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2005-03

Battlespace Language Activities at NPS

Blais, Curtis L.

Battlespace Language Activities at NPS, Coalition Battle Management Language (C-BML)
Workshop, ODU/VMASC, 7-9 March 2005

http://hdl.handle.net/10945/36558

Battlespace Language Activities at NPS

Curtis Blais, MOVES Institute

Coalition BML SISO Study Group Workshop

7-9 March 2005

Relevant NPS Efforts 2000-present

- C2IEDM
  - Scenario Authoring and Visualization for Advanced Graphical Environments (SAVAGE)
  - Interoperability, Data Control and Battlespace Visualization
  - MOOTW FAST Toolbox Data Interchange
  - Coalition Secure Management and Operations System (COSMOS)
- C2IEDM and BML
  - Common Maneuver Network (CMN) and Mobility Common Operational Picture (M-COP)
- Maritime BML
  - Autonomous Vehicle Control Language (AVCL)

# Scenario Authoring and Visualization for Advanced Graphical Environments

- Maj Shane Nicklaus, USMC, *Scenario Authoring and Visualization for Advanced Graphical Environments (SAVAGE),* Master's Thesis, September 2001

  http://MovesInstitute.org/Theses/ShaneNicklaus.pdf

- "This research presents an integrated Web access and 3D visualization strategy for Department of Defense (DOD) tactical messaging and operation orders using the Generic Hub data model and the Extensible Markup Language (XML)."

Operations Order Data Interchange

Generic Hub Design Methodology for Battlespace Visualization + Semantics: DoD-wide Autoconversion Of Operation Orders into 3D Virtual Environments

Battle Management Language (BML)
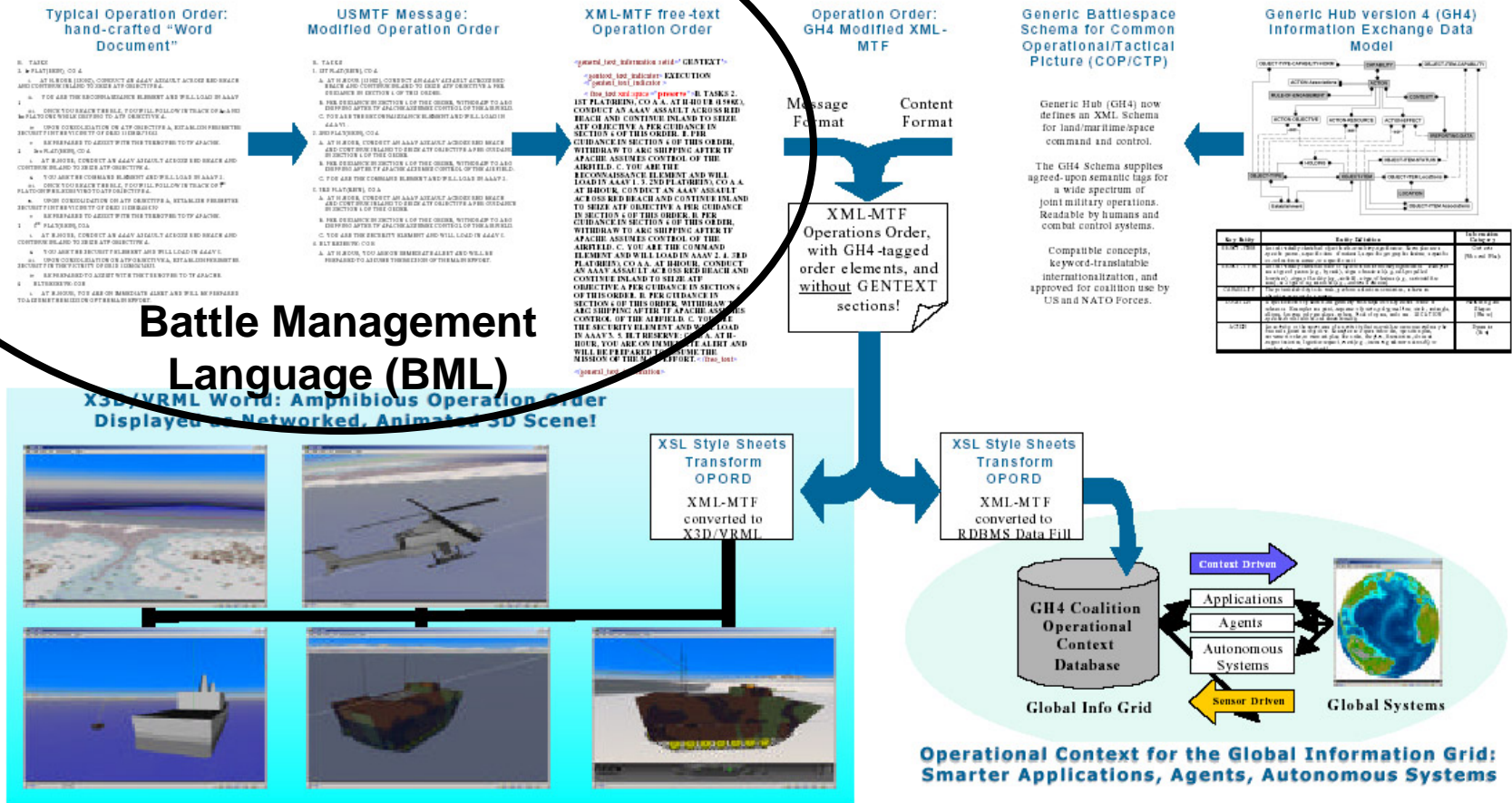
Points of Contact: Erik Chaum NUWC *ChaumE@npt.nuwc.navy.mil* - Francisco Loaiza IDA *FLoaiza@ida.org* - Eugene Simaitis IDA *GSimaitis@ida.org* - Don Brutzman, Shane Nicklaus, Doug Horner NPS *brutzman@nps.navy.mil*
13 September 2001

Interoperability, Data Control and Battlespace Visualization

■ Capt James Neushul, USMC, *Interoperability, Data Control and Battlespace Visualization Using XML, XSLT, and X3D,* Master's Thesis, September 2003

http://MovesInstitute.org/Theses/NeushulThesis.pdf

■ "The application of structured data methodologies using the Extensible Markup Language (XML) allows organizations and systems to exchange and process battlespace information cooperatively."

Battlespace Generic Hub (BGH) – XML Schema Extensions

DBMS

DBMS

ARM

ATCCIS Replication Mechanism

C2IEDM

Command and Control Information Exchange Data Model

SQL

ERWin^{tm}

MS Access^{tm}

Direct Mapping of BGH-ARM to BGH-TML captures all entities and preserves database oriented referential links. This allows extensibility while maintaining inter-database connectivity capability.

IDA: BattlespaceGenericHub ATTCIS Replication Mechanism XML SCHEMA (BGH-ARM)

OpOrder.xml

BGH-TML To BGH-ARM

BGH-ARM To BGH-TML

NPS: BattlespaceGenericHub Tactical Markup Language XML INSTANCE (BGH-TML)

OpOrder.tml

C4I Software

Simulations

RII

MCCS

CCE

Messaging via Web Services

SOAP

Message is XML equivalent of BGH-ARM SQL Query

The BGH-TML is restructured to reflect the C2IEDM Key Entity relationships in XML

MOOTW FAST Toolbox Data Interchange

■ Capt Glenn Hodges, USA, *Designing a Common Interchange Format for Unit Data using the Command and Control Information Exchange Data Model (C2IEDM) and XSLT,* Master's Thesis, September 2003

http://www.movesinstitute.org/Theses/Hodgesthesis.pdf

■ "Using a common data representation like C2IEDM coupled with the power of XML and XSLT, unit information can be transformed and interchanged between applications."

Unit Data Interchange
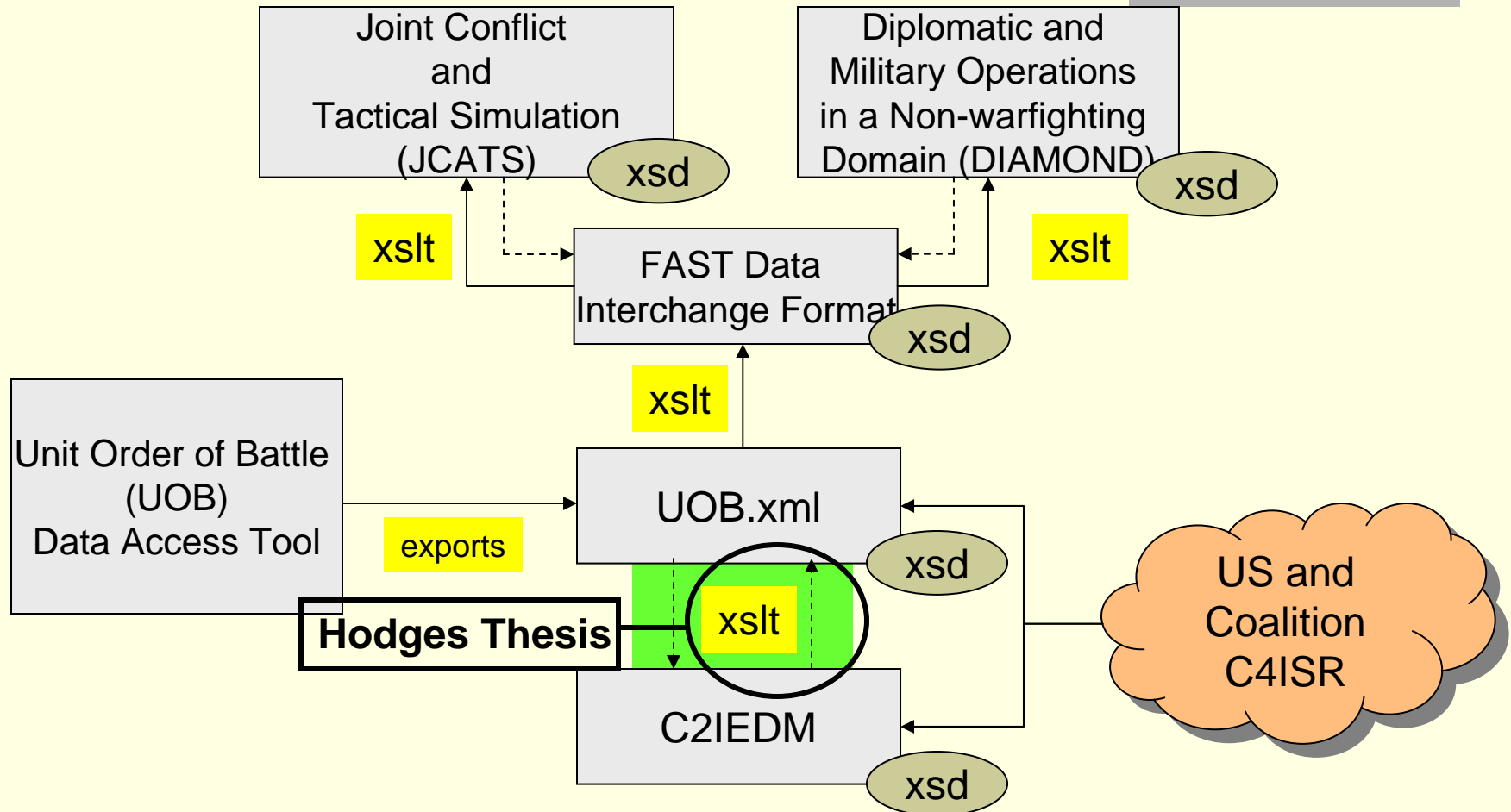
COSMOS ACTD

- Coalition Secure Management and Operations System (COSMOS) Advanced Concept Technology Demonstration (ACTD)
  - "Enable rapid information exchange among MIP-compliant coalition C2 applications using the MIP specifications and procedures."
- Various initiatives planned/proposed:
  - C2IEDM-enabled data interchange under role-based access controls
  - C2IEDM for description of roles
  - C2IEDM for description of the network
  - C2IEDM-based tactical chat ("possibly part of a virtual collaborative environment supported by DEM replication?")

Extending C2IEDM for CBRN*

Professor Tom Johnson

Department of National Security Affairs (NSA/JO)

Naval Postgraduate School

APM for Data, JPM IS under JPEO CBD (SPAWAR PMW 150)

Deputy DoD CBRN XML Namespace Manager

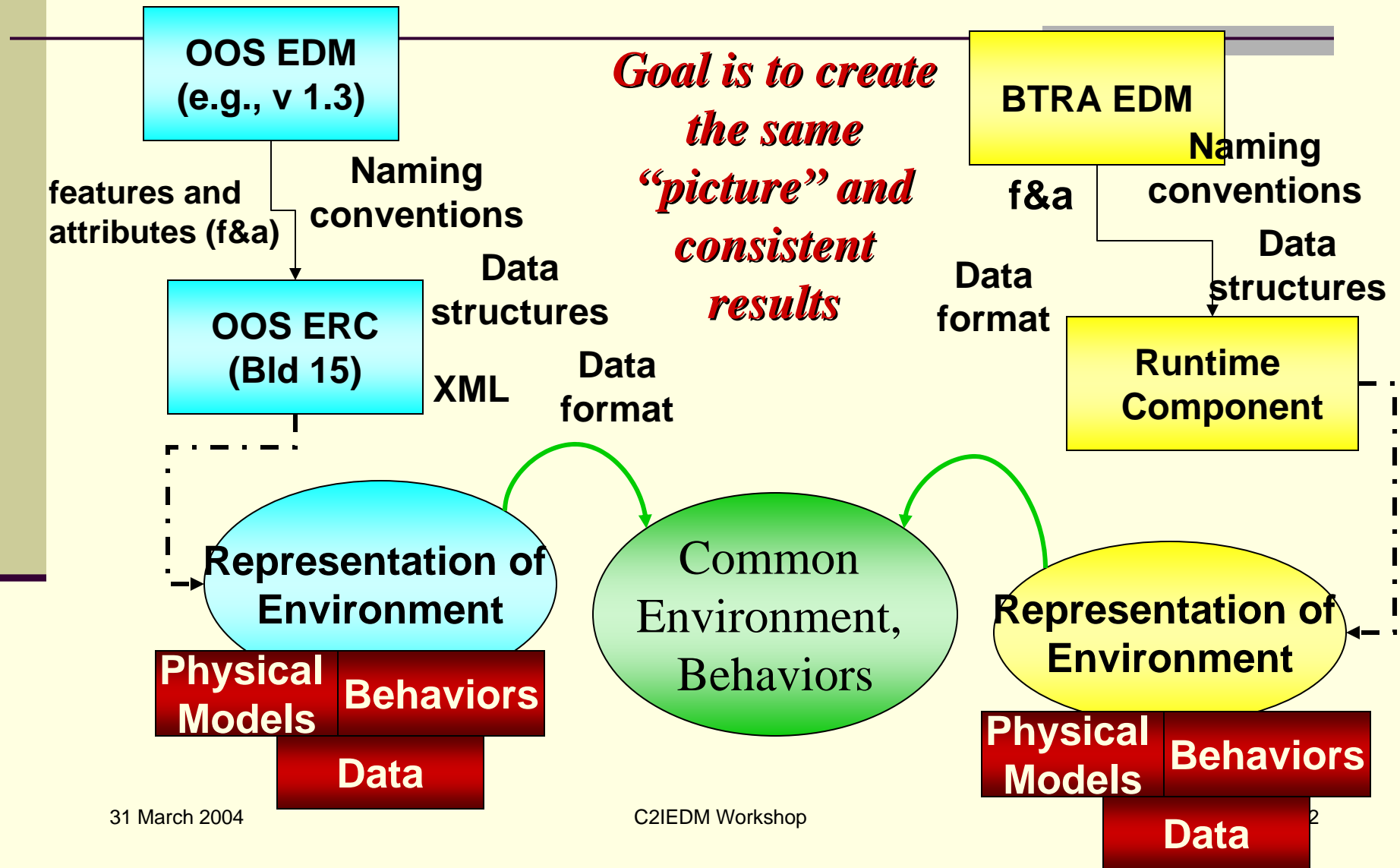thjohnso@nps.navy.mil (831-656-3109)

thjohnson@msiac.dmso.mil (703-933-3301)

*Chemical, Biological, Radiological, and Nuclear

Common Maneuver Network

- Common data representations across C4I systems and M&S (embedded M&S in FCS)
    - Battlespace Terrain Reasoning and Awareness (BTRA)
    - OneSAF Objective System (OOS)
- Various maneuver network representations
    - BML
    - C2IEDM
    - Military Scenario Definition Language (MSDL)
   - Geography Markup Language (GML)

Common Maneuver Networks

OOS EDM (e.g., v 1.3)

BTRA EDM

Goal is to create the same "picture" and consistent results

features and attributes (f&a)

Naming conventions

f&a

Naming conventions

OOS ERC (Bld 15)

Data structures

Data structures

XML

Data format

Data format

Runtime Component

Representation of Environment

Common Environment, Behaviors

Representation of Environment

Physical Models

Behaviors

Physical Models

Behaviors

Data

Data

Maritime BML

- Adapt BML to context of Naval operations
  - Work proposed; not yet started
  - Scenarios: Anti-Submarine Warfare (ASW), SSBN / Special Operations Forces
- Autonomous Vehicle Control Language (AVCL)
  - XML language for arbitrary autonomous vehicle mission definition, inter-vehicle communication and mission-data storage
  - CDR Duane Davis, USN, PhD dissertation, in progress – designing the language for compatibility with JC3IEDM
  - May be useful to BML/C-BML as start of the control language for robotic forces

AVCL in the Autonomous and Unmanned Vehicle (AUV) Workbench
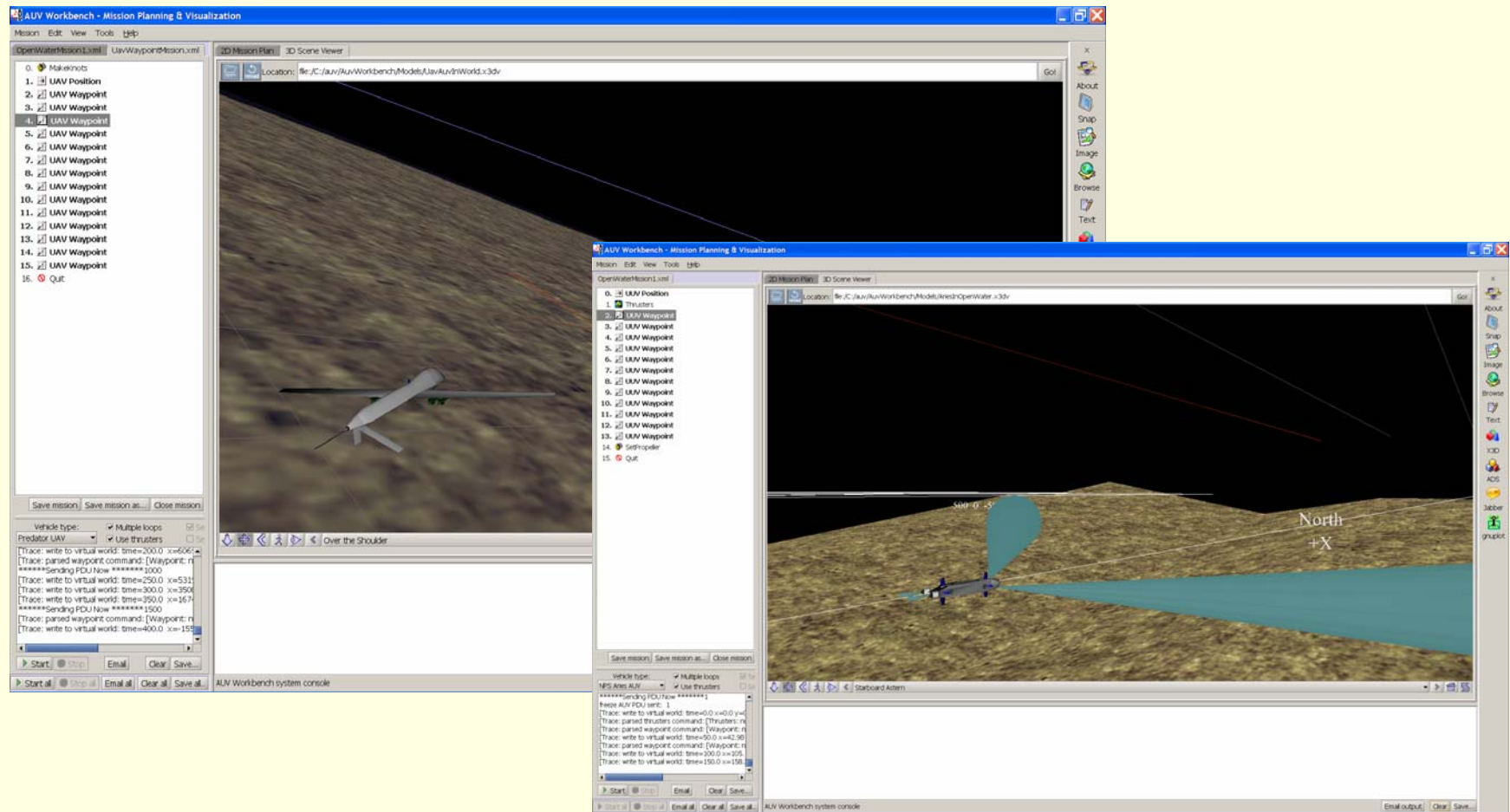
Questions?

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