



The Open Source AADL Tool Environment (OSATE)

OSATE Development Team

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DM19-1098

OSATE

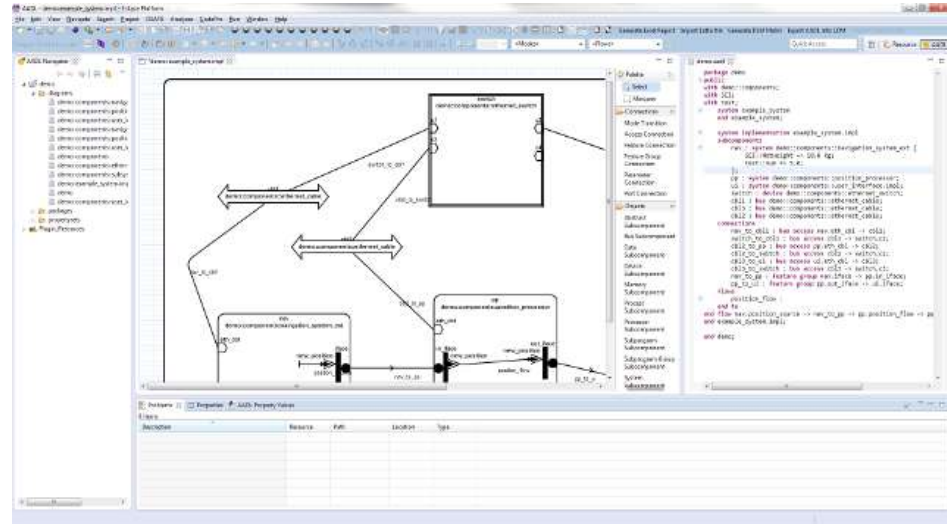
Open Source AADL Tool Environment

Developed and maintained by CMU/SEI

Reference implementation of AADLv2 and annexes

Dual use to serve AADL community

- Complete support of AADL
- Hosting third-party tools, extending capabilities
- Research prototyping platform



Distribution:

- No cost license under EPL license
- Download site: <https://osate.org>
- Issue tracking (public): <https://github.com/osate/osate2/issues>
- Release cycle: bi-monthly stable, nightly builds

OSATE Workbench Capabilities

OSATE is extensible using Eclipse plug-ins

Modeling Capabilities

AADLv2

EMV2

Behavior

Data Model

ARINC 653

Interoperability

FACE Import

Usability Capabilities

Syntax Sensitive Text Editor

Graphical Editor

Role specific workflow

Configuration Management

Analysis Capabilities

Resource Budget

Latency Analysis

Safety (FHA, FTA, FMEA) – ARP4754

RMA/EDF scheduling

Resource Allocation

ARINC653, MILS conformance

ALISA -- Automated Requirement Driven Verification

Examples of External Contributions

Assume/Guarantee contract modeling – Collins Aerospace

Ocarina Code Generation for RTOS and ARINC653

Scheduling Analysis – Cheddar by UBO

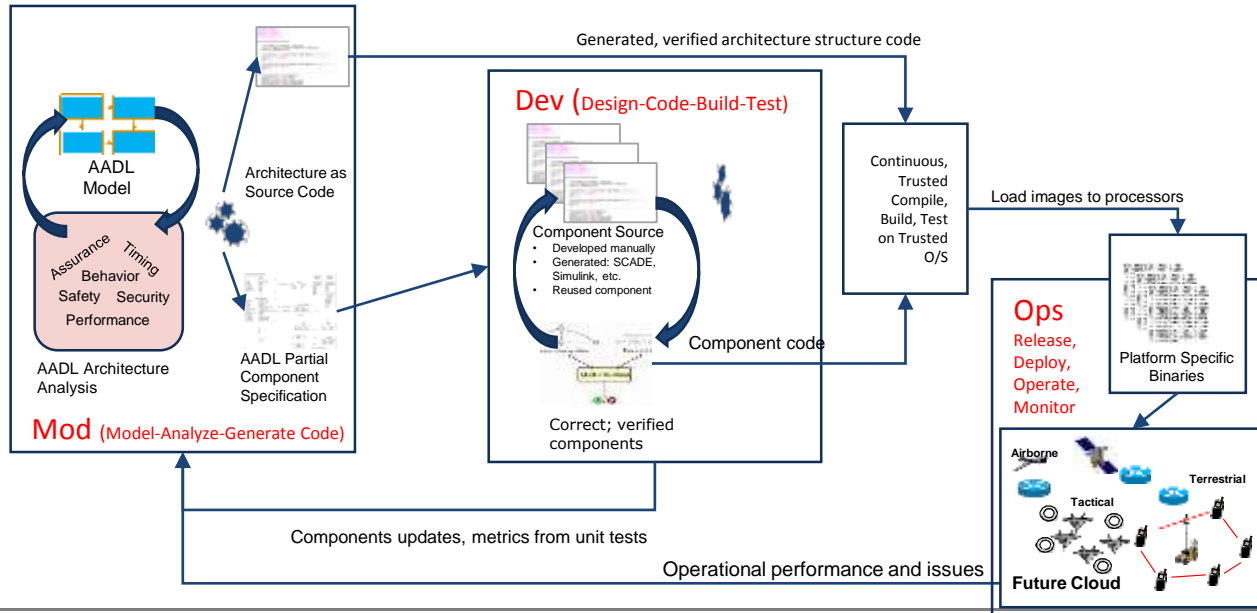
Scheduling Analysis – MAST by Adventium Labs

SPICA Scheduling FASTAR Global Timing

Embedded ModDevOps – leveraging AADL ecosystem

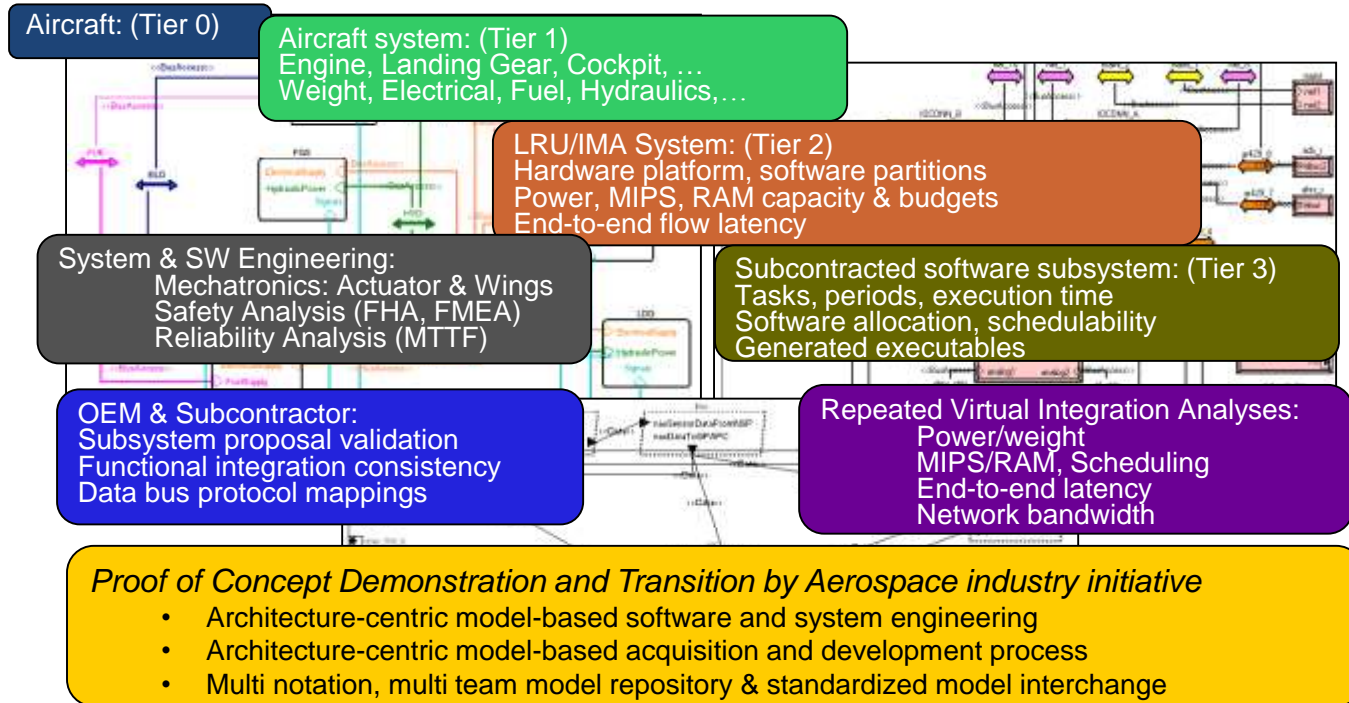
Predictive modeling as complement to DevOps and contribute to Digital Engineering vision

⇒ Capture architecture, perform early integration analysis and synthesize middleware, leverage trusted build and execution infrastructure



SEI
Research
with Demo
Started

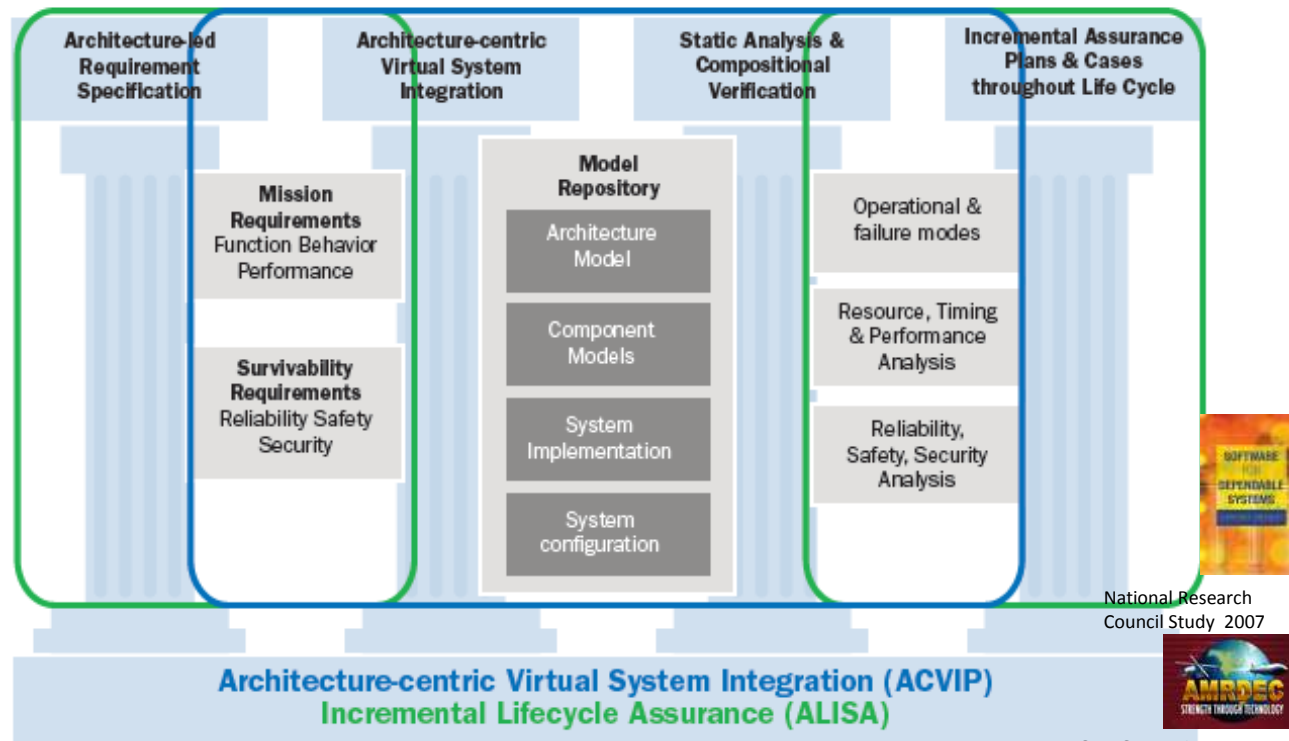
Incremental Multi-Tier Assurance of an Aircraft



- Multi-tier system & software architecture (in AADL)
- Incremental end-to-end verification of system properties

Automated Verification of Functional and Non-functional System Properties

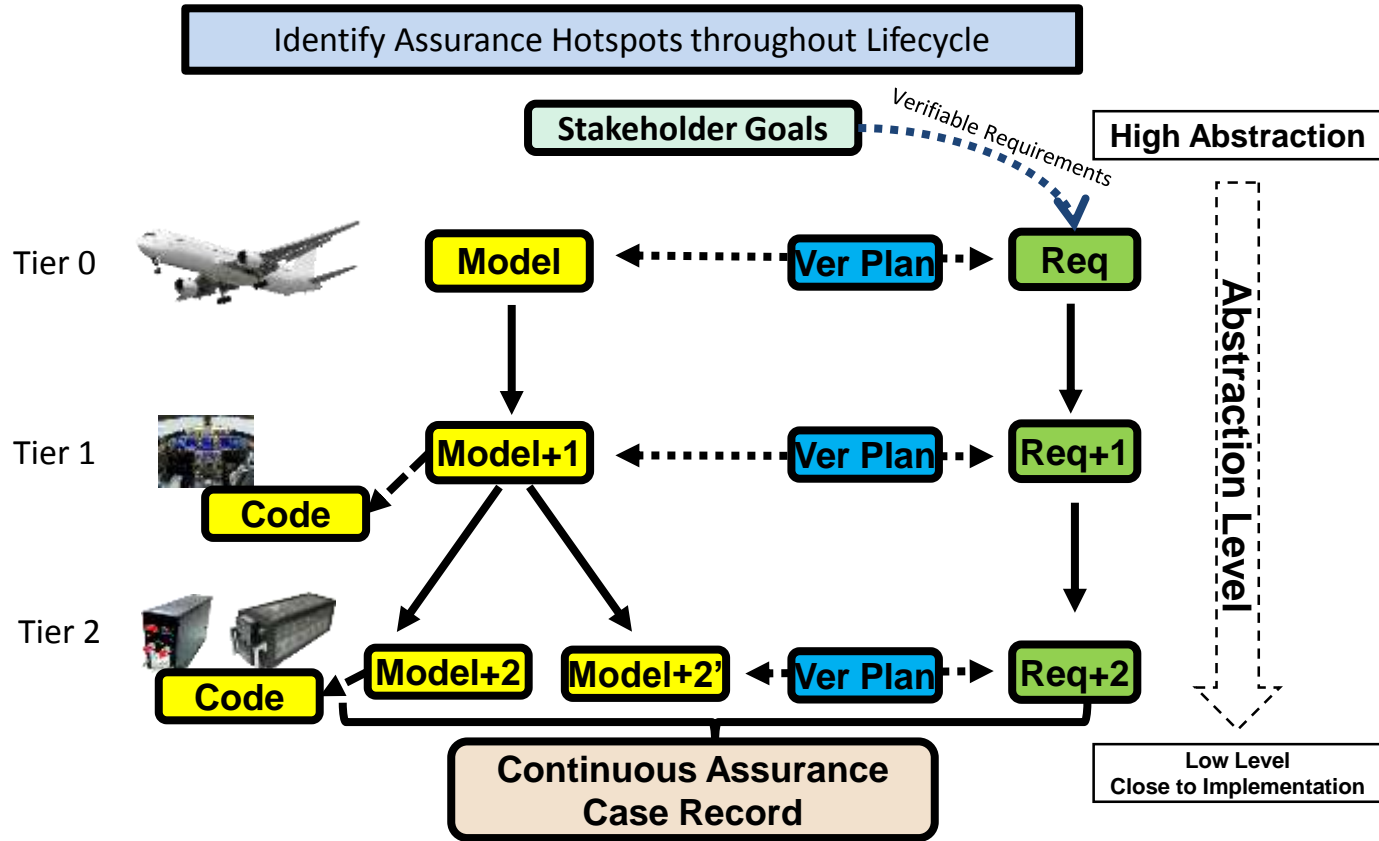
Assurance: Sufficient evidence that a system implementation meets system requirements



National Research Council Study 2007

2010 SEI Study for AMRDEC
Aviation Engineering Directorate

Automated Incremental Assurance with ALISA



Resources on OSATE and AADL

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AADL:

Collection of examples: <https://github.com/osate/examples>

SEI Technical reports and podcast: <https://resources.sei.cmu.edu/library/asset-view.cfm?assetid=453645>