

Department of Defense (DoD) SysML v2 Transition Guide Project

INCOSE IW 2024

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Digital Engineering, Modeling & Simulation's Place in the Federal Government



Joe Biden
President
whitehouse.gov



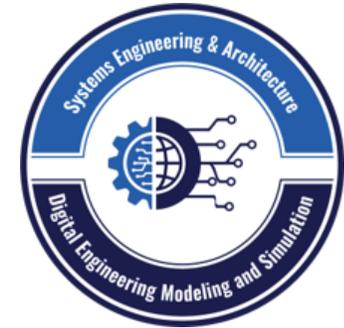
Lloyd J. Austin III
Secretary of Defense
defense.gov



Heidi Shyu
Under Secretary of Defense
(OUSD) for Research and
Engineering (R&E)
cto.mil



Tom Simms
Executive Director, SE&A
cto.mil/sea



Daniel Hetteema
Director
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NDS&T Strategy – Importance of Standards

NATIONAL DEFENSE SCIENCE & TECHNOLOGY STRATEGY 2023

UNITED STATES DEPARTMENT OF DEFENSE



Upgrading Digital Infrastructure

We will continue to **modernize our digital infrastructure** to improve information sharing and knowledge management. Cloud computing and data sharing will be the norm, in alignment with the Department’s *Digital Modernization Strategy*, *Digital Engineering Strategy*, *Data Strategy*, and *Cyber Security Strategy*.

Whenever appropriate, we will consult with allies and partners to build shared platforms that advance collaborative research and development.

Technology **standards and protocols are core to our digital infrastructure**, national security, and economic prosperity. As we upgrade our digital infrastructure, we will **reengage in the standards bodies** that set technical specifications. We will also encourage industry, academia, and allies and partners **to participate in standard-setting more actively**. Working with our allies and partners we will continue to shape the international rules of the road.

*emphasis added for this presentation



DoD INSTRUCTION 5000.97, “DIGITAL ENGINEERING”

Purpose: The Department of Defense is transforming its engineering practices to incorporate digital technology and innovations into an integrated, digital, model-based approach. This instruction establishes policy, assigns responsibilities, and provides procedures for implementing and using digital engineering in the development and sustainment of systems.

This policy directs:

- Programs started after the date of the policy will incorporate digital engineering during development unless the program’s decision authority provides an exception.
- Programs started before the date of the policy should incorporate digital engineering, to the maximum extent possible, when it is practical, beneficial, and affordable.
- Digital engineering should be addressed in the Acquisition Strategy and in the Systems Engineering Plan.
- Digital engineering methodologies, technologies, and practices support a comprehensive engineering program for defense systems.

Digital Twin

A computerized representation (integrated set of models) that serves as the real-time digital counterpart of a physical object or process.

Digital Thread Examples

- Requirements analysis
- Architecture development
- Design and cost trades
- Design evaluations and optimizations
- System, subsystem, and component definition and integration
- Cost estimations
- Training aids and devices
- Development and operational tests
- Product support

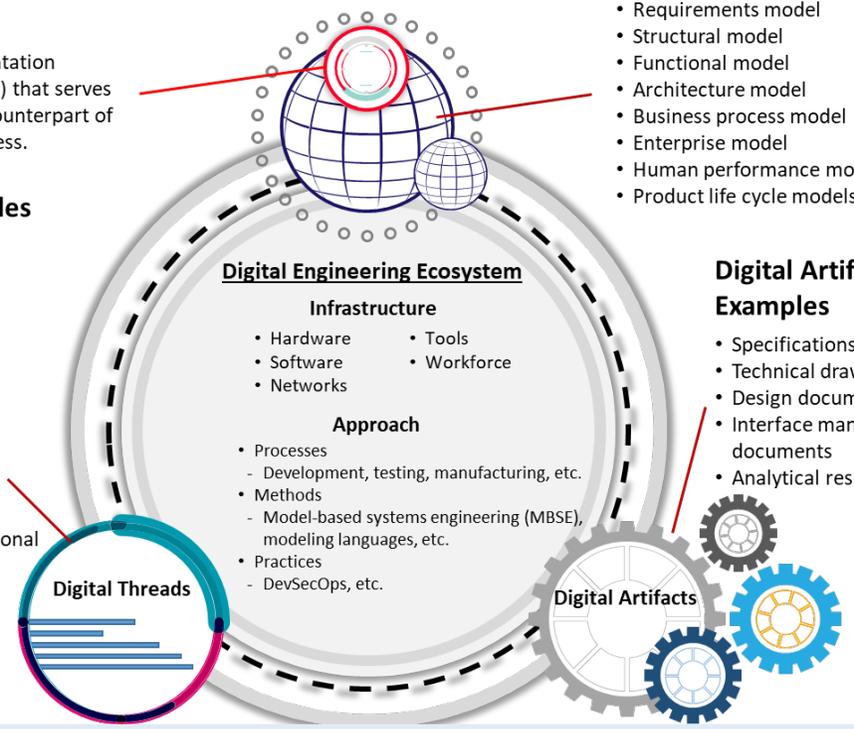
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Digital Model Examples

- Requirements model
- Structural model
- Functional model
- Architecture model
- Business process model
- Enterprise model
- Human performance models
- Product life cycle models

Digital Artifact Examples

- Specifications
- Technical drawings
- Design documents
- Interface management documents
- Analytical results



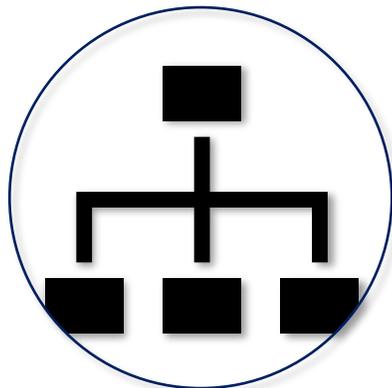
Digital engineering transforms DoD systems engineering practice.

Data management should

le, and secure.



What is the scope of the change?



15,000 +

models in DoD
*Based on sampling
counts of government
owned ecosystems*

**Significant
investment**



25%

DoD engineers use models
*Based on reported data and
user assumptions of those
ecosystems*

Size estimates do not include contractor ecosystem models and people using them



Background

- SysML v1 to v2 Transition Project began at INCOSE IW 2023
 - Workshop laid the foundation for guidance and established community
 - Feedback received directly led to the development of transition FAQs
- Transition Guidance project represents opportunity for the SE community
 - Opportunity to enable a smoother, faster transition
 - Opportunity to speed up and align community adoption of SysML v2
 - Opportunity to model better using SysML v2 advantages



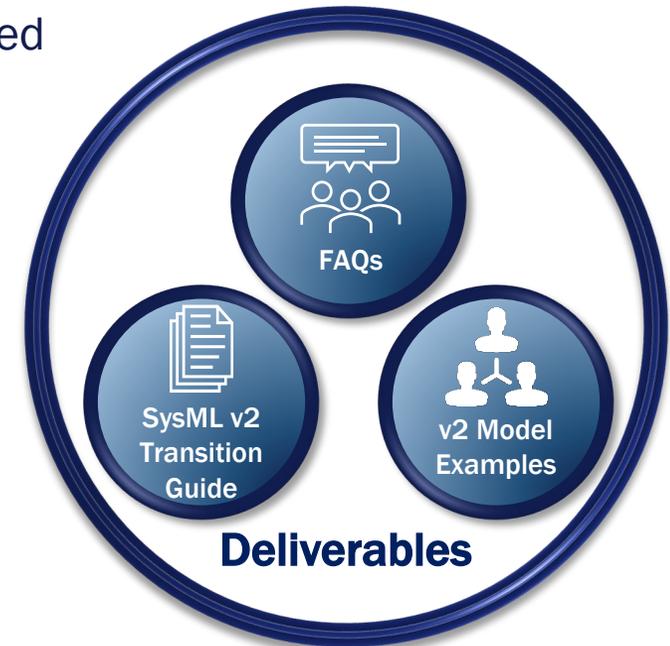
SysML v2 Transition Guidance

Guidance will:

- Address community questions and concerns on transition
- Define differences in syntax, semantics from v1 to v2
- Model examples that further explain guidance principles
- Provide stylistic suggestions to help streamline the modeling process
- Align transition and adoption effort
- Communicate the values of transitioning from v1 to v2

Outcomes:

- Greater transition success
- Faster transition
- Improve modeling practices and model quality
- Avoid duplications of effort
- Share lessons learned





Collaborating across the community



Please Join the
Monthly
Community
Collaboration



SysML v1 to SysML v2 Transition Information Session

Agenda:

09:30 – 12:00 PM Morning Session

- 9:30 – 9:45 Introduction – Daniel Hettema OUSD Director for Digital Engineering, Modeling & Simulation (DEM&S)
- 9:45 – 11:00 SysML v2 basics – Sanford Friedenthal
- 11:00 – 12:00 SysML v2 tool vendor roadmap highlights (vendors)

12:00 – 13:00 Lunch

13:00 – 15:00 Afternoon Session 1

- 13:00 – 13:45 DoD Transition Guidance Project overview – Frank Salvatore
- 13:45 - 15:00 DoD transition planning panel

15:00 – 15:30 Break

15:30 – 17:30 Afternoon Session 2

- 15:30 – 16:05 Organization transition planning approach – An industry perspective – Chris Schreiber
- 16:05 – 17:15 Tool vendor panel
- 17:15 – 17:30 Wrap-up – Daniel Hettema OUSD DEM&S



Contact Info

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