Richland Technologies Slashes Design and Certification Time for Advanced Avionics Systems

About Richland Technologies

Richland Technologies LLC is a leading AS9100C-certified company providing full-lifecycle hardware and software engineering, safety-critical and high-integrity product development and certification services worldwide to the civil and military avionics industry.

Headquartered in Lawrenceville, Georgia, the company specialises in avionics computing platforms, cockpit displays and advanced vision system development with services including safety engineering in addition to design, implementation, verification and validation to meet DO-178C (software) and DO-254 (hardware) standards.

Evaluating the LDRA Tool Suite

Richland Technologies is currently using the LDRA tool suite for static analysis, unit-testing, low-level verification and structural coverage analysis of the embedded software for advanced vision systems and inertial measurement units used in standby instrument systems.

Sales and Marketing Executive Robert Atkinson outlined why Richland Technologies undertook this evaluation process, “Many of our engineers had excellent previous experience with the LDRA tool suite, however, we wanted to make sure it could continue to provide the best results as our design cycles got shorter and designs became more complex. The LDRA tool suite came out on top in our evaluation of low-level verification tools for target computer systems and we have been using it successfully for almost three years now. We are currently looking at implementing even more of the modules in the LDRA tool suite as our business grows.”

LDRA Technical Support: An Invaluable Resource

“With most complex tool suites, it takes days to get set up using a combination of instruction manuals and the tool-provider’s technical support,” confirmed Stephen Spence, a senior avionics software engineer at Richland Technologies. “Set up almost always takes a lot longer than you expect, but we had the opposite experience with the LDRA tool suite. It took less time than we expected because we had a skilled technical support engineer there to resolve any issues quickly.”

Automation: Speeding the Verification Process and Making it (Almost) Fun!

For Richland Technologies, integrating the LDRA tool suite into their workflows automated a great deal of the verification process and dramatically reduced the verification cycle and time to certification.

“The LDRA tools automate the part of software engineering that everyone hates — the mundane, repetitive verification tasks,” Spence added. “Having a tool that will find 99% of coding standard violations in seconds is great.”

Stepping Up to the DO-254 and DO-178C Certification Challenge

Richland Technologies is known for its in-depth understanding of the strict requirements-driven processes mandated by the DO-254 and DO-178 standards for the development of commercial airborne electronic systems. According to the company’s engineers, the LDRA tool suite and documentation are extremely well matched to safety-critical design flows and in-house methodologies that help achieve standards certification in much shorter timeframes.

Particularly valuable features of LDRA include:

- Well organised web page-based output highlighting code coverage and static analysis results achieved during low level verification
- Rapid regression analysis
- Structural coverage results
- Robust static analysis capability
- Extensive unit tests
- Easy integration into the DO-178C design flow

LDRA Tool Suite Facilitates Design and Customer Collaboration

Choosing verification tools that are also part of their customers’ design flows further enhances Richland Technologies’ collaborative approach to customer engagement.

“When we work with multi-billion dollar aviation companies who also use LDRA tools, it’s much easier to collaborate,” Atkinson stated. “For example, we were working on a remote data concentrator unit design with a large European avionics company and were able to easily pass data back and forth between our teams in Atlanta and Europe. This is not an uncommon way of working, but the more collaborative you can be, the easier it is to complete the design and efficiently meet certification requirements.”

Inside this Issue

- Introducing V9.5 – What’s New?
- LDRA Receives Embeddy Award
- Collaboration with Aeroconseil
- Tool Integration News
Introducing V9.5 – What’s New?

“In the 9.5 release, LDRA further extends performance of the LDRA tool suite by improving Linux support and by introducing a clear ‘Uniview’ function to help users visualise software components and development artifacts commented André Girard, VDC Research’s Senior Analyst of IoT & Embedded Technologies.”

**Unit Testing**
Simplified test case entry and class views improve users’ ability to look at coverage analysis from different perspectives.

**Uniview Update**
Offering a clear and expansive view of traceability relationships, from requirements to software code to verification tasks and test cases. Standalone test cases can be individually executed or associated with requirements.

**Linux Support**
Users can now conduct complete Linux dependency checks to ensure comprehensive analysis.

**TBmanager**
The addition of metadata enables companies to fit verification to their workflow improving communications and co-ordination between development teams and allowing them to organise artifacts and software components as needed.

**Flow Graphs**
Users can view flow graphs from multiple test cases to see how their system reacted differently to each test case, saving time and improving understanding of the big picture.

**Simplified Test Case Creation and Execution**
Point and click for test case creation saving time for data entry.

LDRA Receives VDC Research Embeddy Award at ESC Silicon Valley
Award honours new tool suite that enhances usability and scalability to speed analysis across larger teams and more complex systems.

Jim McElroy, VP of Marketing
LDRA Expands Compliance and Certification Services in European Markets with Aeroconseil, AKKA Technologies Group

LDRA has collaborated with Aeroconseil, a subsidiary of the AKKA Technologies Group and a leading aeronautical services company, to offer European-based resources to LDRA customers.

Aeroconseil works with aircraft manufacturers, system manufacturers, equipment suppliers, and major airlines worldwide to serve customers that include Airbus, Dassault Aviation, GE Aerospace, Liebherr Aerospace, Panasonic, Rockwell Collins, Air France, Air Méditerranée, and Eurofly.

Through its relationship with Aeroconseil, LDRA will have European-based touch points for users of its LDRA Certification Services (LCS) and LDRA Compliance Management System (LCMS). In turn, LDRA will serve as a preferred provider for Aeroconseil customers in the Americas.

LCS offers a comprehensive and fully compliant FAA and EASA certification solution. Proficient in both commercial and military airworthiness regimens, only the LCS team can address all critical project requirements related to certification, including management and planning, staff training, development, verification, production, and regulatory liaison.

LCMS, the solution-based services offered by LCS includes the Certification Roadmap and Finding of Process Compliance backed by LCS Level A Designated Engineering Representatives (DER).

Standards compliance, quality assurance, and certification are top business and technical issues for aerospace firms, but can also be a source of significant cost and headache,” said Lionel Burgaud, Chief Operating Officer, Aeroconseil. “LCMS automates the key aspects of the compliance process, enabling us to deliver additional value to customers. LDRA's approach to compliance and certification is an excellent fit with our expertise and services.”

On the 25th May, Cunard’s Three Queens - Victoria, Mary 2 and Elizabeth sailed down the River Mersey.

The Trio took part in an historic “royal” salute and river ballet, watched by up to one million people on the shore, including employees who enjoyed a first class view from the LDRA headquarters.
Newsletter Contributions

Contributions from our readers are welcome. If you have any comments or stories that you feel are relevant to the world of software testing, please contact us:

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Social Networking

Join us on our Twitter, Facebook and LinkedIn profiles to get the latest updates about LDRA news, product updates, events and webinars.

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Tool Integration News

LDRA Collaborates with Texas Instruments to Provide Advanced Testing Capabilities with New Functional Safety Platform

LDRA has collaborated with Texas Instruments (TI) to provide automated unit testing capabilities as part of TI’s new SafeTi™ Compliance Support Packages (CSPs) for TI’s Hercules™ microcontrollers (MCU) software components.

SafeTi CSPs help TI customers comply with functional safety standards, reducing verification and validation efforts so that they can focus on differentiating their industrial and automotive systems, which will accelerate time to market.

Read More: www.ldra.com/ti-pr

LDRA Newsroom

LDRA and Green Hills Software Deliver Industry-Leading Multicore Development and Verification

Optimised integration between the LDRA tool suite and Green Hills Software’s INTEGRITY-178 tuMP RTOS and MULTI IDE offers true high-assurance application development for safety- and security-critical developers.

“LDRA has invested time and research to provide verification tool solutions for safety-critical software developers targeting multicore architectures,” said Dan O’Dowd, founder and chief executive officer of Green Hills Software. “These efforts have positioned LDRA as the leading provider of high-assurance testing and verification tools for INTEGRITY-178 tuMP systems and enabled users to successfully complete the required compliance activities.”

Read More: www.ldra.com/greenhills

LDRA Webinars

LDRA have created a series of web seminars to help current and future customers learn more about the LDRA tool suite and how it can assist in developing software quality and security through test, analysis and requirements traceability. These web seminars can be viewed at: www.ldra.com/webinars.

Certification Services

The Comprehensive and Fully Compliant Certification Solution

The LCS support services, offered at fixed prices, are categorised as follows:

- FAA Designated Engineering Representative (DER) services
- Training and Mentoring
- DO-178B/C development and verification services
- DO-254 development and verification services
- Bundled services

Read more: www.ldra.com/lcs

Extra

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