Rationale, Context, Status, and Future Plans

MoSSEC (AP243) ISO Standard

Gregory Pollari, Collins Aerospace (America Co-Chair)
Adrian Murton, Airbus (European Co-Chair)

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Agenda

- Why do I need MoSSEC?
- What is MoSSEC?
- How is MoSSEC used?
- Summary
Understanding the Need Before Defining a Solution

Why do I need MoSSEC?
Typical Decision-Making Questions

- Is there a change to this requirement and what does it impact?
- Why was it decided to use this technology?
- Which partner has the skills to perform this task?
- Show me the detailed analysis behind these figures of merit?
- What inputs were used for this analysis and where were the results used?
- What method has been used for this type of analysis in the past?
- Who made this assumption and what evidence was there to support it and where was it used to support a decision?
- What method should be used to verify this requirement and what level of output quality is needed?
- This is a surrogate model of this component behaviour and is valid for this input range.
Typical Decision-Making Questions


“The Kipling Method”
Improved Decision-Making Across an Organization

- Need efficient distribution and retrieval
  - Of system-of-systems definition
  - Across multiple organizations, platforms and locations
- Facilitate a joined-up big-picture view
Improved Decision-Making Across an Extended Enterprise

• Need efficient distribution and retrieval
  – Of system-of-systems definition
  – Across multiple organizations, platforms and locations
• Facilitate a joined-up big-picture view
Combine Modeling & Simulation Data with Collaboration Data

Modeling and simulation data
- Managed with PLM/SPDM* tools
- Standards-based exchange

Collaboration data
- Managed with MoSSEC-compliant tools
- MoSSEC standard-based exchange

* Product Lifecycle Management/Simulation Process & Data Management
A Data Exchange Standard for Model Metadata

What is MoSSEC?
A Work-in-Process ISO Standard

- ISO Committee Draft: approved June 2018 (ISO/AWI 22071, AP243)
- Draft International Standard: send for ballot July 2019 (earliest expected)
  - Dependent on STEP Extended Architecture validation and STEP Module Resource Library release
- International Standard: 2020 (planned)
- Contributing web services specification for the STEP Extended Architecture
- Industrial partner support (e.g. Airbus, Collins Aerospace, Boeing, BAE Systems)
- Vendor support (e.g. Eurostep, Dassault Systèmes, MSC Software, Siemens)
Business Object Model Coverage for Model Metadata
Built on Related Standards

- ISO 10303 STEP modular architecture (model-based)
  - Mapping to Core, sharing subset with AP239 (PLCS*), harmonized with AP242 ed2
  - Allows for alternative technology-specific implementations – “future-proofing”
- Model-based definition enables test suite export for implementers

* Product Life Cycle Support
Examples

How is MoSSEC Used?
Implementation Scenario – Intermediate Collaboration Hub Communication

Each tool builds a “Stub” to convert native API to MoSSEC.

Tools then Push/Pull to/from the Collaboration Hub

Implementation Examples:

Windchill (PTC)  
SimManager (MSC)  
Non COTS (various)  
ShareAspace (Eurostep)
Implementation Scenario – Direct Tool Communication

Each tool builds a “Stub” to convert native API to MoSSEC.

Tools then communicate directly with each other.

Implementation Examples:

- 3DX (Dassault Systemes) ↔ TeamCenter (Siemens)
- 3DX ↔ SimManager (MSC)
- Non COTS (various) ↔ SimManager
Typical Application Area – Aircraft Design Trades

Typical Product Development Cycle

Single domain → Multi-domain
Exploring rapidly loads of concepts  Trade-Off analysis across a set of concepts involving rapid domain M&T

Multi-domain → Multi-domain
Designing one concept in detail

Discipline silos
No means to steer trade process
Key information trapped in reports
Incoherent & not traced data
“Model Instance” – Context Illustration
Benefits and Observations

- **Development lifecycle**
  - Initial development
    - Mapping to internal data model
    - Services development
  - Subsequent development
  - Implementation reuse

- **Technology-independent model of standard**
  - SOAP to REST without changing (for example)

- **Standardized semantics and services**
  - Improved collaboration, traceability, and decision-making
MoSSEC: A Unique Combination of Features

- Links modeling and simulation to the Systems Engineering Context
  - Uses objects at a business level

- Efficiently shares context information
  - Uses web services defined by the business object specification

- Builds on existing standards
  - Uses STEP Extended Architecture mapping to ISO 10303 AP239 PLCS and the Core Technical Capabilities
  - Exploits AP239 usages, such as LOTAR (Long Term Archiving and Retrieval)

- Supports lifecycle model-based enterprises
MoSSEC: More Information

• MoSSEC website
  – mossec.org
  – Overview
  – Resources
  – News
  – Links

• Member website
  – private.mossec.org

• Request to be added to member list
  – Adrian.Murton@airbus.com
    • European Co-Chair
  – Gregory.Pollari@collins.com
    • America Co-Chair