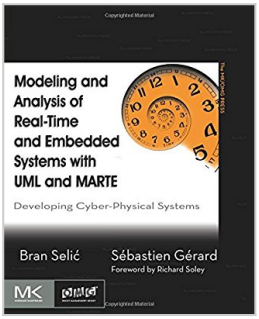

Modeling and Analysis of Real-Time and Embedded Systems with UML and MARTE: Developing Cyber-Physical Systems (The MK/OMG Press)

By Bran Selic, Sebastien Gerard

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Modeling and Analysis of Real-Time and Embedded Systems with UML and MARTE explains how to apply the complex MARTE standard in practical situations. This approachable reference provides a handy user guide, illustrating with numerous examples how you can use MARTE to design and develop real-time and embedded systems and software.

Expert co-authors Bran Selic and Sébastien Gérard lead the team that drafted and maintain the standard and give you the tools you need apply MARTE to overcome the limitations of cyber-physical systems. The functional sophistication required of modern cyber-physical systems has reached a point where traditional code-centric development methods are proving less and less capable of delivering a reliable product in a timely manner. In *Modeling and Analysis of Real-Time and Embedded Systems with UML and MARTE*, you will learn how to take advantage of modern model-based engineering methods and corresponding industry standards to overcome these limitations. These methods take full advantage of computer-supported automation allowing timely detection of design flaws to reduce engineering risk, leading thereby to better overall product quality and greater productivity.

- Understand the design rationale behind the MARTE standard needed to take full advantage of its many powerful modeling capabilities
- Best apply the various MARTE features for the most common use cases encountered in the design of real-time and embedded software
- Learn how MARTE can be used together with the SysML language for the design of complex cyber-physical systems
- Discover how MARTE can be used for different kinds of computer-supported engineering analyses to predict key system characteristics early in development
- Customize MARTE for a specific domain or project

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- Sales Rank: #3084876 in Books
- Published on: 2013-11-08
- Released on: 2013-10-25
- Original language: English
- Number of items: 1
- Dimensions: 9.25" h x .71" w x 7.50" l, 1.20 pounds
- Binding: Paperback

- 314 pages

Editorial Review

About the Author
Sebastien Gerard is a CEA LIST senior researcher in software engineering and computer science. He graduated in 1995 from ENSMA (the Superior School of Mechanics and Aeronautics in Poitiers, France) as a mechanical and aeronautics engineer, after which he obtained a doctorate in computer science in 2000. He is currently leading a research team of about 20 engineers at CEA LIST (an arm of the French Atomic Energy Agency, http://www-list.cea.fr/gb/index_gb.htm) within the LISE (Laboratory for Model-based Engineering of real-time and embedded (RT/E) systems). The principal objective of this research of this team is to achieve "correct-by-construction" design of RT/E systems from requirements to implementation". Through his involvement in a numerous national and international research projects, Dr. Sebastien Gerard has worked with many industrial partners such as Peugeot Citroen, Airbus, ST Microelectronics, EADS, gaining extensive experience and insight into industrial problems and requirements. Dr. Sébastien Gérard is also deeply involved in various standardization activities, and is currently co-chairing both the UML 2 and MARTE (the UML extension for RT/E) standardization task forces. He is also core member of the European network of excellence, ArtistDesign (http://www.artist-embedded.org), where he is a prime on issues related to modeling and standardization. In addition, Dr. Sébastien Gérard is a member of the editorial board of the SoSyM journal, co-founder of the summer school on model-based development for DRES (http://www.mdd4dres.info) and a frequent member of program committees of major technical and scientific conferences (MODELS, ECRTS, ISORC, etc.).

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