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Software Components, Architectures and Reuse
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The aim of this special issue is to report the state of research and practice on the theme of software components, architectures and reuse. This special issue is comprised of invited papers, and peer-reviewed papers presented at the Brazilian Symposium on Software Components, Architectures and Reuse (SBCARS 2007) (http://www.ic.unicamp.br/sbcars2007), held in Campinas, São Paulo, Brazil, 29-31 August, 2007.

The call for this special issue received 18 submissions: 14 submissions related to extended and revised versions of papers accepted for SBCARS 2007, and 4 invited submissions from well-known researchers in the area. Each of the 18 submissions was reviewed by at least 3 reviewers, and based on the reviewers' recommendations 8 papers were accepted. These papers stand for the high quality of the research being carried out among researchers from Brazil, Canada, France, Italy, Sweden, United Kingdom, and United States.

Contents of this Issue

The first paper entitled "Model Interpreter Frameworks: A Foundation for the Analysis of Domain-Specific Software Architectures" (G. Edwards, C. Seo, N. Medvidovic) proposes a reusable model interpreter for reducing the complexity of transforming architectural models into analytical models. In the context of component-based software development, the proposed approach enables the automated analysis of the quality attributes of software systems, such as, performance, reliability, and resource consumption. For illustrating the approach, the authors describe the implementation of the eXtensible Toolchain for Evaluation of Architectural Models (XTEAM), an environment that integrates the activities of modeling, analysis, and synthesis.

The second paper "Embedded Software Revitalization Through Component Mining" (M. Ramos, R. Penteado) presents an approach for software maintenance that relies on the mining of components for performing the revitalization

of embedded legacy systems. The intent is to produce a core of reusable assets for supporting the development of similar products. Software product line techniques were employed for the domain modelling and for the development of software components.

The third paper entitled "Experimenting the Automated Selection of COTS Components Based on Cost and System Requirements" (V. Cortellessa, I. Crnkovic, F. Marinelli and P. Potena) proposes an approach for selecting components during the requirements phase in a component-based development process. The DEER (DEcision support for componEnt-based softwaRe) framework is based on an optimization model that supports the selection of COTS components in a context where a significant number of components is available in the search space. The main challenge of the proposed approach is to estimate the values of the model's parameters so that the proposed optimization approach can be applied to the selection activity.

The fourth paper entitled "LIFT: A Legacy InfFormation Retrieval Tool" (K. Brito, V. Garcia, E. Almeida and S. Meira) presents a tool for reverse engineering and knowledge extraction from legacy systems. The requirements for the tool development were based on the evaluation of existent tools for reverse engineering. The tool was implemented and applied in an industrial case study. Its development was then refined based on the feedback provided by the use of the tool.

The fifth paper entitled "Mismatch Avoidance with Web Services" (C. Gacek and C. Gamble) defines an architectural style for Web Services, using the ACME/Armani architecture description language, together with its associated development environment, AcmeStudio. Constraints pertaining to web services, such as, the message exchange patterns that are allowed, are specified formally using Armani constraints. The paper also presents a small case study showing how a web service-oriented system can be designed using the proposed architectural style.

The sixth paper is "CrossMDA: A Model-Driven Approach for Aspect Management" (M. P. Alves, P. F. Pires, F. C. Delicato, M. L. M. Campos). A framework based on model driven development is presented for managing crosscutting concerns during system development. The proposed approach uses model-based transformations to perform the weaving among aspects and their related business elements, which allows the development of completely independent business and aspect models. The framework, known as CrossMDA, comprises a development process, a set of services and supporting tools.

The seventh paper entitled "A Product Derivation Tool Based on Model-Driven Techniques and Annotations" (E. Cirilo, U. Kulesza, C. Lucena) introduces a model-driven tool for software product lines to support automatically the creation of models from pre-existing code assets, as well as, the instance

product derivation from these models. The tool generates three types of models using as input source code with Java annotations: features, architecture and configuration models. Moreover, it was implemented using the Eclipse platform and a case study shows the feasibility of the proposed solution. The main contribution of this article is to provide a practical solution to derive automatically products from a software product line using generative programming to facilitate the process of product creation.

The eighth paper is entitled "A Service-oriented Process to Develop Web Applications" (F. Zaupa, I. Gimenes, D. Cowan, P. Alencar, C. Lucena). This paper describes an approach based on product lines and service oriented architectures for generating Web applications. The approach, whose focus is a process for generating applications, is presented in the context of an environment called WIDE-PL. The process defines the stages for developing services and the rules that map feature models into an implementation model.

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