The Military Scenario Definition
Language Standard Version 1.0 and Beyond

SISO-STD-007-2008

Presented By
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Agenda

• Military Scenario Definition Language
  – User Community
  – Schema Structure
  – Data Model Details and Data Relationships
    • MSDL:MilitaryScenarioType/ScenarioID
    • MSDL:MilitaryScenarioType/Options
    • MSDL:MilitaryScenarioType/Environment
    • MSDL:MilitaryScenarioType/ForceSides
    • MSDL:MilitaryScenarioType/Organizations
    • MSDL:MilitaryScenarioType/Overlays
    • MSDL:MilitaryScenarioType/Installations
    • MSDL:MilitaryScenarioType/TacticalGraphic
    • MSDL:MilitaryScenarioType/MOOTWGraphics
  – Naming and Design Principles
• MSDL Tools
MSDL User Community

- MSDL User community
  - Modeling Architecture for Technology Research and Experimentation (MATREX)
  - PEO Soldier Federation for Analysis Effort
  - Combat XXI
  - OneSAF
  - IWARS
  - AWARS
  - Naval Postgraduate School (NPS)
  - TRAC-Monterey
  - US Army Simulation and C4I Interoperability (SIMCI)
  - Coalition Battle Management Language (C-BML) PDG
  - DARPA
  - ...
MSDL Concepts Section 5.1

- Planning and Execution
- Reality and Intelligence
  - Organizations are ground truth
  - Installations, TacticalGraphics, & MOOTW are Intelligence based
- Element Identification and Reference
MSDL Schema Structure and Elements
– General Bookkeeping

Draft\msdl\V_1.0\MilitaryScenario_1.0.0.xsd
* includes MsdlComplexTypes_1.0.0.xsd and defines
  jc3iedm and modelID namespaces

* includes MsdlCodes_1.0.0.xsd
* includes MsdlSimpleTypes_1.0.0.xsd

* imports namespace
  "http://www.sisostds.org/schemas/modelID" with
  schemaLocation “extern\ModelID_v2006_FINAL.xsd”

* imports namespace
  “urn:int:nato:standard:mip:jc3iedm:3.1:oo:2.0” with
  schemaLocation “extern\JC3IEDMMeteorological.xsd”
MSDL Data Elements
MilitaryScenario

<x:scomplexType name="MilitaryScenarioType">
  <xs:annotation>
    <xs:documentation>The complex content of a Military Scenario.</xs:documentation>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="ScenarioID" type="modelID:modelIdentificationType">
      <xs:annotation>
        <xs:documentation>identifier of the scenario.</xs:documentation>
      </xs:annotation>
    </xs:element>
    ...</xs:element>
  </xs:complexType>
ScenarioID

- Taken in whole from the SISO-STD-003-2006 Base Object Model standard.
- Holds meta-data describing the Military Scenario described within the remaining base elements of the military scenario.
  - Name
  - Type
  - Security Classification
  - ...

- id:notes not recommended for use MSDL does not include a notes table.
Options

• Holds the MSDL Version used within the instance document as a 64 byte string.

• Holds the level of detail by echelon of the organizations described within the instance document:
  
  • If AggregateBased is true then
    Level of Detail is specified by Echelon held in AggregateEchelon
  
  • else
    Level of Detail is at entity level

• Identifies standards to be used consistently throughout the instance document.

  • Symbology Data Standard (2525B, NATO_APP-6)
  
  • Coordinate System Type
    • MGRS – Military Grid Reference System (Grid)
    • GDC – Geodetic Coordinate (lat, long)
    • GCC – Geocentric Coordinate (x,y,z)
    • UTM – Universal Transverse Mercator (Grid)
Environment

- Initial Start date and time of the scenario.

- Area of interest is defined by the upper right and lower left boundaries of the scenario specified.

- Scenario Weather leverages JC3IEDM: Atmosphere, CloudCoverItems, Icing, LightItems, Precipitation, VisibilityItems and WindItems to specify initial weather conditions using the ScenarioTime as a time reference; the center of Scenario AreaOfInterest as the location reference; and surface height as reference height.

- Meteorology and Oceanography leverages 2525B Specification to identify meteorological information.
ForceSide

• Defines Forces and Sides for the scenario.

• Defines allegiance and associations between the Forces and Sides defined within the Scenario.

• Special Note – Sides are defined to the first level definition within the ForceSide structure.

• Sides have associations to all other Sides.

• Forces have associations to all other Forces that do not have allegiance to the same Side as the current Force. All Force to Force and Side to Side relationships are to be explicitly defined within the Associations structure.
Organizations

- Defines Organizational unit and equipment structure for scenario.

- Leverages 2525B data structure and definitions.
Organizations/Units/Unit

- Defines the unit data including force/side, command, and support relationships.

- CommunicationNetInstances – Net type, net id, and net services.

- Relations – Defines unit relationship to higher ForceSide or Unit, along with Support, and Organic relationship detail.

- Disposition – Location, direction of movement, speed, and formation.

- Model – Intended level of detail for instantiated Unit model. Resolution describes the unit’s model as an enumerated value of none, minimal, standard, enhanced, high, not specified.
Organizations/Equipment/EquipmentItem

- Describes equipment/entities such as tanks, aircraft, watercraft, and individuals

- CommunicationNetReferences – Describes references to available communication services.

- Disposition – Location, direction of movement, speed and formation position

- Relations – Identifies Organic superior and Unit or ForceSide owner

- Model – Intended level of detail for instantiated Equipment model.
Overlays

- Used to organize the intelligence information described by the control measures and held in the Installation, MOOTW, and TacticalGraphics element.

- ObjectHandle to be referenced by installations, TacticalGraphics, and MOOTW Graphics

- Overlay Types within the defined enumeration set:
  - Operations
  - Fire_support
  - Modified_combined_obstacles
  - Intel
  - Recon_surveillance
  - Obstacle
  - Air_defense
  - Logistics
  - ...
  - User_defined
Installations

- Leverages 2525B and provides information installations that are identified and included within the scenario.
  - Affiliation identifies the threat of the installation to the data owner: HOSTILE, NEUTRAL, FRIEND, UNKNOWN.
  - Owner identifies the owning unit of the data/graphic.
  - AssociatedOverlays – establishes a relationship with the appropriate overlays.
TacticalGraphics

- Leverages 2525B and provides information on C2 graphics used within the scenario.
  - Affiliation identifies the threat of the installation to the data owner.
  - Owner identifies the owning unit of the data/graphic.
  - AssociatedOverlays – establishes a relationship with the appropriate overlays.
  - Defines 6 types of TacticalGraphic Symbology Sets
    - Point Symbols (casualty collection point, etc)
    - Line Symbols (Forward Lines of Own Troops, etc.)
    - Area Symbols (Assembly, Support, Holding, etc.)
    - Boundary Symbols (echelon boundary lines)
    - NBC Event Symbols (min safe distance zones, ground zero, etc.)
    - Task Symbols (principal direction of fire, search area)
MOOTWGraphics

- Leverages 2525B and provides information on C2 MOOTW graphics used within the scenario.
  - Affiliation identifies the threat of the installation to the data owner.
  - Owner identifies the owning unit of the data/graphic.
  - AssociatedOverlays – establishes a relationship with the appropriate overlays.
  - Defines MOOTW Symbology Sets
    - Violent Activities
      - Assassination/Murder/Execution
      - Bomb/Bombing
    - Operations
      - Recruitment (willing) & (coerced/impressed)
      - Demonstrations
      - Psyops
    - …
MSDL Naming and Design Principles

- **Types versus Element**
  - Allows extensions to be managed using Type-based restrictions and extensions
  - Type definitions add a lot of flexibility in how to handle domain values
  - Provides Flexibility of aggregation vice inheritance-based composition

- **URL versus URN**
  - Selected URN to avoid confusion if initial URL changed

- **Namespaces**
  - No default namespace
  - Include MSDL defined schemas (Complex, & Simple Types, and Codes) under single namespace
  - Import externally defined schemas (JC3IEDM, ModelID)
MSDL Post Version 1.0

• Capabilities Under Investigation for Version 2.0
  – Coalition Battle Management Language
  – Unit and Equipment Enumeration
  – Air & Space Domain Extensions
  – Electronic Order of Battle Information
  – Political, Military, Economic, Social Infrastructure, and Information (PMESII)
  – Perception Support
  – Human Attribution
  – …
MSDL Tools

- One Semi-Automated Forces (OneSAF) Military Scenario Development Environment (MSDE) – POC Rob Wittman (rwittman@mitre.org)
  - Powerpoint graphic based tool to laydown units, equipment and 2525B based graphics on map.
- Modeling Architecture for Technology Research and Experimentation (MATREX)
  - MSDE/MSDL as military scenario transmittal format within a larger federation based initialization toolkit
- TRADOC Analysis Center – POC Maj Francisco Baez (Frbaezto@nps.edu)
  - Tool to populate and transmit data to IWARS and Pythagoras
- SAAB POC Per Gustavvson (per.m.gustavvson@saabgroup.com)
  - Graphical tool for building simple MSDL compliant scenarios – www.wiseconnectivity.se
- Deep Green (DARPA Project) – POC Rob Wittman
  - MSDL as military scenario transmittal format to anticipatory planning simulations
- Data Production Development Environment (DPDE) Simulation Initialization Tool (SIT) – POC Bruce Carlton (bcarlton@arlut.texas.edu)
  - Produces MSDL files from repository used to create Army Battle Command System initialization files.
MSDE Overview
COA – Task Organization

Select MSDE->Properties to establish the planning Unit.
COA – Task Organization

Select “Edit->Task Organizations->Friendly Forces”. Then drag and drop units to establish the Higher.
COA – Tactical Graphics

Select “View->Tactical Graphic Palette”. Navigate the hierarchy and/or search for the graphics to be created. COA graphics are derived from the Higher order/RTW and include additional boundaries for the disposition of units.
Select “Edit->Execution Matrix” to create phases, events, and tasking for subordinate elements. This establishes a framework from which the MCT operator can produce SAF orders.
Acronym List

- AWARS  Advanced Warfighting Simulation
- C-BML  Coalition-Battle Management Language
- DARPA  Defense Advanced Projects Agency
- DPDE SIT Data Production Development Environment Simulation Initialization Tool
- GCC Geocentric Coordinate
- GDC Geodetic Coordinate
- IWARS Infantry Warrior Simulation
- MATREX Modeling Architecture for Technology Research and Experimentation
- MGRS  Military Grid Reference System
- MOOTW Military Operations Other Than War
- MSDE  Military Scenario Development Environment
- MSDL  Military Scenario Definition Language
- NBC Nuclear Biological Chemical
- NPS  Naval Postgraduate School
- PEO  Program Executive Office
- PMESII  Political, Military, Economic, Social, Infrastructure, and Information
- Psyops Psychological Operations
- SIMCI  Simulation and C4I Interoperability Organization
- SISO  Simulation Interoperability Standards Organization
- STD  Standard
- TRAC TRADOC Analysis Center
- TRADOC Training and Doctrine Center
- UN/CEFACT United Nations Centre for Trade Facilitation and Electronic Business
- UTM  Universal Transverse Mercator
- XML eXtensible Markup Language
- XSD  XML Schema Definition