STIMULUS®

Makes Requirements Right the First Time

STIMULUS IS AN INNOVATIVE MODELING AND SIMULATION TOOL THAT ENABLES SYSTEM ARCHITECTS TO EDIT, DEBUG, AND TEST REAL-TIME REQUIREMENTS.

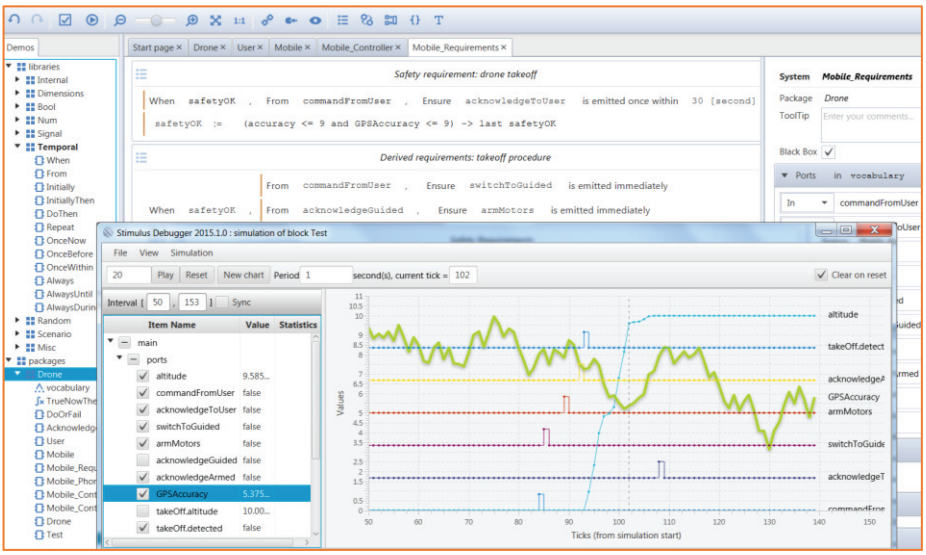
STIMULUS helps you to detect ambiguous, incorrect, missing, or conflicting requirements and to create the high-quality specifications needed for real-time safety-critical standards compliance.

Validating requirements before you start to code means you disrupt the traditionally error-prone development process—you make requirements right the first time—and your real-time system achieves standards quality criteria sooner and for less cost.

40-60% of design bugs are caused by faulty requirements

YOU NEED **STIMULUS** IF YOU:

- **Must meet functional safety standards for aerospace, rail, automotive, energy, defense, or medical**
- **Need to provide clear specifications to subcontractors**
- **Need to contain time and cost of development processes**
- **Plan to create future variations on your product**



↑ STIMULUS enables you to express natural language requirements using formalized language templates, state machines, and block diagrams. These requirements can then be fully tested to identify errors before any design or coding takes place.

Key Benefits

- SHARE CLEAR AND OBSERVABLE REQUIREMENTS AMONG ENGINEERS
- DETECT INCORRECT AND MISSING REQUIREMENTS EARLY
- DEFINE, MAINTAIN, AND TEST REQUIREMENTS INCREMENTALLY
- MAXIMIZE FUNCTIONAL COVERAGE OF TEST CAMPAIGNS
- REDUCE COSTLY ITERATIONS OF THE DEVELOPMENT PROCESS

Key Features

- EXPRESS REQUIREMENTS IN A NATURAL YET FORMAL LANGUAGE USING SENTENCE TEMPLATES
- GENERATE AND OBSERVE POSSIBLE EXECUTION TRACES THAT SATISFY YOUR SYSTEM REQUIREMENTS
- DEFINE GENERIC TEST SCENARIOS AND DEBUG YOUR REQUIREMENTS AGAINST REALISTIC INPUTS
- GENERATE NUMEROUS TEST VECTORS FOR SOFTWARE-IN-THE-LOOP VALIDATION

argosim®

MODELING SYSTEM REQUIREMENTS

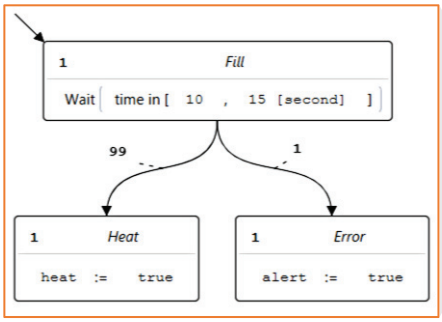
STIMULUS provides textual language templates that support common industry practices for writing real-time system requirements. You can easily produce standardized requirements and share a clear understanding of specifications.

↑ **STIMULUS** expresses requirements using sentence templates, such as *When*, *After*, and *Within*.

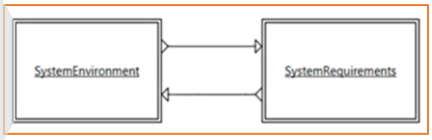
DEBUG & TEST REQUIREMENTS

STIMULUS enables you to meet IEEE criteria for requirements that should be correct, unambiguous, complete (no missing requirements), consistent (no conflicts) and verifiable, meaning that functional test scenarios can be written.

With **STIMULUS**, you can simulate and debug requirements together with generic test scenarios and find specifications errors before the design phase, adopting an effective requirement- and test-driven development process.



During debug and test, you connect system requirements to assumptions on the environment. ↓

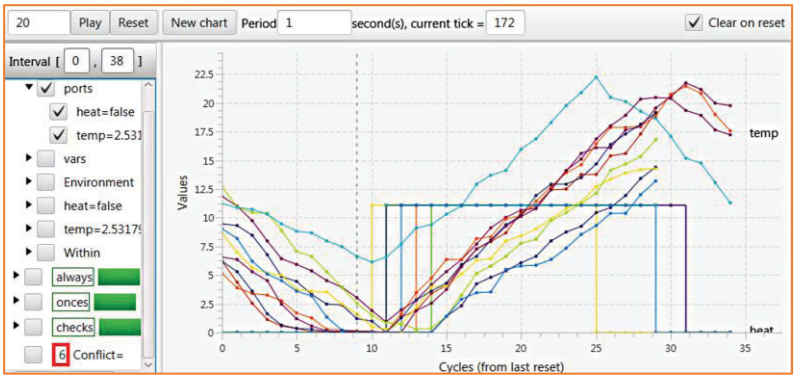


← Using stochastic state machines and templates, you can define generic test scenarios.

SOFTWARE-IN-THE-LOOP VALIDATION

Once the system has been developed, requirements can be turned into test oracles and replaced by the actual compiled code.

You can regenerate and run numerous test vectors automatically to optimize functional coverage of your test campaign. You can also export generated test vectors and rerun them in your favorite SIL environment.



↑ **STIMULUS** generates many test vectors and detects requirement violations automatically.

TOOL CONNECTIONS

STIMULUS retains existing traceability links defined by third-party requirement management tools so that you can import external legacy code from C/Simulink®.

Editing Features

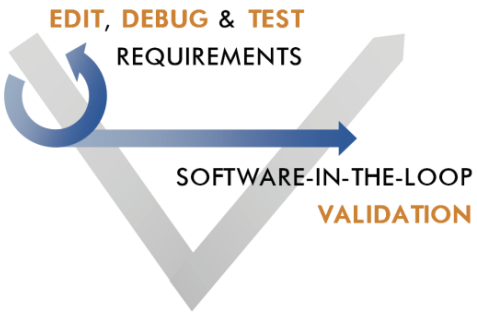
- SIMPLY DRAG-AND-DROP SENTENCE TEMPLATES TO EDIT REQUIREMENTS
- EXTEND LIBRARIES OF TEMPLATES TO FIT DOMAIN-SPECIFIC NEEDS
- EXPRESS RUNNING MODES USING HIERARCHICAL STATE MACHINES
- DESCRIBE SYSTEM ARCHITECTURE WITH BLOCK DIAGRAMS

Debugging Features

- GENERATE MANY EXECUTION TRACES THAT SATISFY REQUIREMENTS
- OBSERVE ALL SYSTEM SIGNALS AND DISCOVER FAULTY REQUIREMENTS
- DETECT CONFLICTING REQUIREMENTS AUTOMATICALLY
- TRACK REQUIREMENT VIOLATIONS USING OBSERVERS

Testing Features

- DEFINE GENERIC TEST SCENARIOS USING STOCHASTIC STATE MACHINES
- DEFINE ENVIRONMENT ASSUMPTIONS USING SENTENCE TEMPLATES
- CONNECT SYSTEM TO ENVIRONMENT USING BLOCK DIAGRAMS



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