SEI Bulletin 40 years

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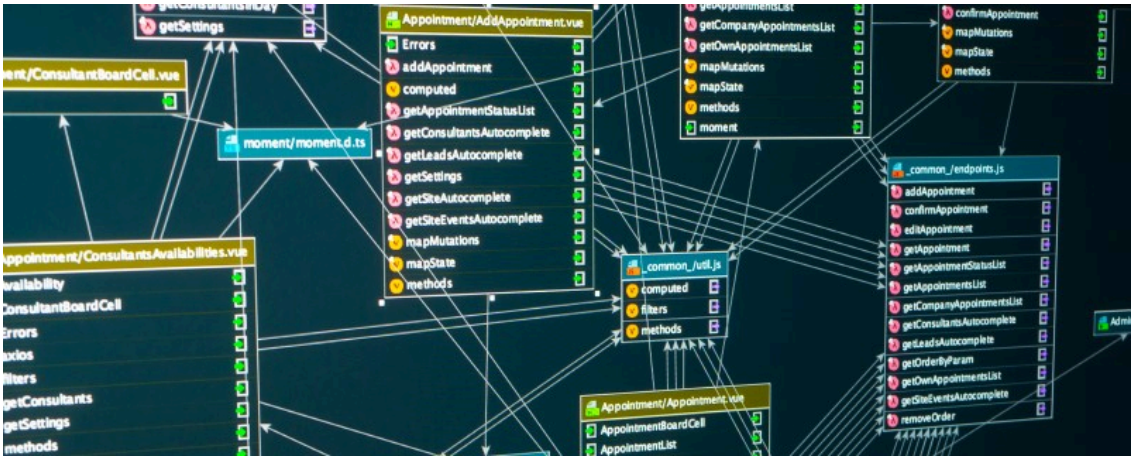

SEI Workshop Calls for Improved Model-Based Systems Engineering in Defense and Intelligence

August 20, 2025 — Model-based systems engineering (MBSE) is a formal methodology for improving communication, productivity, and quality during the development of complex systems. While MBSE has gained ground in government settings, its adoption faces organizational and expertise obstacles. A new SEI report captures feedback from a workshop with MBSE practitioners in the Department of Defense (DoD) and the intelligence community (IC). They call for actions that can expand the adoption of this crucial practice.

MBSynergy Workshop participants identified the five major barriers to implementing MBSE in DoD and IC software system development and, crucially, ways to overcome them. These 19 calls to action target the MBSE community, emerging MBSE technologies, DoD and IC policies, the digital engineering environment, training, and MBSE processes.

Workshop organizers invite those in defense and intelligence software programs to grow the MBSE community of practice by contacting the SEI.

Read more »

SEI News

Study Finds Key Causes of Divergence in Software Bills of Materials
Potential differences in software bills of materials (SBOMs) for an individual piece of software can undermine confidence in these key supply chain documents.

Model-Based Systems Engineering in Practice Conference Announces Keynote and Program
The August 21 event will feature presentations on MBSE across the lifecycle, in Defense Department acquisition, and in cybersecurity.

SEI Fellow, Founding CERT/CC Director Richard D. Pethia Inducted into FIRST Incident Response Hall of Fame
The honor recognizes Pethia's trailblazing work in computer security incident response.

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Latest Blogs

Artificial Intelligence in National Security: Acquisition and Integration
This post details practitioner insights from the AI Acquisition workshop, including challenges in differentiating AI systems, guidance on when to use AI, and matching AI tools to mission needs.

Managing Security and Resilience Risks Across the Lifecycle
This post introduces the Security Engineering Framework, a detailed schema of software-focused engineering practices that acquisition programs can use to manage security and resilience risks across the lifecycle of software-reliant systems.

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Latest Podcasts

Understanding Container Reproducibility Challenges: Stopping the Next Solar Winds
Kevin Pitstick and Lihan Zhan discuss Vessel, a recent SEI tool that helps developers identify the difference between two container images to help sort benign from problematic issues.

Mitigating Cyber Risk with Secure by Design
SEI CERT Division director Greg Touhill and Matt Butkovic highlight recommendations, built on prior joint efforts by the SEI and the Cybersecurity Infrastructure Security Agency, for making software secure by design.

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Latest Publications

History of Innovation at the SEI
This book offers snapshots of the culture of innovation at the SEI from 1988 to 2025 as our researchers and engineers have worked to advance software for national security.

Report on the First MBSynergy Workshop
MBSynergy research focuses on ways of pursuing government equities using model-based systems engineering and digital engineering in DoD and intelligence community settings. This report describes the MBSynergy team's first working session.

Software Bill of Materials (SBOM) Harmonization Plugfest 2024
This report describes how differences in SBOM generation can result in different SBOM outputs.

See more publications »

Latest Videos

Achieving Balance: Agility, MBSE, and Architecture
Peter Capell addresses a practical vision for meeting stakeholder expectations of Agile implementation, highlighting the value of model-based systems engineering and architecture.

Identifying AI Talent for the DoD Workforce
Eric Keylor, Intae Nam, and Dominic Ross go beyond traditional knowledge and skill assessments as they introduce prototype tools that reveal key information about evaluating talent for AI and data positions.

See more videos »

Upcoming Events

Model-Based Systems Engineering (MBSE) in Practice 2025, August 21, Arlington, Va.
Join us to gain practical insights from seasoned MBSE adopters, discover innovative solutions to common challenges, and shape the future of systems engineering in an increasingly complex world.

Webcast - Quantum Computing Meets High Performance Computing Skills in the Class, August 27
SEI AI researcher Dan Justice and NVIDIA senior technical marketing engineer Monica VanDieren assess the university preparation of quantum machine learning students for work in high performance computing environments.

AAAI Fall Symposium: Engineering Safety-Critical AI Systems, November 6-8, Arlington, Va.
As AI is increasingly applied to new and more high-risk settings, a mature safety engineering discipline for AI becomes ever more critical. Join the SEI to advance the discipline of engineering AI for safety.

See more events »

Upcoming Appearances

AFCEA TechNet Augusta 2025, August 18-21, Augusta, Ga.
Visit the SEI at booth T825.

16th Annual Billington CyberSecurity Summit, September 9-12, Washington, D.C.
Hear the SEI's Matthew Butkovic, Christopher Cullen, Lauren McIlvenny, David Schulker, and Brett Tucker, and visit the SEI at booth D23.

AFA Air Space Cyber Conference 2025, September 22-24, National Harbor, Md.
Visit the SEI at booth 116.

See more opportunities to engage with us »

Upcoming Training

Developing a National or Government CSIRT
October 7-8 (Live Online)

Software Architecture Design and Analysis
October 14-17 (Live Online)

E-learning - CERT Artificial Intelligence (AI) for Cybersecurity Professional Certificate

E-learning - Introduction to Artificial Intelligence (AI) Engineering

E-learning - Effective Communication of Technical Concepts

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