



SYSTEMS MODELING LANGUAGE VERSION 2 TRANSITION GUIDANCE

SYSML V2

Systems Modeling Language (SysML) is the industry standard for creating digital models. With artificial intelligence and other technologies emerging, the Object Management Group (OMG), an international consortium of model developers, is developing SysML Version 2 (v2) to keep pace with trends. OMG released the revised language in 2025. On behalf of the Office of the Under Secretary of War for Research and Engineering (OUSW(R&E)), the Systems Engineering and Architecture (SE&A) Digital Engineering, Modeling & Simulation (DEM&S) team has developed guidance to assist defense acquisition programs to achieve a smooth transition from SysML v1 to v2.

❖ OUSW(R&E) SYSML V1 TO V2 TRANSITION GUIDANCE

The Interim National Defense Strategic Guidance (March 2025) and Department of Defense (DoD) Instruction 5000.97, “Digital Engineering,” acknowledge the importance of standards in establishing a digital infrastructure. As an industry standard, SysML promotes the effective design of digital models that can be used to analyze and verify complex systems. Ensuring a smooth transition from SysML v1 to v2 ensures the DoW follows current best practice and supports the DoW’s overall strategic mission to revive the warrior ethos and restore trust in our military.

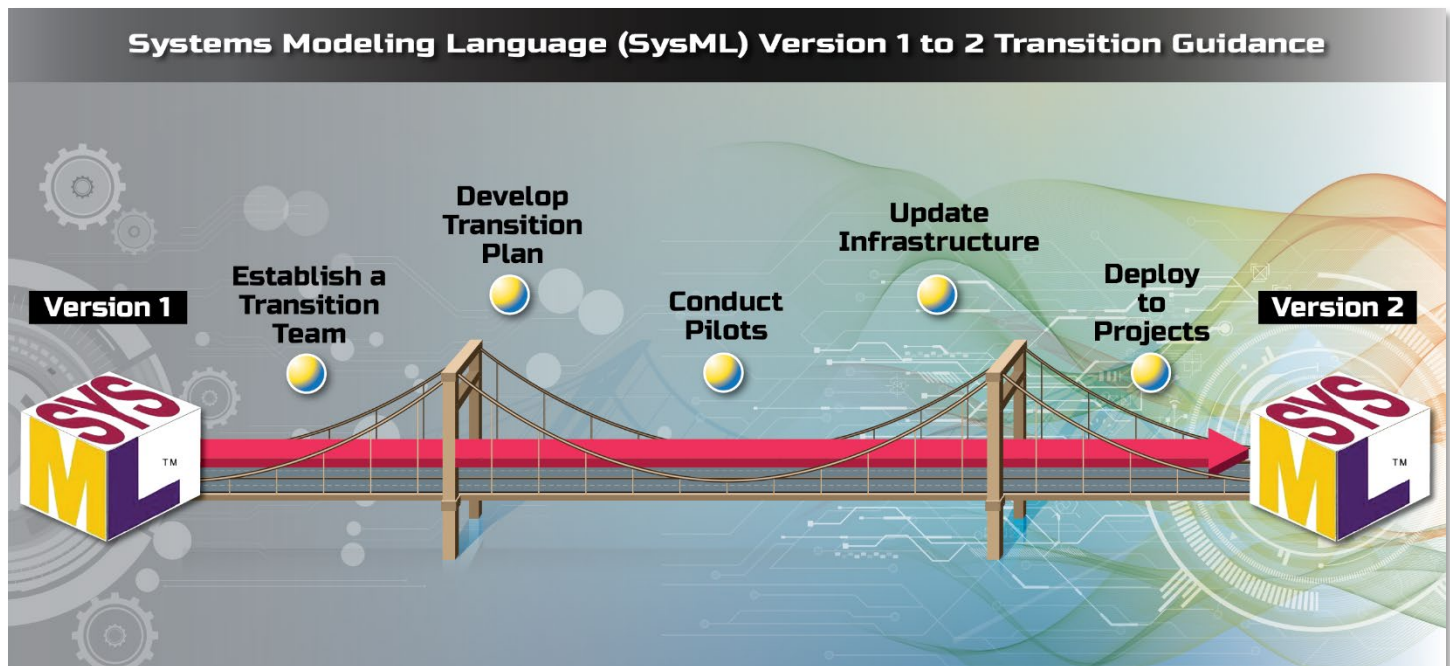


Figure 1. Notional Transition from SysML v1 to v2

❖ WHAT’S NEW WITH SYSML V2:

Application Programming Interface (API): SysML v2 introduces an API into the modeling language, allowing for seamless collaboration between engineering disciplines and agencies.

Kernel Modeling Language (KerML): SysML v2 now uses KerML, a standardized language that makes models machine readable, ensuring all project stakeholders have access to a common, computable understanding of system architecture.

Improved Interoperability: SysML v2 offers improved interoperability, resulting in seamless data sharing across teams, ultimately helping program managers by providing better project visibility, reduced errors, and faster development cycles.



TECHNICAL HIGHLIGHT:

SysML V2 TRANSITION GUIDANCE *continued*

❖ OBJECTIVE

The SysML v2 standard focuses on three core elements: the underlying KerML, modeling semantics and syntax in the SysML, and the API and services. In anticipation of this change, the DoW and community have developed a set of guidance to help programs make the transition to SysML v2. This guidance recommends that programs:

- Begin with a strategic plan for their team’s transition.
- Become familiar with SysML v2 textual notation and API.
- Gain experience with the practice model and conduct a pilot

Figure 2 lists the OUSW(R&E)-developed SysML v1 to SysML v2 transition guidance to support defense acquisition programs. Government, industry, and tool vendors have been using the guidance to help accelerate transition efforts.

Products	Description
Frequently Asked Questions (FAQ's)	This product page was created based on community input resulting from the 2023 INCOSE International Workshop. It provides a listing of 58 Frequently Asked Questions stakeholders might have along with the latest answers to those questions based on current knowledge.
SysML v1 to v2 Transition Plan Outline and Recommendations	This product page provides an outline and recommended approach around what to plan for and consider when transitioning from SysML v1 to SysML v2.
SysML v2 Tool Consideration Checklist	Based on experience converting SysML v1 models to SysML v2 models a list of tool consideration was documented. As a tool user or tool developer, use this list as possible features you might consider in a tool that supports SysML v2.
SysML v2 Modeling Environment and Tools	This product provides instruction to help with setting up your own SysML v2 textual notation model development environment. It also provides vendor modeling tool information.
SysML v1 to SysML v2 Model Conversion Process	This product page includes an approach to converting a SysML v1 model to a SysML v2 model. This page also includes links to documented conversion efforts.
SysML v1 to SysML v2 Model Conversion Examples	This page includes links to example SysML v1 models and SysML v2 conversion results so that you can download them for your own purposes should you choose to try your hand at converting them to a SysML v2 model.
SysML v2 Flashlight Starter Model	This page includes a short description of the SysML v2 Starter Model along with links to a tutorial and completed SysML v2 Model. This product is a learning aid to get someone comfortable with SysML v2

Figure 2. DoW Transition Guidance Available on OMG Wiki

❖ RESOURCES

SE&A: <https://www.cto.mil/sea/>

DEM&S: <https://www.cto.mil/sea/dems>

OMG Wiki: https://www.omgwiki.org/MBSE/doku.php?id=mbse:sysml_v2_transition

SysML V2 Transition Community of Practice Meeting:

Email: osd-sea@mail.mil | Attn: DEM&S



Visit the OMG Wiki Page to get information on SysMLv2 Transition Guidance and more!

Modernizing digital infrastructure and adhering to standards supports DoW’s strategic mission to provide superior capability for the warfighter.