



# AADL User Day Welcome

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# Welcome

## AADL/ACVIP USER DAY

JUNE 2, 2022 | VIRTUAL

Thank you for joining leading AADL/ACVIP users who are changing the world of software engineering in this forum presenting the latest on Architecture Analysis and Design Language (AADL), Architecture-Centric Virtual Integration Process (ACVIP), and associated tools.

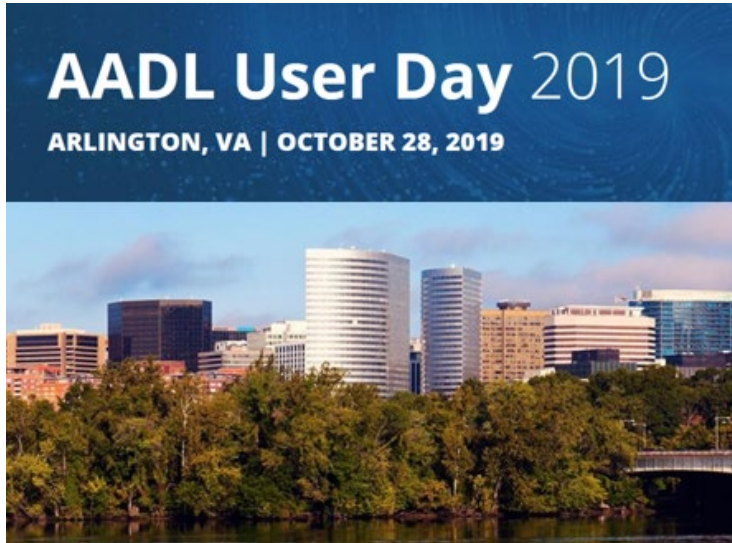
# CMU SEI Brings Unique Expertise and Capability to Software Engineering



Our Vision: Software as a  
Strategic Advantage for the DoD

- Established as a DoD FFRDC in 1984 at Carnegie Mellon University
- Charged to improve the state of the practice of software engineering, cybersecurity engineering, and AI engineering
- Maintains a diverse portfolio aligned with DoD priorities
- Provides close, rapid-response and long-term support across the software acquisition and cyber operations lifecycle
- Collaborates with other CMU departments and broadly in academia, government, and industry
- Capable of conducting both fundamental research and classified work
- ~610 staff members (80% in Pittsburgh)

# We've Come a Long Way from AADL User Day 2019!



## Primary goals:

- Engaging **more collaborators** to use AADL tools and to provide **real world input**
- Leveraging model-based techniques (including AADL/ACVIP) to **improve DoD procurement practice** and revisit **acquisition policies**

Today, we're thrilled to report major progress in collaboration, real world use, and policies and practices that enable the use of AADL and ACVIP.

Speakers throughout the event today will be providing a detailed view into this progress as they share their experiences.

# Collaborators

AADL is used throughout the world by many different groups that improve and validate its capabilities, including

- Government agencies
- Defense contractors
- Universities and research institutes
- Commercial Industry



All these groups are represented by our participants today.

Speaker highlights include PEO Aviation, Boeing, Northrop Grumman, Lockheed Martin, Raytheon Technologies, Collins Aerospace (DARPA-sponsored project), CyManII, IDT, and Adventium Labs.

# Proven Transition Success for AADL/ACVIP

In December 2020 the U.S. Army Development Command Aviation & Missile Center **completed a multi-year study** to reduce risk and costs.

This study **confirmed the benefits of the ACVIP** approach for the Army and other DoD programs. Now the effort is ongoing to transition it from S&T to programs of record.



The estimated overall program **savings exceeded 30%**, easily recovering the front-end investment and, more importantly, **substantially reduced risks to the schedule** that could delay fielding new capabilities for the Army.

Source: “Addressing Schedule Risk on Embedded Systems with Virtual Integration,” *Army Aviation*, by Alex Boydston (upcoming publication)

# Increased Usability and Support for DoD Adoption

ACVIP's virtual integration approach has been tailored for DoD acquisition and now includes

- modeling **standards** and **guidance**
- model **formats** that support **multi-vendor procurements**
- **tools** to conduct the virtual integration analysis within modern software development workflows



AADL and ACVIP training courses were created for government and industry personnel, with participation by over **80+** program managers and system and software engineers, representing **10** defense contractors and **12** government agencies.

# Development of Mature Toolsets

The Mission Systems Architecture Demonstration invested in several tool efforts to take its efforts from prototype to maturity. The tools have been evaluated and applied by DoD contractors in the Capstone project. Notable achievements include:

- Translators for SysML and FACE standards to improve interoperability
- a suite of analysis software built by a Small Business Innovation Research (SBIR) program
- Maturation of OSATE



**Developers, including the Army, now have ongoing access to robust tools that support the sophisticated analysis requirements of ACVIP.**



# Looking Ahead

- Incorporation into RFPs for major defense acquisitions
- Revisions to AADL standard and support from OSATE
- Improvements in tooling and integration for industry environments
- AADL will be used in the DoD's efforts to "move left" through virtual integration

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