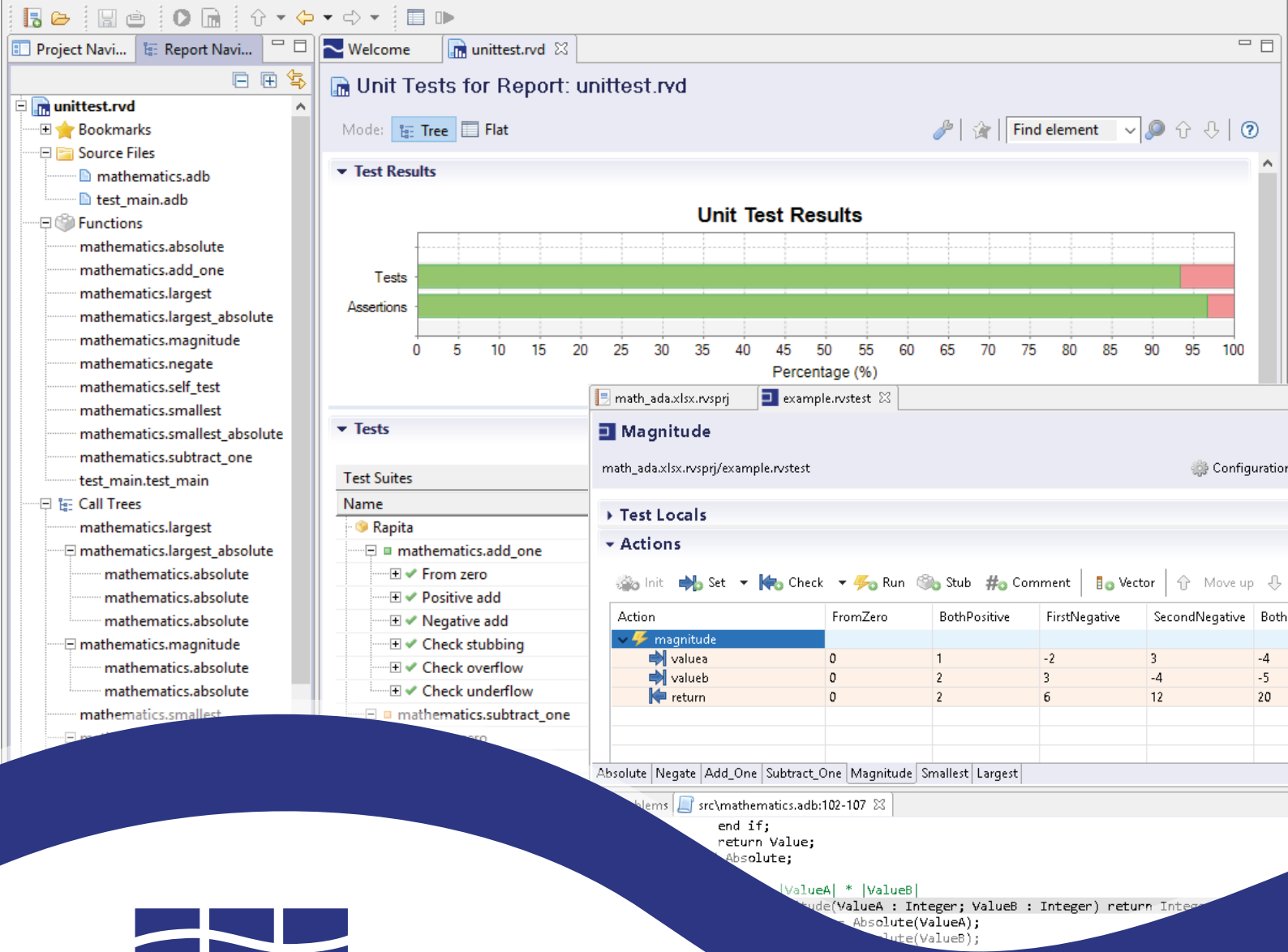


RAPITA SYSTEMS
A DANLAW COMPANY

Safety through quality

PRODUCT BRIEF

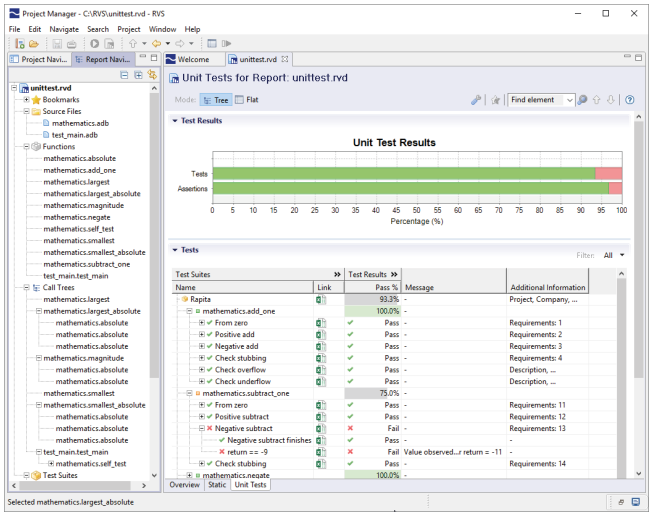
Functional testing for critical software with Rapi**Test**

Product brief: Rapi**Test**

RapiTest

How can Rapi**Test** help you?

Rapi**Test** drives the inefficiencies out of functional testing in critical software verification projects. By automating the creation and execution of unit, integration and system tests from input tests written in easy to use test formats, it reduces the cost of critical software verification.

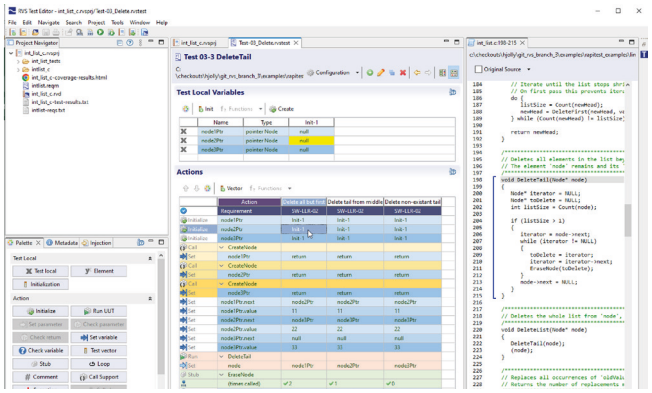


*Test results collected by Rapi**Test***

Rapi**Test**'s test formats make it easy to write tests at any level (unit, integration, system) and define all types of stub behavior used in the industry.

Benefits of using Rapi**Test**

- Automated platform for unit and system testing both **on-target** and **on-host**. Integrate testing into your existing build process to improve the efficiency of your testing.
- Efficient test generation. Minimize build cycles and test rig utilization by running multiple tests per build.
- Fast incremental builds. Rapi**Test** builds only critical files when your code base changes, even in systems with very large code bases.
- Manage project artifacts. import requirements from various formats, link tests to requirements, view test results against requirements and export traceability results.
- Minimize "usercode" by writing tests in any of Rapi**Test**'s test formats. These let you write test cases for generics or multi-dimensional tables without "usercode".
- Flexible test authoring. Write tests in any of 3 test formats, each with different benefits. Convert tests between these formats automatically for ultimate flexibility.
- Advanced support for Ada. Rapi**Test** handles even the most complex Ada code constructs such as generics, nested functions and private types.
- Flexible stubbing options. Write both simple and complex behavior for stubbed functions easily. Rapi**Test** supports all types of stubbing behavior, including stubs, fakes, mocks, spies and dummies.
- Interface with other R**VS** plug-ins. Integrate coverage, timing and scheduling analysis into your testing process.



*Rapi**Test**'s UI-based test format makes it easy for test authors without programming experience to write and review tests*

Rapi**Test** use cases

- Functional and requirements-based system, integration, and unit testing for critical software.
- Address avionics software guidelines: DO-178B/C, A(M)C 20-193, MIL-HDBK-512C, AA-22-01, AMACC ...
- Address space software standards: NASA NPR 7150.2d and ECSS-E-ST-40C.
- Address ISO 26262 requirements.

How does Rapi**Test** work?

Rapi**Test** uses input test suites to automate functional testing by building a test harness, executing tests, collecting data and generating reports.

It supports test authoring through a variety of formats and is easily driven through a user interface. By integrating with your existing development environment, Rapi**Test** reduces the overheads needed to test your code.

Rapi**Test** supports large testing projects by offering a portable test environment and retaining references to code and revision numbers in test reports.

Key features

Functional testing

- Generate and run functional tests at any level (system, integration, unit)
- Generate test templates quickly
- Automatically generate test vectors to check boundary values for C and C++ functions
- View status of tests for each requirement
- Create support functions to easily reuse across multiple tests
- Merge reports from different test runs and builds
- Easily manage test runs, quick filter and select tests with specific status (new, modified, failed), save and load test selections
- Portable test environments let you use a single project file throughout a team
- Results filtering and search options to highlight project progress over time
- Requirements traceability
  - Import requirements from various formats
  - Link tests to requirements
  - View status of tests for each requirements
  - Export traceability results
- White box testing
- Black box testing

Test authoring

- Flexible test authoring through 3 testing formats, ***RapiTest Editor*** (integrated into the Rapi**Test** user-interface), spreadsheet and scripting formats
- Convert tests between formats automatically at any time (cannot convert from test scripts)
- Minimize usercode by defining even complex tests easily
- Tutorials, documentation and training to get started easily

Language support

- Ada 83-2012, support for GNAT Pro™ and Green Hills® compilers among others
  - Handles even the most complex code constructs such as generics, nested functions and private types
- Support for C and agreed C++ language features

Integration with build system

- Multiple strategies available: compiler wrappers, clone integration, and scripting into build system directly
- Support for very large code bases
- Shared integration with other R**VS** tools
- Test what you compile - test unmodified object code

Target integration

- Support for data collection using Address bus, CAN bus, Ethernet, GPIO, JTAG, Serial (RS232), debuggers and our **RTB**x data logger
- Extremely low overhead map data collection can be configured with a single assembly instruction
- No library/run-time dependencies or dynamic memory requirements

Tool qualification

- Qualification kit and service to support DO-178B/C and ISO 26262 tool qualification

Third party integration

- Tools such as Mx-Suite™, MATLAB® Simulink®, ANSYS® SCADE® Test™ and GNAT GPS™
- Continuous build servers e.g. Jenkins®, Atlassian Bamboo®
- Support migrating tests from other tools e.g. VectorCAST® and AdaTest®
- Requirements management tools through Requirements Interchange Format (ReqIF), dedicated integration with Jama Connect®
- Debuggers e.g. Lauterbach™, i-SYSTEM®
- Software Configuration Management system

Integrated testing environment

- Summary and detailed results views
- Project and code base insights including code complexity, treemaps, call dependencies, and LOC
- Reduce retesting effort by automatically calculating the most efficient set of tests to run to achieve previous coverage when code changes
- Code viewer:
  - View source code alongside pre-processed and instrumented code
  - Color-coded by whether tests passed or failed
- Compare reports
- Database-like search function

Compatibility

- Runs on host operating systems
  - Windows® 10+ and Windows Server® 2019+
  - Linux distributions including Ubuntu®
- Results can be collected from systems without supported operating systems and transferred to a supported system for analysis

Licensing

- Enterprise license gives you access to new versions, support and maintenance
- One-year support and maintenance included in purchase price
- Single price for all features
- Licenses transferable across projects

RAPITA Systems
A DANLAW Company

About Rapita

Rapita Systems provides on-target software verification tools and services globally to the embedded aerospace and automotive electronics industries.

Our solutions help to increase software quality, deliver evidence to meet safety and certification objectives and reduce costs.

Find out more

A range of free high-quality materials are available at:
rapitasystems.com/downloads

SUPPORTING CUSTOMERS WITH:

Tools	Engineering Services	Multicore verification
Rapita **Verification Suite**:	V&V Services	**MACH**[178]
Rapi**Test**	Integration Services	Multicore Timing Solution
Rapi**Cover**	Qualification	
Rapi**Time**	SW/HW Engineering	
Rapi**Task**	Compiler Verification	

Contact

Rapita Systems Ltd.
Atlas House
York, YO10 3JB
UK
+44 (0)1904 413945

Rapita Systems, Inc.
41131 Vincenti Ct.
Novi, Mi, 48375
USA
+1 248-957-9801

Rapita Systems S.L.
Parc UPC, Edificio K2M
c/ Jordi Girona, 1-3
Barcelona 08034
Spain
+34 93 351 02 05

rapitasystems.com

linkedin.com/company/rapita-systems

info@rapitasystems.com