



2019
Annual **INCOSE**
international workshop
Torrance, CA, USA
January 26 - 29, 2019

MBSE Workshop

IW2019 TIMLM WG Update

Tool Integration and Model Lifecycle Management Working Group



**Chair,
Co-chairs,
Proj Leads**

John Nallon: Chair
Mark Williams: PDES Project Lead
Rene King: PPI Project Lead
Wes Hewett: INCOSE Project Lead
John Russell: Traceability Project Lead

**TIMLM
WG Open
Web
Page**

<http://www.incose.org/ChaptersGroups/WorkingGroups/transformational/tools-integration-interoperability>

**Number
of
Members**

110 TIMLM WG Members

**SETDB
Project
Members**

22 SETDB Team Members

**TIMLM
WG
Connect
URL**

<https://connect.incose.org/WorkingGroups/TIMLM/Pages/Home.aspx>

**SETDB
Connect
URL**

<https://connect.incose.org/WorkingGroups/ToolsDatabase/Pages/Home.aspx>



TIMLM WG 2018/2019 Activities



1. **Joint MBSE Data Exchange Project with PDES Inc. (on-going)**



2. **LOTAR for MBSE Digital Data (new 2019)**



3. **Joint Systems Engineering Tools Database Development with PPI (on-going)**



4. **Lifecycle Traceability of Requirements re-initiated (2019 kickoff)**

MBSE for PDES – A Joint PDES/INCOSE Project



- **MBSE for PDES: A Joint PDES Inc – INCOSE Project**
 - **Collaboration** project with several INCOSE Working Groups:
 - **Tool Integration and Life Cycle Management WG**
 - **Digital Engineering Information eXchange WG –**
 - (Digital View Point, Digital Exchange Framework, Digital Model, Digital Encyclopedia)
 - **Configuration Management WG**
 - **NAFEMS-INCOSE Systems Modeling and Simulation WG**

Work Statement

- **Define HOW to assemble/bundle/couple or package MBSE business objects (MBSE TDP) that need to be exchanged and HOW the exchange should occur.**



MBSE for PDES – A Joint PDES/INCOSE Project

- **Project Investigative Activities:**
 - Correlating the **UAF** and **STEP** standards thru experimentation and pilots (paper) using SysML or equivalent modeling languages.
 - Investigating the informative portions of various models **for ISO Standards AP232, AP233, AP239, AP242, AP243 to support MBSE and data exchange.**
 - *Verifying what is covered (or not) by the standards.*
 - *Do they adequately cover the entire body of MBSE requirements?*
 - *Do we need to down select and focus on the best fit for updating?*
 - *What are the gaps in the standards that need closure?*
 - *What is the closest standard to meeting MBSE needs?*
 - *.....*



MBSE for PDES – A Joint PDES/INCOSE Project

- **Project Investigative Activities: (Continued)**
 - Investigating how MBSE impacts **assembly, bundling, coupling packaging** already defined by other standards or industry guides. (Technical Data Packages)
 - MIL-STD 31000B, INCOSE SE Handbook, NASA SE Handbook, UAF
 - Also analyzing **gaps in other standards**: SySML, ReqIF, IEEE 42010, etc.
- **Bi-Weekly Meetings Attended By:** INCOSE and PDES Members
 - Airbus, Boeing, AFNET, UTC, EUROSTEP, NASA, Honeywell, CACI, Opus Systems, Liberty, Lockheed Martin, 3DS, Engility and INCOSE
 - Tool Suppliers that present their product functionality and interoperability capability on request



MBSE for PDES and LOTAR Session

- **Monday January 28, 1300-1700 Salon F**
 - This session will present and discuss some of the issues mentioned, and the communities engaged in identifying potential opportunities and solutions for data exchange and LOTAR.
 - Can you identify the role of PDES, LOTAR, and/or the industry consortiums aligned to implement change?
 - We are building MBSE artifacts, can we use them in 3 years? 10 years? 5 years?

MoSSeC Presentation Sunday 09:00 to 10:30



- Update to the new ISO Standard (ISO/AWI 22071, ISO 10303-AP243): **MoSSEC** (**M**odelling and **S**imulation information in a collaborative **S**ystems engineering **C**ontext).
- AP243 is a model metadata exchange standard that covers the "**Who, What, When, Where, How, and Why**" of MBSE.
- **Author: Mr. Greg Pollari, Collins Aerospace**
 - Presentation will be available on MBSE Wiki and TIMLM WG CONNECT site.



TIMLM WG 2018/2019 Activities

1. Joint MBSE Data Exchange Project with PDES Inc. (on-going)
2. **LOTAR for MBSE Digital Data (new 2019)**
3. Joint Systems Engineering Tools Database Development with PPI (on-going)
4. Lifecycle Traceability of Requirements re-initiated (2019 kickoff)



2. MBSE and LOTAR Project Initiated



- **2018 MBSE for PDES project:** Activities and Standards Analysis resulted in an MBSE Data Work Item submittal to PDES/LOTAR.
- **MBSE for LOTAR – Long Term Archival and Retrieval** of digital data.
 - Not only models, but also all digital data developed during a product lifecycle.
- December 12, 2018 a **LOTAR MBSE Working Group** was initiated
- **BI - Weekly Meetings** initiated in January
- **There is no collaboration (MoU) agreement between LOTAR and INCOSE**
 - Must be a LOTAR Member to participate
 - AFNET, Airbus, BAE Systems, Boeing, Embraer, GE, Goodrich, Gulfstream, Lockheed Martin, SAFRAN, Sandia National Labs, NIST, Purdue University, Wichita State University



TIMLM WG 2018/2019 Activities

1. Joint MBSE Data Exchange Project with PDES Inc. (on-going)
2. LOTAR for MBSE Digital Data (new 2019)
3. **Joint Systems Engineering Tools Database Development with PPI (on-going)**
4. Lifecycle Traceability of Requirements re-initiated (2019 kickoff)



3. Systems Engineering Tools Database



- **INCOSE and PPI-Int joint project** to bring the **Systems Engineering Tools Database (SETDB)** back to the INCOSE Web Site!!
- **Weekly Project and Stakeholder Team Meetings**
- **Frequent Meetings with other working group representatives and tool vendors** (also Saturday – Tuesday at IW2019)
- **SETDB Team Activities:**
 - Research of historical Tools Database documentation and files (on-going)
 - Captured User and Stakeholder inputs (IW2018 and IS2018)
 - System Use Cases and System Model (SySML) developed and being maintained
 - Operational Concept Description Final Draft completed and released to stakeholders for review
 - Developing Capability System Requirements – incorporated historical requirements and current requirements, review at IW2019
- **Next Activities Focused on Taxonomy and Tool Categories, Data Collection (2019), Architecture and Prototyping**



TIMLM WG 2018/2019 Activities

1. Joint MBSE Data Exchange Project with PDES Inc. (on-going)
2. LOTAR for MBSE Digital Data (new 2019)
3. Joint Systems Engineering Tools Database Development with PPI (on-going)
4. **Lifecycle Traceability of Requirements re-initiated (2019 kickoff)**



4. Lifecycle Traceability Project

- **First Phase** Suspended in 2016
 - Investigated tool data exchange of textual requirements between COTS tools.
 - Investigated **exchanging trace relationships**
 - Requirement to Requirement
 - Requirement to models (Functional, Logical, Physical)
- **Phase 2 Planning** underway to look at lifecycle traceability from Systems Engineering into the Supply Chain
- **Project Leaders:** John Russell and Bob Henninger



Thank You!!

Info will be posted on the MBSE Wiki and
TIMLM WG CONNECT sites

John Nallon, Chair, TIMLM WG

Mark Williams, Project Leader

Rene King, Project Leader

Wesley Hewett, Project Leader

John Russell, Project Leader



2019
Annual **INCOSE**
international workshop
Torrance, CA, USA
January 26 - 29, 2019

www.incose.org/IW2019