



Software and System Development using Virtual Platforms: Full-System Simulation with Wind River Simics

By Daniel Aarno, Jakob Engblom

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Virtual platforms are finding widespread use in both pre- and post-silicon computer software and system development. They reduce time to market, improve system quality, make development more efficient, and enable truly concurrent hardware/software design and bring-up. Virtual platforms increase productivity with unparalleled inspection, configuration, and injection capabilities. In combination with other types of simulators, they provide full-system simulations where computer systems can be tested together with the environment in which they operate.

This book is not only about what simulation is and why it is important, it will also cover the methods of building and using simulators for computer-based systems. Inside you'll find a comprehensive book about simulation best practice and design patterns, using Simics as its base along with real-life examples to get the most out of your Simics implementation. You'll learn about: Simics architecture, model-driven development, virtual platform modelling, networking, contiguous integration, debugging, reverse execution, simulator integration, workflow optimization, tool automation, and much more.

- Distills decades of experience in using and building virtual platforms to help readers realize the full potential of virtual platform simulation
- Covers modeling related use-cases including devices, systems, extensions, and fault injection
- Explains how simulations can influence software development, debugging, system configuration, networking, and more
- Discusses how to build complete full-system simulation systems from a mix of simulators

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Editorial Review

Review

"Full-system simulators have the potential to yield a quantum leap in software development productivity. This book explores the potential of this technology in general and Simics in particular, backed by numerous real-world examples. A must-read for anyone serious about development of complex embedded systems." -
-Niklas Rudemo, President of Virtutech AB (maker of Simics), 2002-2010

"This book does an outstanding job of conveying what full-system simulation is, explaining the spectrum of its application, describing real-world examples, and providing a peek under-the-hood. Readers will come away with a solid understanding of how this technology can benefit their organizations and even some hands-on familiarity with transaction-level model development." --**Trevor Wieman, Principal Engineer, Intel Design & Technology Solutions, Pre-Silicon Systems**

"Being a Simics Customer Support Engineer I am always looking for information that is useful, focused and presented in a clear and concise manner. Being involved in Simics since its conception, the author not only knows how Simics works, he also knows the industry and Simulation Theory. This book is proving to be a must-have for anyone using, or interested in, using Simics." --**Gary Belanger, Technical Support Engineer, Wind River**

From the Back Cover

Virtual platforms are finding widespread use in both pre- and post-silicon computer software and system development, to enable software developers with a development platform months before actual silicon is available, and enable truly concurrent hardware/software design and bring-up. Virtual platforms increase productivity with unparalleled inspection, configuration, and injection capabilities, and form full-system simulations where computer systems can be tested together with their operating environment, allowing for a much more efficient system development workflow.

This book not only addresses how to use Simics and simulation to support very large software development organizations, but also how to use Simics and simulation to handle specialized tasks. Inside you'll find a comprehensive book about simulation best practice and design patterns, using Simics as its base along with real-life examples to get the most out of your Simics implementation. You'll learn about: Simics architecture, model-driven development, virtual platform modelling, networking, contiguous integration, debugging, simulator integration, workflow optimization, tool automation, and much more.

About the Author

Daniel Aarno has been working with the Simics full system simulation product since 2006. His positions have ranged from software developer, customer project manager (including pre-sales) to engineering manager responsible for the modeling tools and model development in Simics at Intel. He has a number of publications, including journal and conference publications, book chapters and the book, Recognizing Intentions, on robotics and artificial intelligence.

Jakob Engblom has been working with Simics since 2002, handling outbound marketing, inbound marketing,

sales and field engineering, academic program and product management. Currently he is a technical marketing manager for tools at Wind River, planning the future of Simics as an end-user product and blogging about Simics. For the past 15 years, he has have worked with various aspects of programming and simulation tools for embedded systems. He has written and presented on a variety of embedded systems topics since 1997, including popular science, trade press, conference papers, journal papers, and book chapters in a wide variety of outlets.

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