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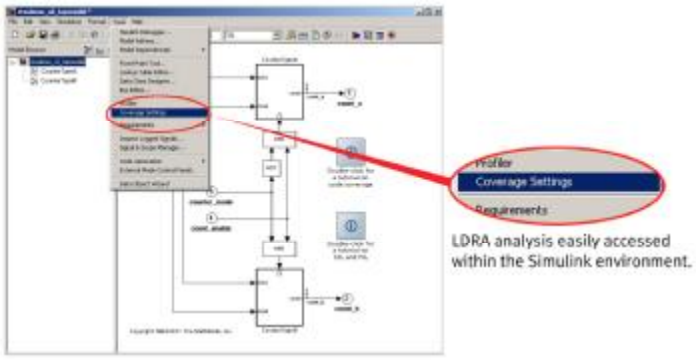

Screenshot 1: LDRA analysis easily accessed within the Simulink environment

LDRA and MathWorks Join Forces to Ease Compliance

Product integration provides independent verification & lowers embedded development costs

Boston, MA, ESC Boston, September 26, 2011. 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 integrated the LDRA tool suite with Simulink modelling tools. The integration offers independent verification and full traceability of all artefacts—whether requirements, model elements, or tests—throughout all phases of the lifecycle, minimising the time and cost of achieving standard compliance.

While model-driven development speeds application development, industry standards are clarifying their call for independent verification of the model-generated code. With more than 35 years of certification expertise, LDRA is well-versed in managing the certification objectives and process across a number of industries. The LDRA-MathWorks integration enables Simulink developers to access all the power and capabilities of the LDRA tool suite directly from within Simulink. Thanks to LDRA's management of industry standards, standard-specific code coverage, verification, and requirements traceability can be applied to the model-generated code.

To further enhance time savings, LDRA and MathWorks have integrated testing capabilities as well, ensuring that unit tests developed in the Simulink environment can be leveraged and reused by the LDRA tool suite. In doing this, embedded development teams will save a tremendous amount of time, and reduce potential errors and costs associated with developing a second set of unit tests. Additionally, LDRA's TBeXtreme provides automatic test case generation from source code analysis only, increasing system testing productivity.

“Many industries—whether aerospace, automotive, medical or financial—are facing the twin challenges of undergoing rigorous design and software testing while managing projects in allocated time and budgets,” Tom Erkkinen, Embedded Applications Manager, MathWorks. “Because of this, companies are looking to embrace new ways to verify that the products they develop are robust, maintainable and secure. This MathWorks-LDRA integration allows developers to gain the benefits of Model-Based Design and quickly assess if the generated code has been exercised using well-established coverage metrics, ultimately improving a company’s product quality and bottom line.”

“Model-driven development generates consistent code and saves tremendous development time, helping system integrators reduce costs,” confirmed Ian Hennell, LDRA Operations Director. “LDRA’s experience with the certification process enables developers to achieve even greater savings, by ensuring that the entire application—model- and hand-generated code—are verified within one solution that tailors the project requirements, processes and application artefacts according to the guidelines of DO-178B/C, IEC 62304, ISO 26262, IEC 61508 or whatever industry standard must be achieved.”

Together, Simulink and the LDRA tool suite create instrumented code that can be built using the selected compiler and executed via the LDRA tool suite. The LDRA tool suite provides full code coverage whether statement, branch or decision, linear code sequence and jump (LCSAJ), or modified condition/decision coverage (MC/DC) of code created from Simulink models and hand-written code. As well, data values used to exercise the model in simulated environments can be leveraged to test the 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. Output, presented in textural and graphical forms, indicates coverage both as absolute values and in relation to a set of limits that may be required by a standards body, such as the DO-178.

LDRA and MathWorks launched the integrated product in onsite seminars at the Johnson and Kennedy Space Centres. The seminars, which will be presented over the next months to various target industries, examine the verification and validation of generated code. Best practises such as reusing artifacts, requirements-based testing, traceability from model elements to code and independent verification of the model, are examined. The seminar then applies these concepts to standards enforcement whether it be coding standards such as MISRA C or industry standards such as DO-178B/C, IEC 61508, IEC 62304 or ISO 26262.

With automotive, medical and industrial markets following the gold-standard of the avionics community, industry trends suggest that all industries will soon adopt and formalise certification procedures for the development technologies such as model-driven design similar to those outlined by DO-178C. This integration enables verification and validation engineers to prove that the functionality of the executable code not only meets the design criteria, but that the underlying code is also sufficiently exercised in terms of the specific standard they must meet.

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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.

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