LDRA Tool Suite Automates Embedded Software Development

LDRA, a leader in standards compliance, automated software verification, source code analysis and test tools, has boosted the automation, efficiency and customization of certification processes with Version 9 of the LDRA tool suite. While maintaining legacy tools and features, LDRA has unified its tools with a common user interface, central repositories and performance optimizations to offer superior lifecycle traceability. These improvements slash the time and cost of certification, extending LDRA's leadership in delivering certification and verification costs well below the industry average.

With the V9 release, embedded engineering teams have the flexibility of using the LDRA tool suite as an integrated solution or as separate point tools where the focus is on software developers, quality analysts or development managers. A consistent user interface coupled with central reporting repositories supports much simplified tool suite integration and organization. As a result, it is much easier and quicker to implement complex capabilities, such as bidirectional traceability, where certification objectives and artifacts are mapped to requirements, code and tests.

"The V9 release of the LDRA tool suite represents a huge leap forward in offloading the manual work of a certification effort," noted Ian Hennell, LDRA Operations Director. "We also built this version with partnerships and integrations in mind so that disparate tools and processes can be unified and the analysis and results are accessible from within development environments, such as Eclipse, Simulink, Workbench or LabVIEW. This release delivers customer automation, efficiency and flexibility."

The LDRA tool suite offers independent verification support across the full development lifecycle from certification objectives of standards, such as DO-178B, IEC 61508, ISO 26262, and IEC 62304, to requirements, code and target testing. In the V9 release, LDRA made the following improvements:

• LDRA Testbed, the analysis engine for the tool suite, is optimized to generate fewer files, increasing analysis speed. A central results repository based on open standards contains all work files and makes them accessible to all LDRA tools. In addition to facilitating the easy transfer of results between team members, results can be imported into customized reports or integrated with other components of the customer's embedded tool chain.
• TBmanager now merges all coverage results from system, module/unit test and test generation from multiple users, post mortem tests, target and host. TBmanager manages and tracks all artifacts, mapping them to project and standards certification objectives to achieve complete bidirectional traceability, including object code and target testing.
• TBrun lets you view and regress all test sequences with multiple files or sets using

common GUI features such as tabs, group nodes, filters and highlights. TBmanager-driven access offers simplified actions with requirement flow down and access to all artifacts and assets via a more intuitive and dynamic interface.
• TBvision offers code review by standards and metrics. Baseline comparisons can be filtered and drilled down to the code level.
• TBpublish centralizes all reports into one location, allowing sets and individual files to be examined from one interface. Call graphs can be invoked in different modes, such as programming, dynamic coverage and filter graphs with interactive options that highlight specific procedures for viewing analysis.

“With many certification processes now following the avionics gold-standard of DO-178B, there’s increased demand for independent verification of applications on the target,” confirmed Hennell. “This is the area where the LDRA tool suite mitigates risk on embedded projects and drives down the costs. Automating bidirectional traceability from objectives to requirements all the way down to object code and back up through test and verification saves much of the manual processing that many companies laboriously wade through, wasting huge quantities of development time.”

“In the medical community where 510k filings take 18 months or longer to be processed for compliance with the Medical Devices Act, there’s an understandable desire to develop, test and file for compliance as soon as possible,” commented Dr. Jerry Krasner, Principal Analyst of Embedded Market Forecasters. “Software verification tools, particularly those that automate requirements traceability to object code, provide an additional level of confidence that code has been thoroughly executed, tested against requirements and verified. Far too often, verification is a bottleneck for process completion.”

For more information on the LDRA tool suite, please visit: www.ldra.com [1].

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