Carnegie Mellon University
Software Engineering Institute

# Active Reviews for Intermediate Design (ARID)

## Get early insight into the viability of the software architectures you design.

How do you know if a software architecture for a system is suitable without building the system first? In the early design stages, how do you know you're on the right track?

Before software architects and designers conduct a comprehensive evaluation of their software architecture, they need insight into the viability of their design strategies.

To provide this insight, SEI researchers developed ARID, a blend of a stakeholder-centric, scenario-based, architecture evaluation method and an active design review of design specifications.

ARID is an easy, lightweight evaluation approach that focuses on suitability and does not require complete architectural documentation. Since it leverages active stakeholder participation, ARID helps gain their early buy-in during architecture development.

### Challenges

Software architects face many challenges as they develop architectures for their organization's software products. Not only must they decide whether their architectures are sound, they must also determine the best way to communicate the architecture to software developers who must then develop whole software products.

Unfortunately, a software architect's early design strategies can be poorly documented and lack important details, making it difficult to assess the viability of the design. However, reviewing a design in its pre-release stages can uncover important inconsistencies or oversights whose early correction can be invaluable.

Further, it is challenging to engage stakeholders to get their input and buy-in early in the architecture design process, when the product is only an abstract plan.

Finally, software architects must ensure the architectural designs are of sufficient detail and quality.

### The ARID Process

ARID is best suited for evaluating a partial design in its early stages. An example is an interface design for a module or subsystem that provides a cohesive set of services.

At this stage of the development process, the designer merely wants to know "Am I on the right track? Are the services I'm designing in this part of the architecture sufficient?"

In other words, the designer wants to know whether the design being proposed is suitable in the context of other parts of the architecture that will be required to use it.

The following are the major steps of ARID.

1. 1The designer and ARID facilitator identify the best reviewers, typically the software engineers who will use the design.
2. The designer explains the design to the facilitator and reviewers and walks through examples of using the design.
3. The reviewers brainstorm and prioritize scenarios for using the design to solve problems they expect to face in each scenario. These scenarios define what it means for the design to be usable.
4. The reviewers collaborate to write code that uses the design's services to solve the problem posed by each scenario.

## Benefits

ARID helps architecture designers engage stakeholders and get their buy-in early in the design process. It also informs designers about whether their design is suitable for the overall system being developed.

Reviewing a design in its pre-release stage provides valuable early insight into the design's viability and allows for timely discovery of errors, inconsistencies, and inadequacies.

## Get Started

SEI researchers can help you use ARID at your organization. Contact us by calling 888.201.4479 or sending email to info@sei.cmu.edu.

## Software Architecture Training

The SEI offers software architecture courses and certificate and certification programs that are based on extensive SEI and community experience in architecting software-intensive systems.

More than 20,000 people from more than 1,800 organizations have attended courses in the SEI Software Architecture Curriculum, and more than 2,500 people have earned software-architecture-related certificates.

Visit www.sei.cmu.edu/training/ to see the complete set of architecture-related offerings and register for upcoming courses.

## SEI Expertise in Software Architecture

For more than two decades, the SEI has been instrumental in creating and developing the field of software engineering known as software architecture.

A system's software architecture is the conceptual glue that holds every phase of a project together for all of its stakeholders. It is the depiction of a system that aids in understanding how the system will behave.

Software architecture serves as the blueprint for both the system and the project developing it, defining the work assignments that must be completed. The architecture is also the primary carrier of system qualities such as performance, modifiability, and security, none of which can be achieved without a unifying architectural vision.

## About the SEI

For more than three decades, the Software Engineering Institute (SEI) has been helping government and industry organizations acquire, develop, operate, and sustain software systems that are innovative, affordable, enduring, and trustworthy. We serve the nation as a federally funded research and development center (FFRDC) sponsored by the U.S. Department of Defense (DoD) and based at Carnegie Mellon University, a global research university annually rated among the best for its programs in computer science and engineering.

## Contact Us

SOFTWARE ENGINEERING INSTITUTE
4500 FIFTH AVENUE; PITTSBURGH, PA 15213-2612

W: sei.cmu.edu
T: 412.268.5800 | 888.201.4479
E: info@sei.cmu.edu