



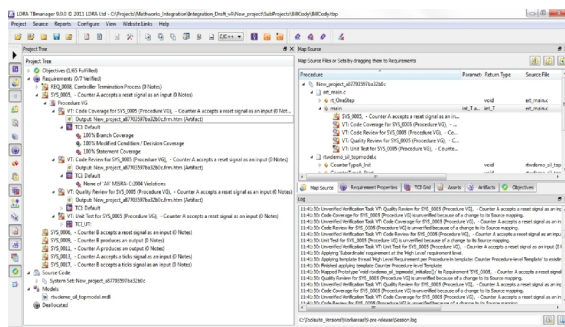
## Embedded World 2012: Hall 4, Stand 410

### Media contacts:

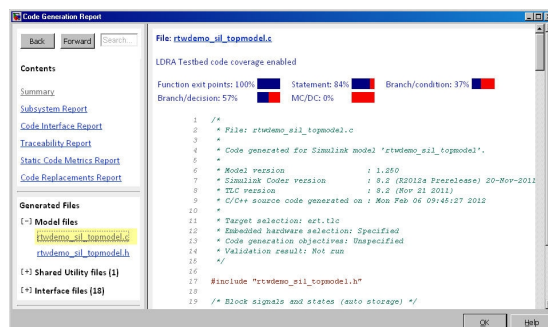
Janice Hughes, Hughes Communications, Inc., Media Relations  
Tel : +1 (705) 549-8952, Mobile: +1 (705) 774-8686, Email: [janice@hughescom.net](mailto:janice@hughescom.net)

Mark James, LDRA, Marketing Manager  
Tel: +44 (0)151 649 9300, Email: [mark.james@ldra.com](mailto:mark.james@ldra.com)

*This press release and associated images (in high-resolution compressed jpeg format) can be downloaded from [www.hughescom.net](http://www.hughescom.net).*



Screenshot 1: TBmanager graphically depicts relationships between a requirement and relevant model



Screenshot 2: MathWorks report with overall coverage information

# LDRA and MathWorks Tool Integration Moves Unit Testing Upstream to the Model

***Certification costs slashed through earlier testing, test reuse and bidirectional traceability between code model and code***

**Embedded World, Nürnberg, Germany, 1 March 2012.** LDRA, the leader in standards compliance, automated software verification, source code analysis and test tools, and MathWorks, the leading developer of mathematical computing software, have extended the integration of the LDRA tool suite with MathWorks Simulink modelling tools. The integration enables joint customers to benefit from full test reuse and bidirectional traceability throughout the software development lifecycle. By bringing all components of the development cycle into one workflow, project teams save time by reusing tests, and more easily track progress toward requirements fulfilment and certification readiness.

Rigorous testing is bottom-line for avionics and automotive certifications such as DO-178B/C or ISO 26262 where on-target testing is required. With LDRA's integration of the LDRA tool suite and MathWorks Simulink, Simulink model test vectors can confirm the application is running as expected on the target, and LDRA-generated tests can be fed back into Simulink and used to refine the simulation. Code can then be regenerated to create the highest calibre code, minimising risk. Tests are reused for both target and model, significantly reducing time otherwise used to generate and prove test regimens for both phases.

When this testing capability is coupled with standard-specific templates, companies gain a streamlined process that details both the process and requirements needed for compliance. TBmanager, a requirements traceability and test product within the LDRA tool suite, links and graphically depicts relationships between requirements and relevant models, code and test artifacts. This information matrix highlights the linkages between software components that auditors can review to see how companies have identified and corrected program errors and addressed non-compliance until the entire application fulfils requirement specifications. Such transparency into application relationships organises and speeds team progress by automating development and documentation.

“Many industries—whether aerospace, automotive, medical or industrial—face the twin challenges of undergoing rigorous design and testing while managing projects with time and budget constraints,” noted Ian Hennell, LDRA Operations Director. “Because of this, companies are seeking ways to update their methodology to generate good quality code that is easier to certify, maintain, and reuse without compromising schedule or budget. The requirements traceability and test reuse of this LDRA-MathWorks integration gives companies concrete ways to improve processes, increase code quality and reduce costs.”

“Model-Based Design generates consistent code and saves time, but it still should be fully exercised and independently verified,” commented Tom Erkinen, Embedded Applications Manager, MathWorks. “Model-Based Design and LDRA capabilities help verify the entire application spanning model- and hand-generated code, and supports tailoring project requirements, processes and application artifacts to DO-178B/C, IEC 62304, ISO 26262, IEC 61508 and other industry standards.”

Together, MathWorks Simulink and the LDRA tool suite create instrumented code that can be built using the selected compiler and executed via the LDRA tool suite to achieve full code coverage whether statement, branch or decision, or modified condition/decision coverage (MC/DC) of code created from Simulink models and manual code. In addition, data values used to exercise the model in simulated environments can be leveraged to test generated code for SIL (software-in-the-loop) and PIL (processor-in-the-loop) on the target as well as generating additional tests through LDRA’s unit test facility. The textual and graphical output indicates coverage both as absolute values and in relation to a set of limits required by a standards body like DO-178.

With automotive, medical and industrial markets following the gold-standard of the avionics community, industry trends suggest that all industries will soon formalise certification procedures for model-driven design similar to those outlined by DO-178C or ISO 26262. The integration enables verification and validation engineers to prove that the executable code meets design criteria, and that the underlying code is sufficiently exercised to the relevant standard.

A demonstration of the LDRA and MathWorks integration will be presented in Hall 4, Stand 410 at Embedded World 2012 from February 28 to March 1 in Nürnberg, Germany. In addition, LDRA will present papers on the following topics:

- “Software Lifecycle Metrics: enabling Quality, Security and Productivity,” in the Achieve High Embedded Software Quality track on 28 February 2012, 5-5.30 p.m.
- “Which two will your team pick: High-quality software, on-time delivery or within budget?” in the Managing Embedded System Development and Life Cycle track on 28 February 2012, 5-5.30 p.m.
- “Reduce Cost of ISO 26262 Compliance while Driving Productivity Gains,” in the Functional Safety of Embedded Systems Cycle track on 29 February 2012, 11-11.30 a.m.
- “A Practitioner’s Guide to Critical Software Certification,” in the Test and Verification track on 1 March 2012, 2.30-3 p.m.

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## **About LDRA**

For more than 35 years, LDRA has developed and driven the market for software that automates code analysis and software testing for safety-, mission-, security- and business-critical markets. Working with clients to achieve early error identification and full compliance with industry standards, LDRA traces requirements through static and dynamic analysis to unit testing and verification for a wide variety of hardware and software platforms. Boasting a worldwide presence, LDRA is headquartered in the UK with subsidiaries in the United States and an extensive distributor network. For more information on the LDRA tool suite, please visit: [www.ldra.com](http://www.ldra.com).

**Please send reader enquiries to:**

Mark James  
Email: [mark.james@ldra.com](mailto:mark.james@ldra.com)