

Evaluation of SysML v2 for use in Collaborative MBSE between OEMs and Suppliers

November 5 2025 – PLM Road Map & PDT Europe



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AD PAG MBSE Collaboration Working Group



PLM Road Map™ & PDT Europe 2025
PLM's Integral Role in Digital Transformation From Strategy to Execution
Elevating PLM to an Enterprise Business Solution,
the PLM Professional's Road Map to Success
5 & 6 November



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Kettering University
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California Institute of Technology (Caltech)

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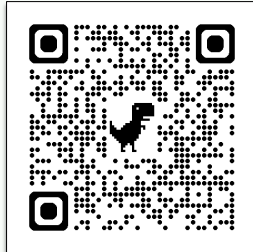
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Project Report Now Available

- Project Conducted Q3 2023 – Q2 2025

- Download Report:



- Today's Agenda

- What is SysML v2? Benefits?
- Rollout: Collaboration Scenarios
- Identified Gaps / Proposed Solutions
- External Considerations

Project Members



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Problem Statement



Currently there are no common methods and standards for exchanging digital model-based requirements and architecture deliverables for the design, procurement, and acceptance of aerospace systems equipment across the industry.

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SysML v2




New Standard for MBSE Collaboration

- OMG recently published: September 2025

CLAIM: “interoperate with other models & tools”
ref: OMG press release July 21, 2025

INVESTIGATION: Will SysML v2 satisfy claim?
What would roll-out look like?

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MBSE Collaboration

Raw Data


Information

Knowledge **Compatibility**

Ontology Accessibility

GOAL: Avoid Tool Vendor Lock

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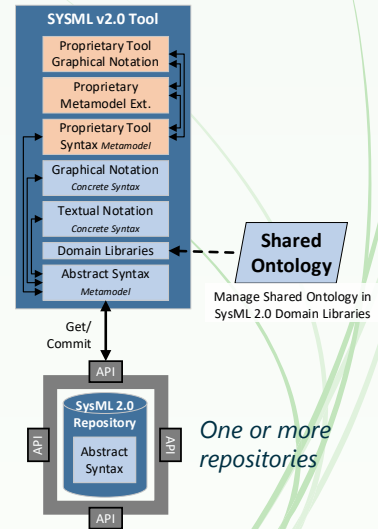
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What is SysML v2?

- Model stored in Abstract Syntax or Textual Notation
 - Kernel Modeling Language (KerML)
- Represented in Concrete syntax
 - Graphical Notation
 - Textual Notation
- Domain Libraries provide standard way to share **ontologies**
- RESTful APIs provide standard **accessibility**
 - Infers a SysML v2 Data Repository



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SysML 2.0 Collaboration Scenarios

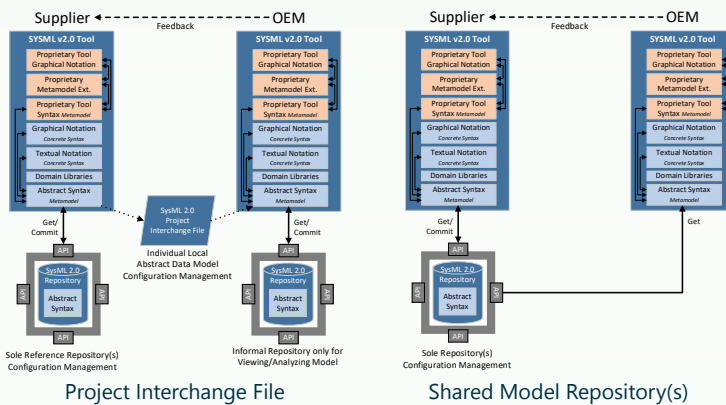


Boeing Collaboration Levels



Airbus Collaboration Schemes

Unidirectional Exchange

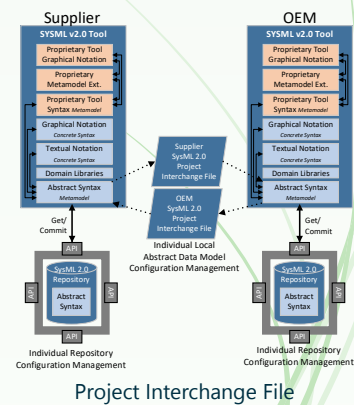


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Bidirectional Exchange



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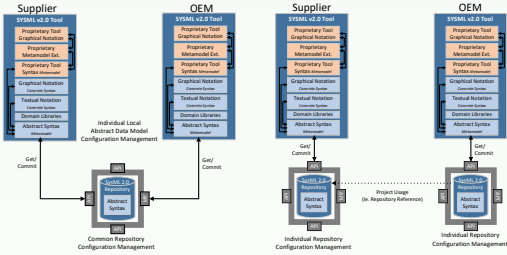
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SysML 2.0 Collaboration Scenarios

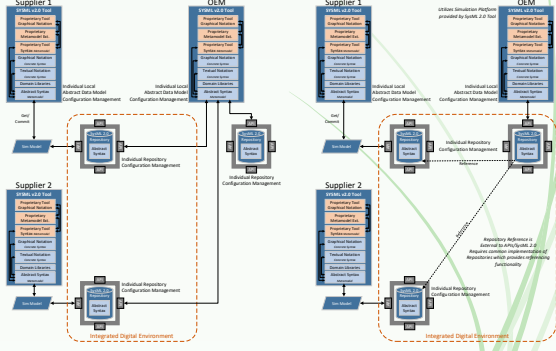
Boeing Collaboration Levels Airbus Collaboration Schemes

Collaboration





Shared Model Repository(s) **Referenced Model Repository(s)**

Platform Co-Simulation



Shared Model Repository(s) **Referenced Model Repository(s)**

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Identified Gaps


Universally Unique Identifiers (UUID)

- Textual Notation Omits UUIDs – Change Management Concerns
- Tools Catching-up to Newer UUID Stability Specification

Lacks Graphical Layout Storage Standard

Lacks Mapping to Common Query Languages

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External Considerations

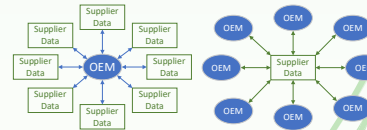
No Path to Transition SysML v1.x to v2

Need Well Define Ontology

- SysML v2 provides method to share ontology, but does not define ontology

Shared IT Environment

- Organization's PLM, Security and Data Retention Needs Drive Distributed IT, not Shared IT



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Conclusions

- Brings Significant Collaboration Opportunities for A&D
- Widespread Adoption Likely Depends on Future v2.x Releases
- Must Exercise the Tools + New KerML Language for Full Evaluation
- Not Just About a Standard.
External Considerations in Roll-Out Planning
- Next Step: Phase 6 Project

A first Look: SysML v2 Collaborative Change Management

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Feedback



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