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Editorial

Welcome to the first volume of *Transactions on Aspect-Oriented Software Development.* Aspect-oriented methods, tools and techniques are gaining in popularity due to their systematic support for modularizing broadly scoped properties, the so-called *crosscutting concerns*, in software systems. Such crosscutting concerns include security, distribution, persistence, mobility, real-time constraints and so on. As software systems become increasingly ubiquitous, mobile and distributed, the modular treatment of such crosscutting concerns also becomes critical to ensure that software artifacts pertaining to such concerns are reusable, evolvable and maintainable. This modular treatment of crosscutting concerns by aspect-oriented techniques is not limited to code level. In fact, aspect-oriented techniques cover the software life cycle, handling crosscutting concerns in requirements, architecture, design, code, test cases, system documentation, etc.

The aspect-oriented software development community is growing fast, with an increasing number of researchers and practitioners across the world contributing to the development and evolution of the field. The community launched its own conference in 2002, which has since been held with great success on an annual basis. Recent reports from Burton and Gartner groups have put aspect-orientation on the *plateau of productivity* on the evolution cycle of new technologies. One of the key indicators of the maturity of a field is the availability of high quality research of an archival nature. The launch of *Transactions on Aspect-Oriented Software Development*, therefore, signifies a key milestone for the maturity of work in this area. The journal is committed to publishing work of the highest standard on all facets of aspect-oriented software development techniques in the context of all phases of the software life cycle, from requirements and design to implementation, maintenance and evolution. The call for papers is open indefinitely and potential authors can submit papers at any time to: taosd-submission@comp.lancs.ac.uk. Detailed submission instructions are available at: http://www.springer.com/sgw/cda/frontpage/ 0,,3-164-2-109318-0,00.html. A number of special issues on current important topics in the community are already in preparation. These include special issues on AOP systems, software and middleware; AOP and software evolution; dynamic AOP, and Early Aspects. Calls for such special issues are publicized on relevant Internet mailing lists, Web sites as well as conferences such as the Aspect-Oriented Software Development conference.

The articles in this volume cover a wide range of topics from software design to implementation of aspect-oriented languages. The first four articles address various issues of aspect-oriented modeling at the design level. The first article, "Assessing Aspect Modularizations Using Design Structure Matrix and Net Option Value", by Lopes and Bajracharya, proposes a methodology and a tool to show how aspects can be beneficial as well as detrimental to a certain design. The second article, "Modularizing Design Patterns with Aspects: A Quantitative Study", by Garcia et al., analyzes and compares the aspect-oriented and object-oriented implementations of design patterns with respect to quality values such as coupling and cohesion. The article "Directives for Composing Aspect-Oriented Class Models", by Reddy et al., proposes models for expressing aspect-oriented and non–aspect-oriented properties of

systems and defines techniques to compose these models together. In the article "Aspect Categories and Classes of Temporal Properties", Shmuel Katz defines a method for classifying aspects with respect to their temporal properties so that application of aspects in a system can be better understood and analyzed.

The following four articles discuss various programming language issues. The article "An Overview of CaesarJ", by Aracic et al., gives an overview of the CaesarJ programming language, which aims at integrating aspects, classes and packages so that large-scale aspect components can be built. In the article "An Expressive Aspect Language for System Applications with Arachne", Douence et al. motivate the applicability of the Arachne language in improving systems written in the C language, where system dynamicity and performance play an important role. Monteiro and Fernandes define in their article, "Towards a Catalogue of Refactorings and Code Smells for AspectJ", a catalogue that helps in detecting aspects in object-oriented programs and in improving the structure of extracted aspects within the context of the AspectJ language. The final paper in the language category is "Design and Implementation of An Aspect Instantiation Mechanism" by Sakurai et al. It proposes association aspects as an extension to AspectJ for flexible descriptions of aspects whose instances are associated with more than one object.

The final article in this volume, "abc: An Extensible AspectJ Compiler", by Avgustinov et al., describes a workbench for implementing aspect-oriented languages, so that easy experimentation with new language features and implementation techniques are possible.

The inception and launch of *Transactions on Aspect-Oriented Software Development* and publication of its first volume would not have been possible without the guidance, commitment and input of the editorial board and the reviewers who volunteered time from their busy schedules to help realize this publication. We thank them greatly for their help and efforts. Most important, we wish to thank authors who have submitted papers to the journal so far. The journal belongs to the community and it is the submissions from the community that are at the heart of this first volume and future volumes of *Transactions on Aspect-Oriented Software Development*.

Awais Rashid and Mehmet Aksit
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