Associated Documentation
- **Individuals** of the DoD M&S workforce **will be trained in documenting the details required for model and simulation traceability. Specific emphasis will be placed on documentation for Configuration Management; Verification, Validation, and Accreditation;** Technical Control Plan, Simulation Control Plan, etc. By understanding and having the appropriate skill set to develop appropriate documentation, the foundation can be established for DoD to improve consistency and reliability of M&S systems; avoid unnecessary costs; encourage reuse and minimize risk to the M&S user community.

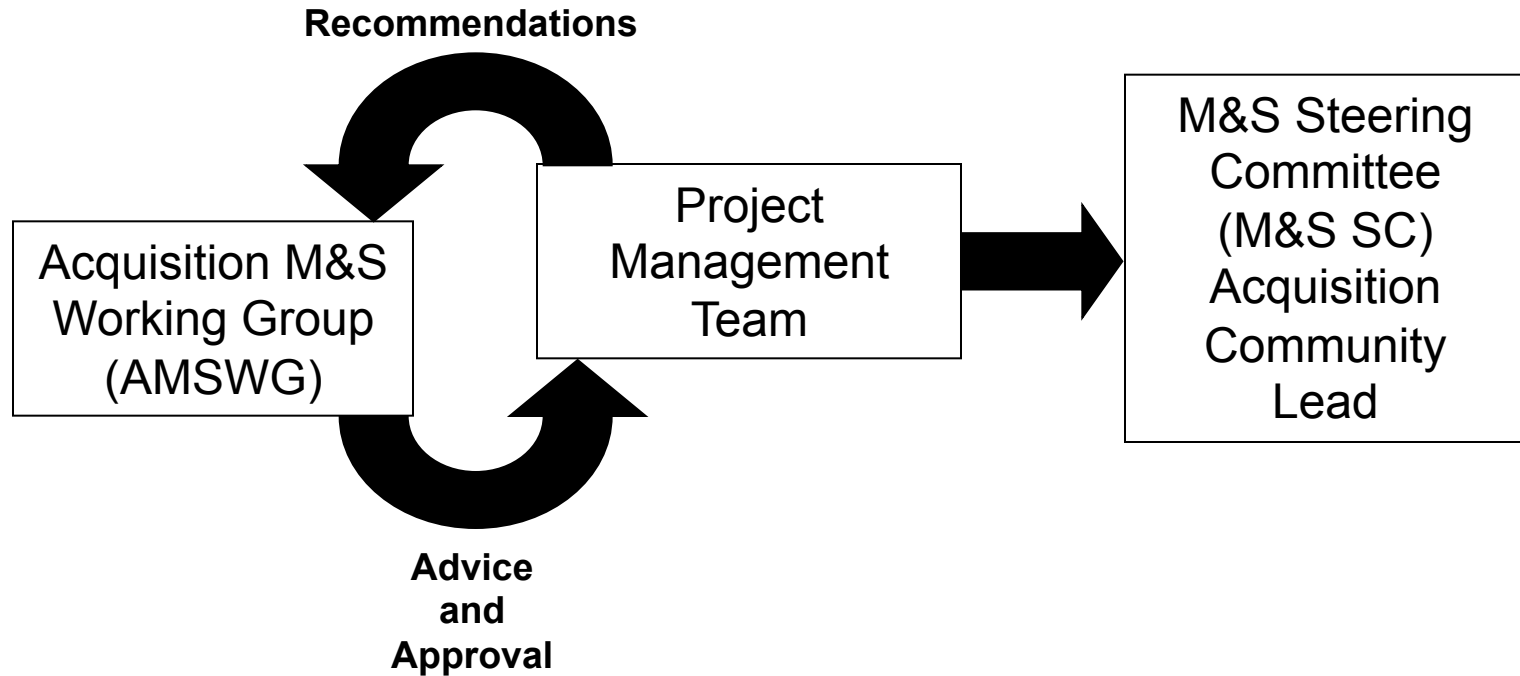


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# Policy, Guidance, & Standards Process

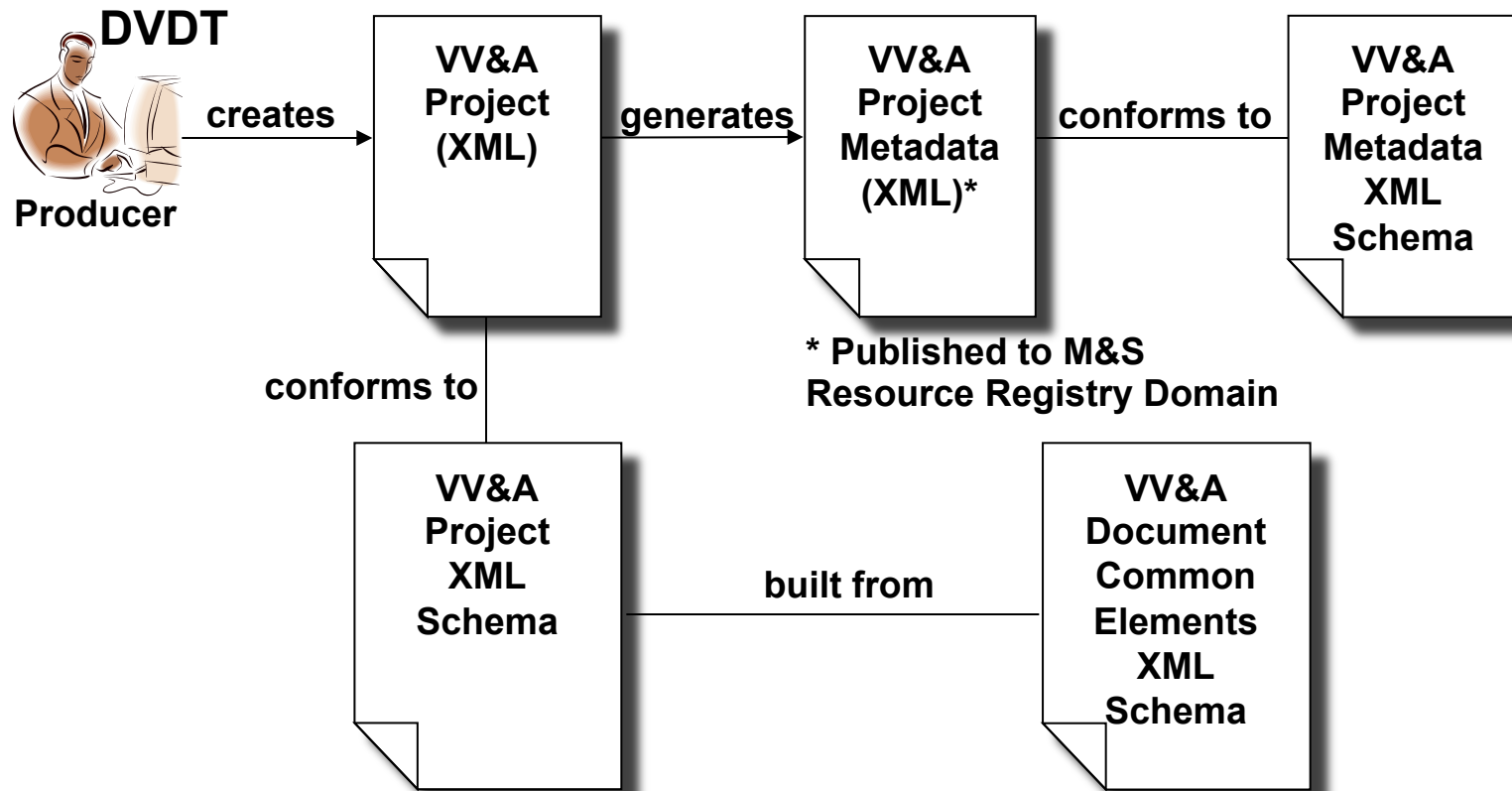


# Recommendation Process

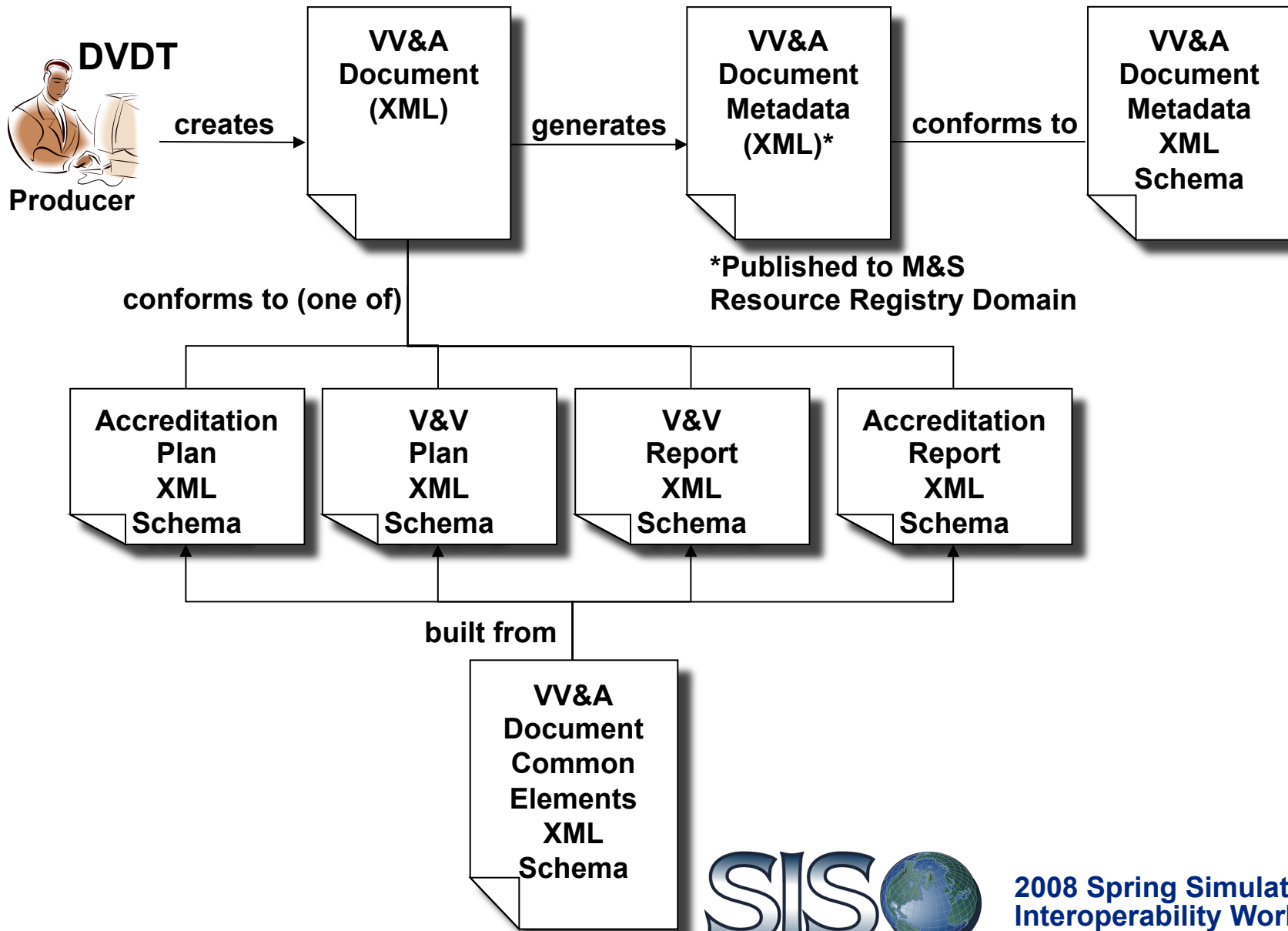




# XML Schema Documents (Project-level)



# XML Schema Documents (Document-level)



# Notional XML Representation

```
<MSRisks>
  <MSRisk>
    <MSRiskCategory>Cost</MSRiskCategory>
    <MSRiskStatement>some statement of cost risk
...</MSRiskStatement>
    <MSRiskMitigationAction>some statement of necessary action to mitigate the risk... </
MSRiskMitigationAction>
    <MSRiskProbability>.50</MSRiskProbability>
    <MSImpacts>
      <MSImpact>
        <MSImpactCategory>Schedule </MSImpactCategory>
        <MSImpactStatement>some statement of impact on schedule resulting from the risk
</MSImpactStatement>
      </MSImpact>
      <MSImpactCategory>Functionality </MSImpactCategory>
      <MSImpactStatement> some statement of impact on required functionality resulting
from the risk</MSImpactStatement>
    </MSImpact>
  </MSImpacts>
</MSRisk>
<MSRisk>
  ...etc. as above...
</MSRisk>
</MSRisks>
```

# Example: Requirements Traceability

## Navigation / Progress

- Accreditation Plan
- V&V Plan
- Accreditation Report
  - Title Page
  - Accreditation Report Executive Summary
- 1. Problem Statement
- 2. M&S Requirements and Acceptability Criteria
- 3. M&S Assumptions, Capabilities, Limitations & Risks/Impacts
- 4. Accreditation Assessment
- 5. Accreditation Recommendations
- 6. Key Participants
- 7. Actual Accreditation Resources
- 8. Accreditation Lessons Learned

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- Appendix A - M&S Description
- Appendix B - M&S Requirements Traceability Matrix
- Appendix C - Basis of Comparison
- Appendix D - References
- Appendix E - Acronyms
- Appendix F - Glossary
- Appendix G - Accreditation Programmatic
- Appendix H - Distribution List
- Appendix I - Accreditation Plan
- Appendix J - V&V Report

## Data Entry

	Accreditation Plan		V&V Plan	V&V Report	Accreditation Report
#	M&S Requirement	Acceptability Criterion	Planned V&V Task / Activity	V&V Task Analysis	Accreditation Assessment
1		1.1	1.1.1	1.1.1	1.1.1
			1.1.2	1.1.2	1.1.2
		1.2	1.2	1.2	1.2
		1.n	1.n	1.n	1.n
2		2.1	2.1	2.1	2.1
		2.n	2.n	2.n	2.n
n		n.n	n.n	n.n	n.n

(Note: Contents are shared across documents, but only the fields appropriate to a particular document are shown in that document's view.)

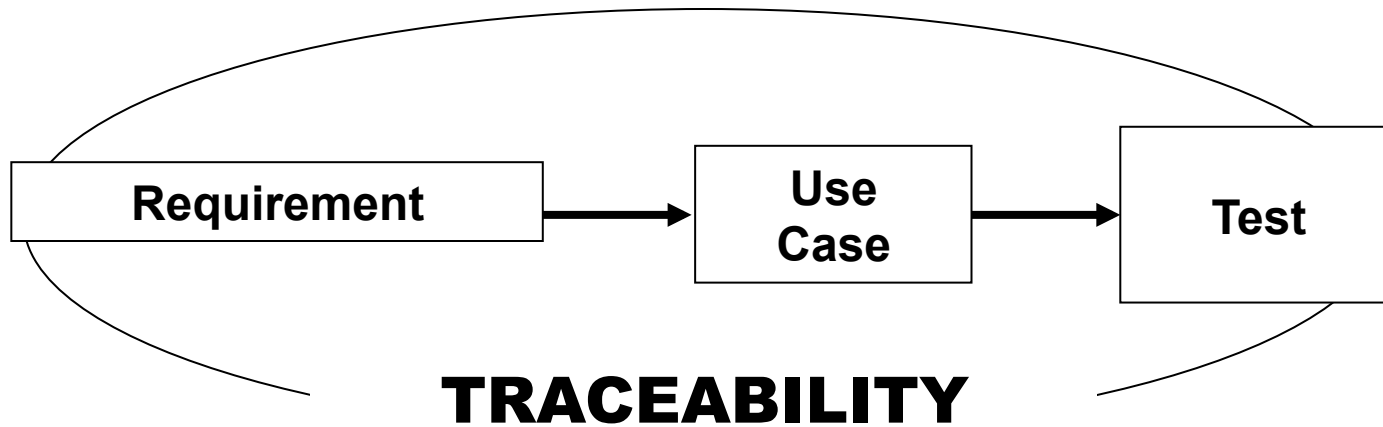
M&S Requirements and Acceptability Criteria

This section describes the M&S requirements defined for the intended use, requirements, the quantitative and qualitative metrics used to measure their requirements and the acceptability criteria can be shown either in text or in

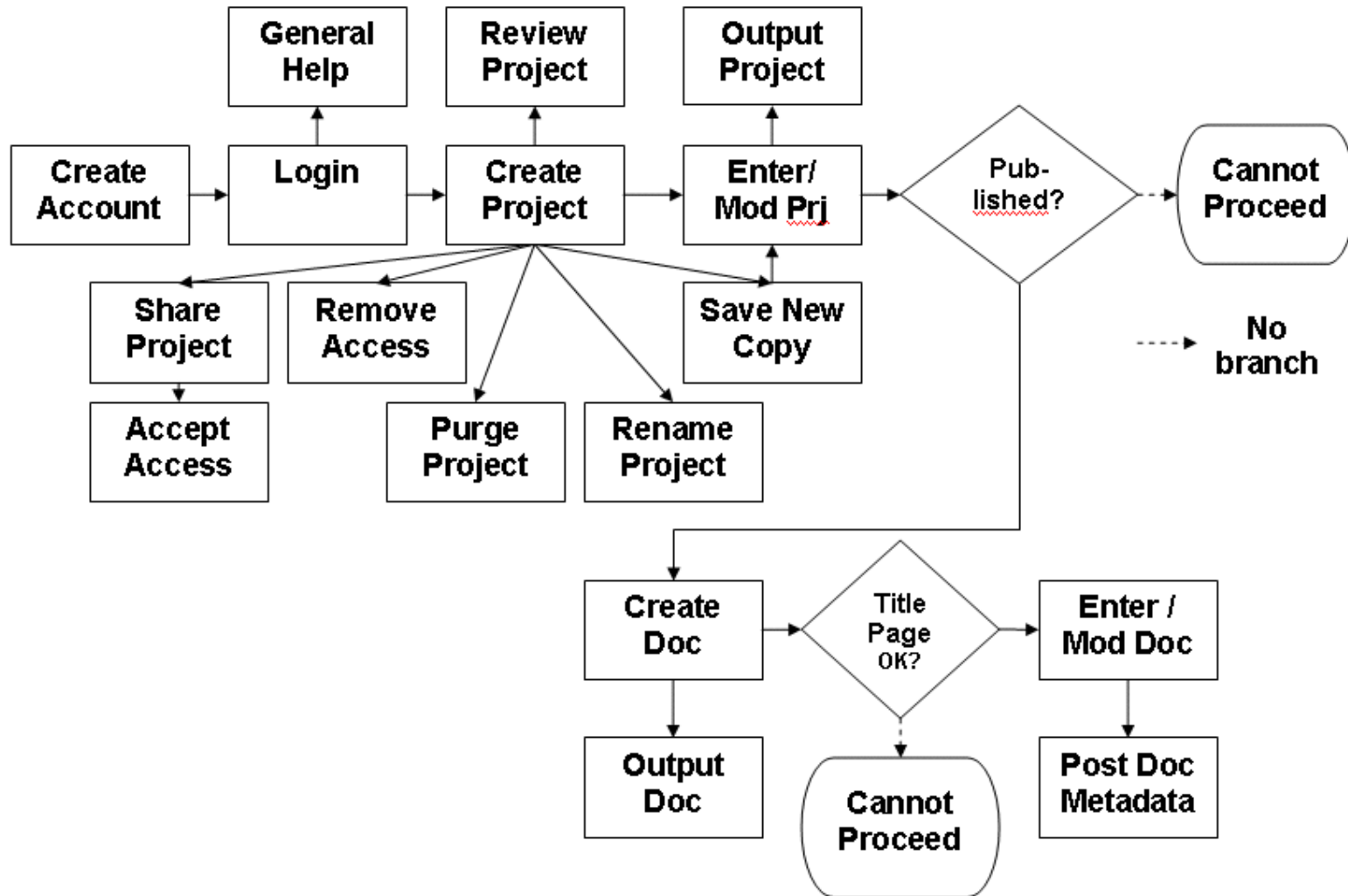
### Context-Sensitive Help



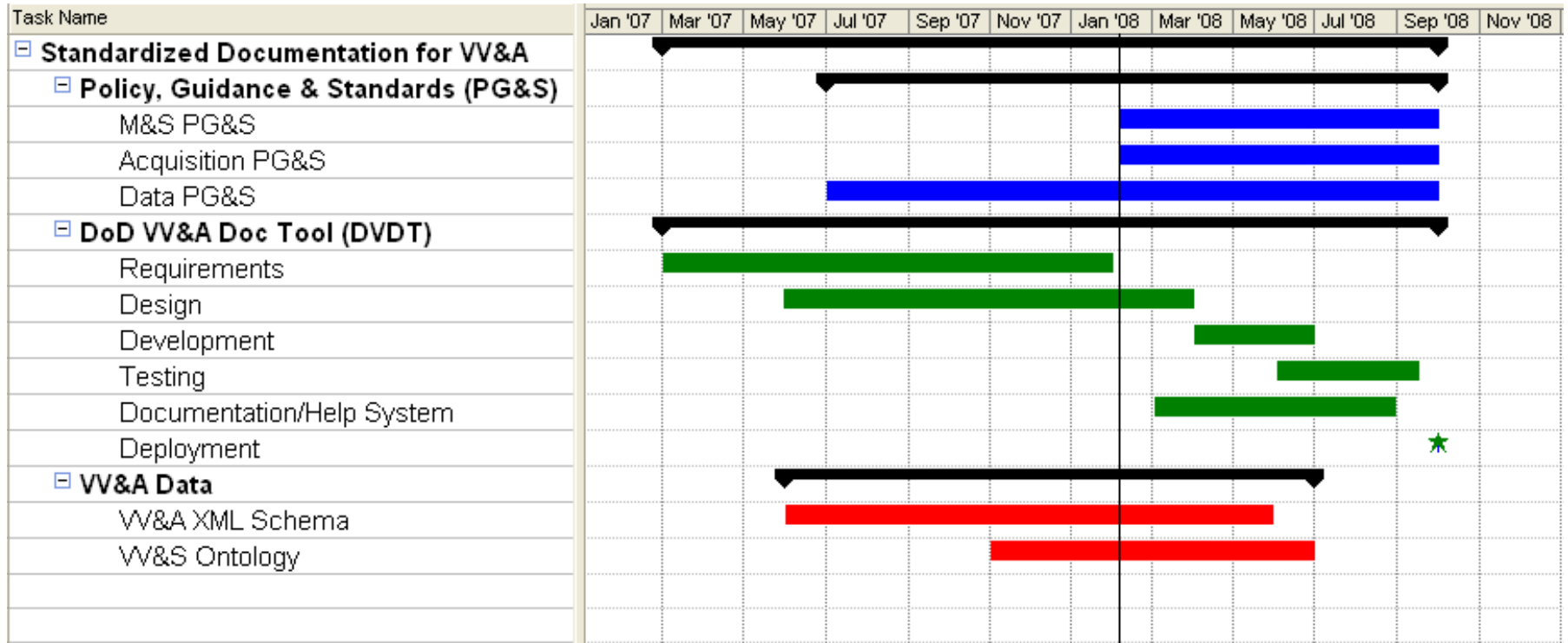
# Test Plan Traceability



# Proposed Use Cases



# Current Plan of Actions and Milestones



# Summary

- Updated the status of the DoD M&S Project, "Standardized Documentation for VV&A"
- Initial policy, guidance, and standards recommendations were made to the DoD Acquisition Community Lead through the AMSWG.
- Various XML description documents began coordination through the GIG M&S COI.
- On schedule to release the DVDT beta production version in Spring 2008.





# Points of Contact

For more information,  
to become a DVDT beta tester, or  
to use the DVDT to support your VV&A project,  
contact any one of the authors below.

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# Backup Slides



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# Acronyms

A&SD	Architecture and Software Development	MATREX	Modeling Architecture for Technology, Research, and Experimentation
AMSWG	Acquisition Modeling and Simulation Working Group	MILSATCOM	Military Satellite Communications
CCB	Configuration Control Board	MOVES	Modeling, Virtual Environments, and Simulation
COI	Community of Interest	MSC DMS	Modeling and Simulation Community of Interest Discovery Metadata Specification
DDMS	DoD Discovery Metadata Specification	NMSO	Navy Modeling and Simulation Office
DoD	Department of Defense	PG&S	Policy, Guidance, and Standards
DOT&E	Director of Operational Test and Evaluation	PMT	Project Management Team
DPA&E	Director of Program Analysis and Evaluation	T&M	Taxonomy and Metadata
DVDT	DoD VV&A Documentation Tool	TSAT	Transformational Satellite Communications System
GIG	Global Information Grid	USD(AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics
JPO	Joint Program Office	USD(P&R)	Under Secretary of Defense for Personnel and Readiness
M&S	Modeling and Simulation, model(s) and simulation(s)	USD(P)	Under Secretary of Defense for Policy
M&S CO	Modeling and Simulation Coordination Office	VV&A	Verification, Validation, and Accreditation
M&S IPT	Modeling and Simulation Integrated Process Team	XML	Extensible Markup Language
M&S SC	Modeling and Simulation Steering Committee		



# 2007 Recommendations

- Recommendations provided to the Acquisition Representative of the DoD M&S IPT and to the AMSWG in November 2007.
  - Defense Acquisition Guidebook, Section 4.5.7 Modeling and Simulation (this section was last updated in 2006)
  - Defense Acquisition University Continuous Learning Modules
    - CLE011 M&S for Systems Engineering
    - CLE023 M&S for Test and Evaluation
- Contributed content to MIL-STD-3022, which advocates the benefits of automating VV&A document production and archiving VV&A information.

