argosim

Makes Requirements Right the First Time

AT A GLANCE

Who We Are: System requirements validators. We provide unique software simulation tools to edit, debug, and test requirements for real-time systems from functional specification to software-in-the-loop validation.

What We Do: Make requirements right the first time. With STIMULUS, system architects can verify code requirements before the design phase even begins, reducing specification errors, process iterations, and compliance costs for industries battling the rising costs of certification.

Who We Serve: System integrators and their subcontractors in safety-critical systems domains—automotive, avionics, rail, energy, defense, and medical—who must comply with rigorous industry standards while containing time and costs.

Who We Are

Argosim, a privately held software company, is the first company to address the challenge of verifying system requirements at the specification stage—before design begins. We use innovative modeling and simulation technologies to validate systems specifications to ensure requirements are right the first time. System architects can edit, debug, and test requirements and generate numerous test vectors to test if the specifications are accurate, correct, and clear—all during the specification stage. The result: high-quality requirements. Development teams spend less time redefining requirements, rewriting, and re-debugging code, resulting in fewer development iterations needed to achieve quality results. Compliance costs plummet.

Requirements Engineering Challenges

Today's system validation process checks that a design properly fulfills system specifications, but it does not check that the specifications are correct. Current validation methods often involve manual reviews that are error-prone and check more the form than the content. In a typical software project, 40 to 60 percent of design bugs are caused by faulty requirements that lead to additional testing and re-debugging.

Because no practical tool exists for debugging the requirements, many software and test engineers use industry design tools by default, not realizing that these very tools force them to form detailed design choices too early. With the trend toward test-driven and requirements-driven development, industry is seeking a way to make systems requirements right the first time. Such an approach defines specifications and runs validation tests before starting the design in order to refine specifications incrementally. As a consequence, requirements and test scenarios are built and maintained in parallel.

Argosim STIMULUS provides modeling and simulation capabilities at a higher level of abstraction, which fits well with current specification practices. STIMULUS enables system integrators from safety-critical domains such as automotive, avionics, railway, energy, defense, medical, and industrial safety to quickly provide clear specifications to subcontractors while guaranteeing functional safety requirements and auditable verification for standards bodies.

Stimulus Makes Requirements Right The First Time

ARGOSIM provides software tools for the validation of real-time functional safety systems, from requirements engineering to automatic test-case generation. Our STIMULUS modeling and simulation tool helps developers create specifications that are correct at the specification stage. STIMULUS improves requirements quality and minimizes iterations within the development process.

STIMULUS bridges the gap between design and requirements engineering tools by using simulation to test the textual specification. STIMULUS relies on a high-level, constraint-based, real-time programming language to express requirements in a formal yet natural language and a simulation engine that generates and analyzes possible execution traces that satisfy requirements. Visualizing what systems will do enables system architects to discover incorrect, ambiguous, missing, or incomplete requirements before the design phase starts.

In particular, STIMULUS enables validation engineers to generate numerous test vectors from the environment specifications of the requirement, improving functional coverage of actual system validation tests. Requirements models are then reused as test oracles to report requirements violations automatically.

Argosim Team

Located in Grenoble, France, Argosim's team includes embedded systems requirements experts, who hail from worldwide software companies, industry start-ups, and research labs. Pioneers in early validation of functional safety systems requirements, Argosim was founded in 2013 with the vision of using simulation tools to validate requirements and evolve engineering methodologies to achieve cost-effective certification compliance. The technology is based on research results from Verimag (CNRS) and INRIA research labs.

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