

Lecture Series - MSG 141

Technical Architecture and Standards

**C2-Simulation Interoperability
(C2SIM)**

The Simulation Interoperability Standards Organization (SISO) Background

Dr. Robert Wittman

APPROVED FOR PUBLIC RELEASE

Agenda

- **Mission & Principles**
- **Leadership & Sponsors**
- **Products & Services**
- **Areas of Interest**
- **Working Model for Standards Development**
- **Current Study Grounds**
- **Available Standards**
- **Standards Under Development**

SISO - <http://www.sisostds.org>

- **Established 1996 as an Open Standards Development Org**
- **Mission**
 - To develop, manage, and promulgate user-driven Modeling and Simulation (M&S) standards that improve the technical quality and cost efficiency of M&S implementations across the worldwide M&S community.
- **Principles**
 - Responsive and Responsible to the communities we serve
 - Quality in our activity and resulting products
 - Discipline in all activities
 - Fairness at all levels
 - Openness to any person in all forums
 - Consensus of the community



SISO Leadership, Sponsors, & Liaisons

- **Mark McCall – Executive Director, SISO**
markmccall@sisostds.org
- **Michael O’Connor – Executive Committee Chair,**
moconnor@trideum.com
- **Jeff Abbott – Standards Activity Committee Chair,**
jeff.abbott@caemilusa.com
- **Paul Gustavson – Conference Committee Chair,**
pgustavson@simventions.com



SISO LIAISONS

- IEEE • ISO • NATO MSG • NCOIC
- NTSA • SimSummit • SCS

SISO Product & Services

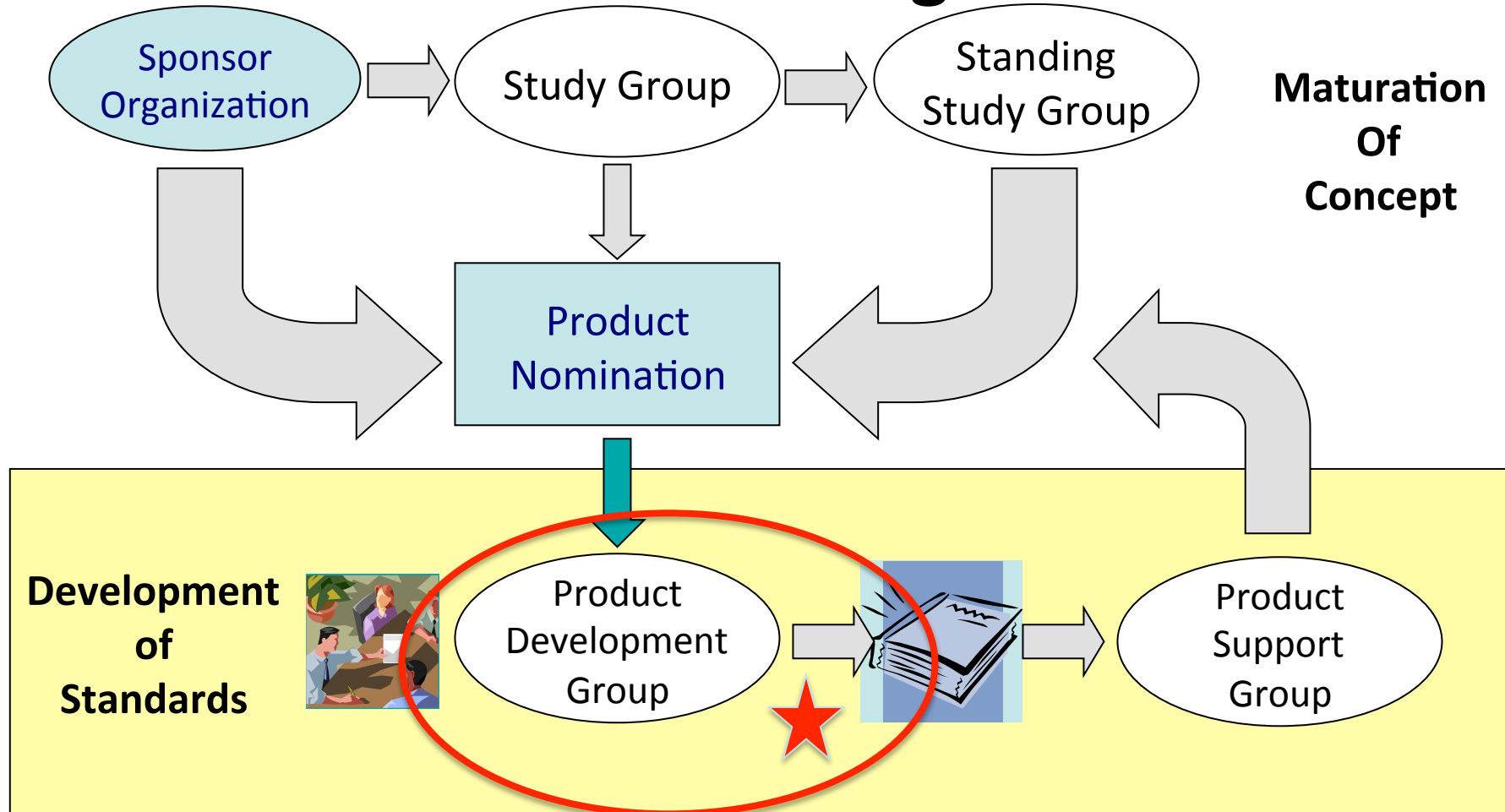
- **Standards**
- **Guidance Products**
- **Reference Products**
- **Papers & Presentations**
 - Spring Technical Interchange Meeting
 - M&S Seminar @ ITEC
 - Fall Simulation Interoperability Workshop
- **M&S Professional Education/Collaboration**

SISO Areas of Interest

- **Augmented Reality**
- **Cyber**
- **Interfaces**
- **Medical**
- **Ontologies**
- **Protection**
- **Taxonomies**

- **Architectures/Frameworks**
- **Communities of Practice**
- **Data/Databases Networks**
- **Intellectual Property**
- **Security**
- **Semantic Interoperability**
- **Substantive Interoperability**

The SISO Working Model



SISO Current Study Groups

- **Short Term Study Groups**
 - Layered Simulation Architecture
 - Human Performance Markup Language
- **Standing Study Groups**
 - Economics of M&S
 - Simulation Australia
 - Parallel and Distributed M&S

SISO Standards (1/3)



- **SISO-STD-001.1: Real Time Platform Reference FOM**
- **SISO-STD-001: Guidance, Rational and Interoperability Modalities for the RPR FOM**
- **SISO-STD-002: Link 16 Simulation**
- **SISO-STD-003: Base Object Model Template Specification**
- **SISO-STD-003.1: Guide for BOM Use and Implementation**
- **SISO-STD-004.1: Dynamic Link Compatibility HLA API Interface Specification (IEEE 1516.1)**
- **SISO-STD-006: Commercial Off-the-Shelf Simulation Package Reference Models**



SISO Standards (2/3)



- **SISO-STD-007: Military Scenario Definition Language**
- **SISO-STD-008: Core Manufacturing Simulation Data**
- **SISO-STD-011: Coalition Battle Management Language**
- **SISO-STD-012 Federation Engineering Agreements Template**
- **SISO-STD-013 Common Image Generator Interface 4.0**
- **SISO Sponsored Standards** 
 - IEEE 1278 Series: Distributed Interactive Simulation (DIS)
 - IEEE 1516 Series: High Level Architecture (HLA)
 - IEEE 730 Series: Distributed Simulation Engineering & Execution Process (DSEEP)



SISO Standards (3/3)



- **SISO Supported Standards**
 - ISO 18025-2005 Series: Environment Data Coding System
 - ISO 18026-2005 Series: Spatial Reference Model

SISO Products Under Development

- Acquisition M&S Standards Profile
- **Command and Control Systems – Simulation Systems Interoperation (C2SIM)**
- Distributed Debrief Control Architecture
- DIS
- Enhanced Position Location Reporting System including Situational Awareness Data Link
- Gateway Description and Configuration Language
- Guidance on Scenario Development
- Guidance, Rational & Interoperability Modalities for RPR FOM 2.0
- Link 11 A/B Simulation
- RPR FOM 2.0
- Reuse & Interoperation of Environmental Data & Processes
- Simulation Conceptual Modeling
- Simulation Reference Markup Language
- Urban Combat Advanced Training Technologies
- Web Live Virtual Constructive (WebLVC) Protocol



What are the opportunities?

- **Become a SISO Member**
- **Attend a Simulation Interoperability Workshop (SIW)**
- **Write / present your ideas and experiences**
- **Contribute to standards development / support group**
- **Be an SIW exhibitor**
- **Sign up to one of our mail reflectors**
- **Become a Sponsor**

Become a SISO member

- Register as a member on the SISO web site
 - annual fee : 95 US \$
- Participate in a SISO workshop (SIW)
 - a paying event!



The screenshot shows the SISO website with the following content:

- Navigation:** Register | Login, Home / Discussion Board / Digital Library / Form Templates / SEARCH, SISO members
- Header:** SISO Simulation Interoperability Standards Organization
- Menu:** About SISO, Products & Publications, Standards Activities, Workshops, News & Media, Sponsorship, Membership
- Banner:** Space (with satellite image)
- Upcoming Events:** 2012 Spring SIW Awards Papers, 2012 Fall SIW - Orlando, Florida
- LATEST NEWS:**
 - 2012 Elections-Results posted: Congratulations to our electees! Results were posted to the SISO-MEMBERS discussion on 5 June.
 - 2012 Spring M&S Journal: The Spring 2012 issue of the M&S Journal focuses on M&S Tools.
- LINKS & RESOURCES:**
 - Become a Member: Join SISO today and get involved!
 - Read about our Partners: Find out who we've been working with!
 - Become a Sponsor: Find out what we're working on and how your organization can get in on the action!
 - Browse Our Standards: Look at our work, and view the standards we've developed!
- WHO WE ARE...:** We are SISO! The Simulation Interoperability Standards Organization (SISO) is an international organization dedicated to the promotion of modeling and simulation interoperability and reuse for the benefit of a broad range of M&S communities including developers, procurers, and users world-wide.
- DID YOU KNOW...:** SISO is an IEEE Sponsor? On 19 November 2003, the IEEE Computer Society Standards Activities Board voted unanimously to grant the SISO Standards Activities Committee(SAC) status as a recognized IEEE Sponsor Committee.

www.sisostds.org

MSDL Background & Operation

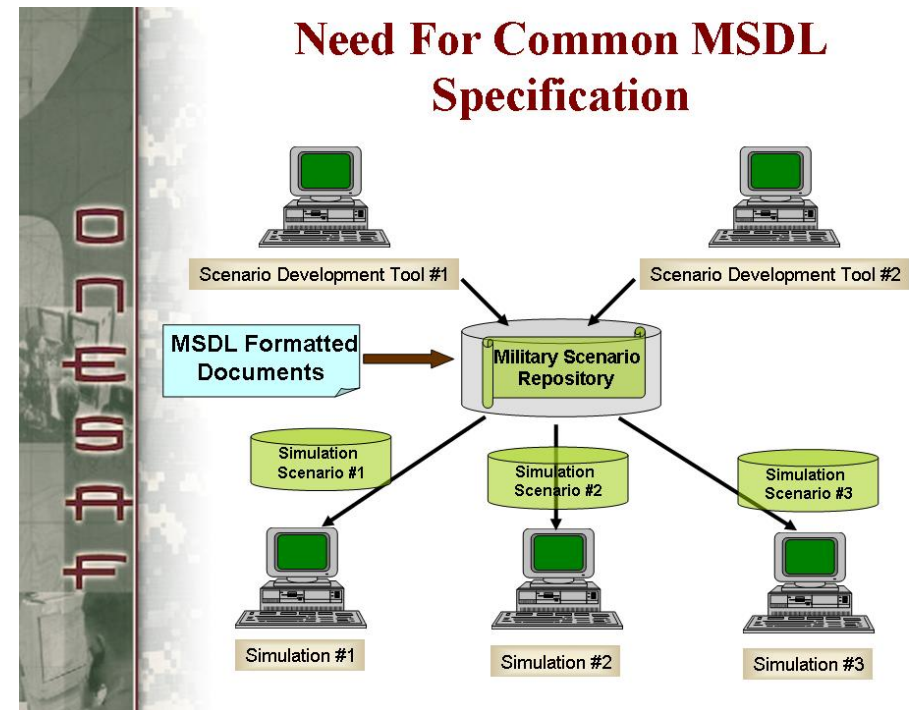
Dr. Robert Wittman

MSDL from the beginning

- **Scenario (Simulation Start Data) Standardization in 2000**
 - Independent formats defined by each simulation
 - Unique scenario development tools for each simulation
 - Creating consistent start data among federations was a human-intensive manual coordination process
 - Community recognized potential savings of standardized sharable scenario data
 - 2001-2005 common scenario data model exploration by the US Program Executive Office Simulation Training and Instrumentation (PEO STRI) OneSAF Program Office
 - 2005 OneSAF Program Office proposes Study Group to explore the concept within SISO

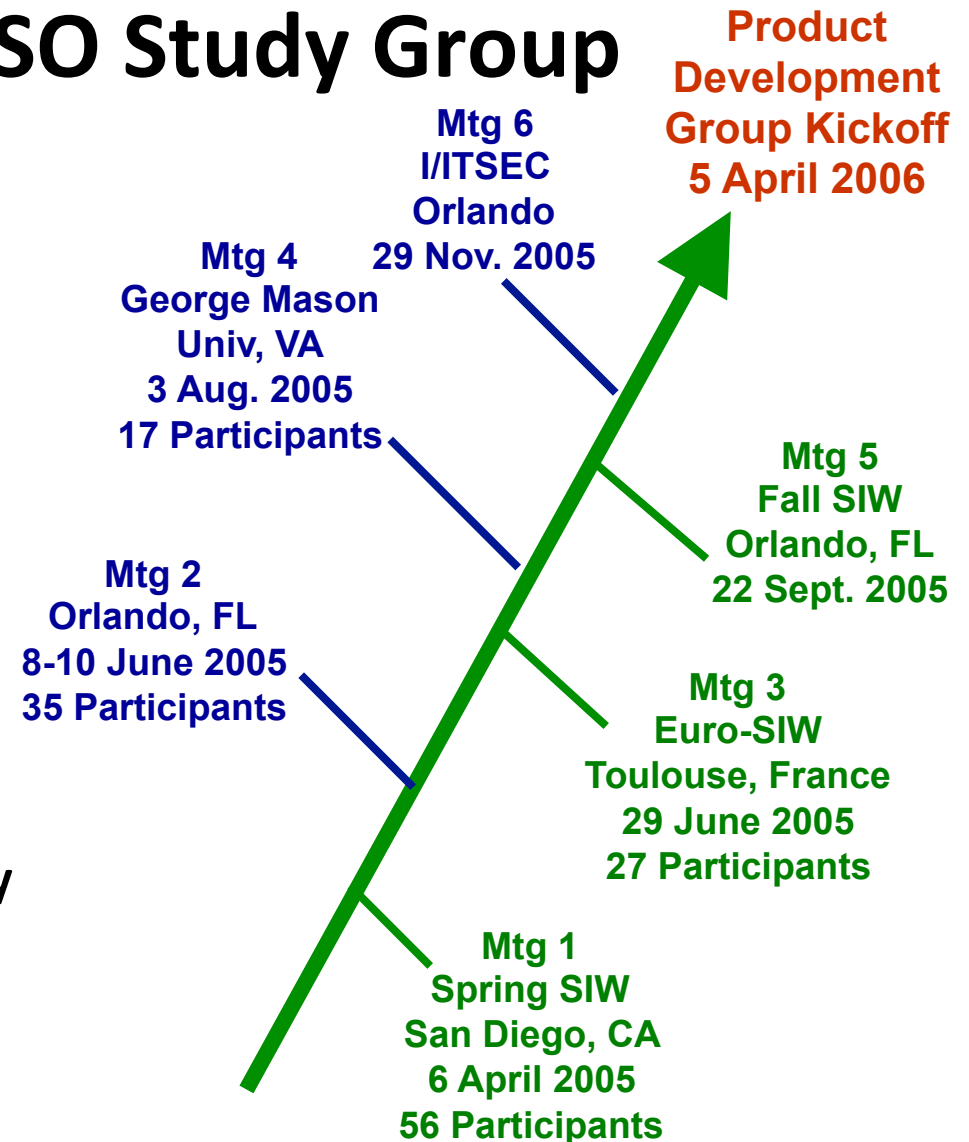
Why Use the MSDL Data Format

- **Import format versus native format**
 - Allows standard format (MSDL) and specific native simulation initialization formats to evolve at their own pace
 - Allows simulations to define specific information needs
 - Allows standard format for scenario start data for all participating systems



MSDL: The SISO Study Group

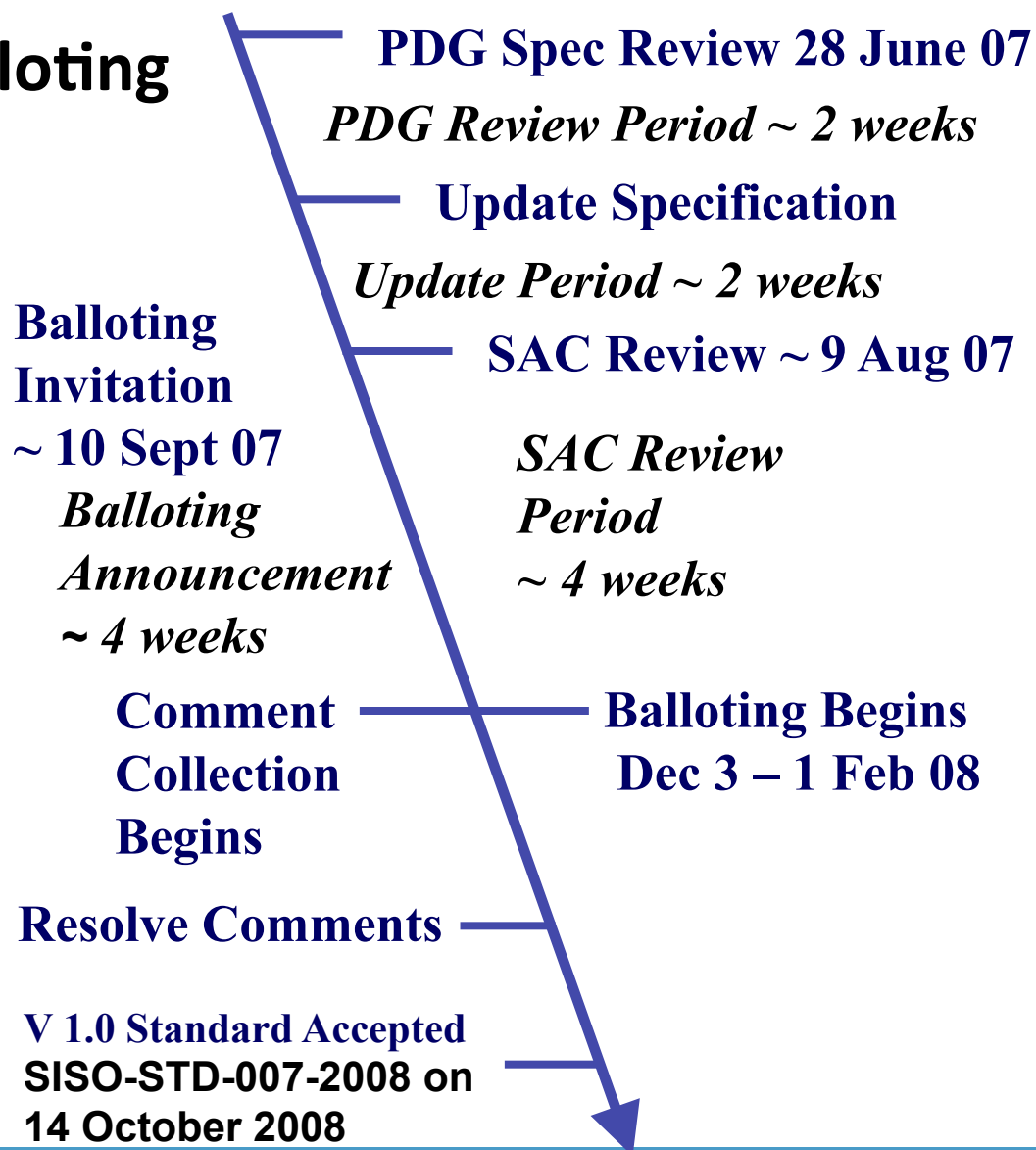
- **Study Group Approval Spring 2005**
- **Participants**
 - Over 100 participants with sustained inputs at meetings and online
 - 5 Nations with start-to-finish representation
 - Industry, Academia and Government
- **C-BML Participation**
- **Product Nomination approved by SAC and EXCOM March 8 2006**



MSDL: The Road to Balloting

- **Product Approval**

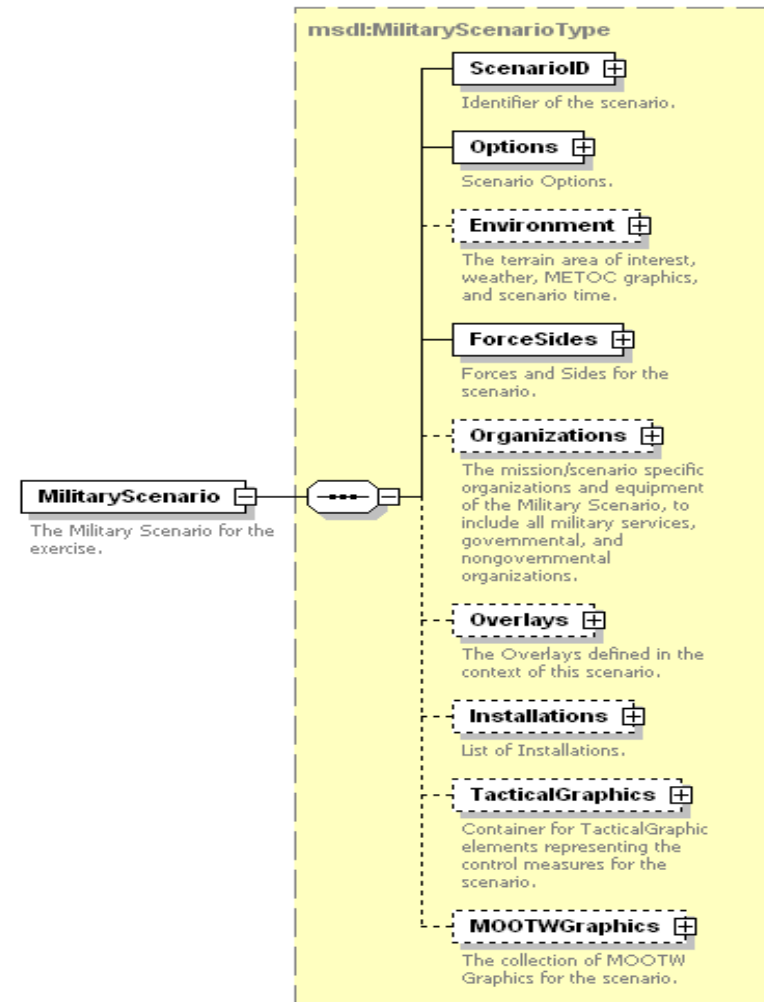
- 33 Accepts
- 1 Reject
- 2 No Response



MSDL Contents

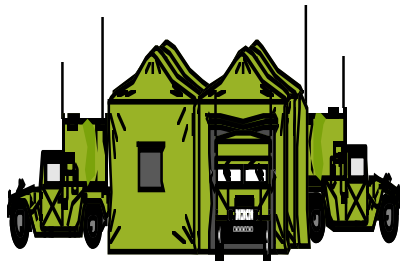
XML Representation

- **9 Primary Elements including reuse components from**
 - Base Object Model
 - JC3IEDM
- **OneSAF Elements not considered for Balloting**
 - Plan
 - Course of Action
 - Threats
 - Units and Equipment Enumerations
- **XML Representation**
 - Structure and Type Validation
 - Business Rule Validation

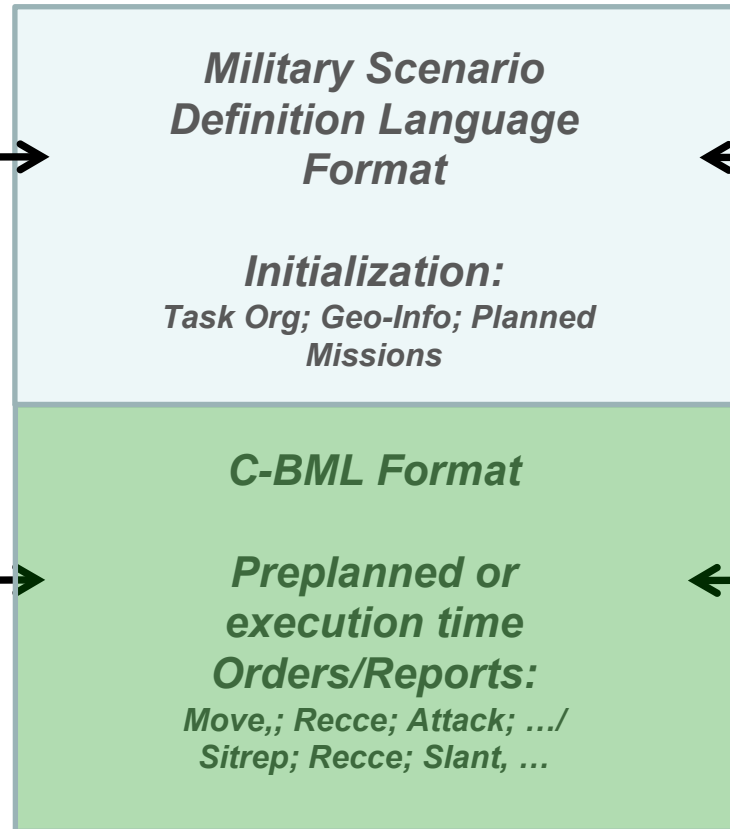


MSDL in Operation

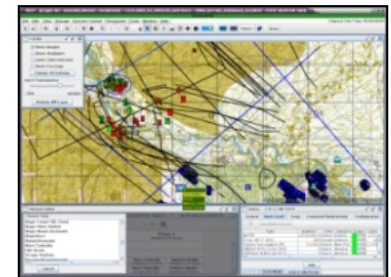
**Command and Control/
Mission Command**



**Initial Prototype with
NATO Mission
Command and
Surrogate Mission
Command Systems
& Scenario
Development Tools**



Simulations



**OneSAF
JSAF
VR-Forces
SWORD
...**