This issue of the Journal of Web Engineering is composed of four papers focusing on different aspects of the Web Engineering discipline. The first three papers represent revised and extended versions of the best papers presented at the “Web Technologies and Applications” (WTA) track, held in Santa Fe (New Mexico) in March 2005, in conjunction with the ACM Symposium of Applied Computing, a forum for applied computer scientists and application developers. Beside these three papers, a fourth paper has been included in this issue having analogous characteristics and being targeted both at academic and industrial researchers.

WTA 2005 has been the fourth edition of a series of successful events that have witnessed a constant evolution in the covered research issues. Web applications are becoming increasingly complex thereby creating a need for appropriate theoretical foundations, development methodologies, and supporting technology, drawing on different areas of computer science such as databases, artificial intelligence, programming languages, distributed computing, information retrieval, semantic modeling, human-computer interaction, etc. The goal of the WTA Track at SAC has been to promote research directions focusing on the previous different issues and areas, by providing a forum where academic and industrial researchers have shared and disseminated ideas related to innovative Web technologies and methods.

The track topics included: Web services, Semantic Web, collaborative Web systems, mark-up languages, Web mining, Web quality, Web searching, conceptual modelling of Web applications, Web engineering, security and integrity issues for the Web, caching and replication. We received 54 submissions covering most of the proposed topics. The selection process was very rigorous: each paper was blind-reviewed by at least 3 independent reviewers with expertise in the topic, and evaluated for originality, significance, technical content, and clarity of presentation. The Program Committee was composed of 35 members (in addition to the track co-chairs) and 18 other external reviewers were involved in the reviewing process. Out of the 54 submissions, 20 papers were selected for presentation at the conference (36% acceptance rate). In addition, three papers were accepted for inclusion in a poster session.

The papers selected for this special issue received the highest evaluation. They focus on very important areas of Web Engineering and cover different aspects, ranging from high-level languages for the specification of complex Web applications to architectures and methodologies facilitating the designer in the development process.

In the first paper, Bry et al. present a high-level declarative language called XChange for programming reactive behaviours on the Web. The Event-Condition-Action paradigm borrowed from active databases can be employed in the Web context to detect happenings of interest that have occurred on the Web and to automatically react to them. The XChange framework described in this paper represents a novel approach in the specification of event-condition-action rules tailored to the characteristics of the Web, consisting of distributed nodes that can communicate to each other. It also introduces several new concepts, like the distinction of persistent and volatile data, the composition of events occurring on the Web, and the lifespan of a Web event. The new concepts and the proposed framework are described through the syntax and the semantics of a reactive language and find
application in several Web systems, including for example online marketplaces, adaptive Web and Semantic Web systems, and Web services and Grids.

In the second paper, Atterer et al. deal with the need of integrating usability evaluation in the process of Web application engineering. Authors start from reviewing well-established model-based design methods, with the aim of discovering if they can support the specification of usability requirements into the application design, thus enabling their automatic validation. Authors also analyze existing tools for usability evaluation and observe that their quality could be significantly improved if the application models coming from the Web Engineering solutions previously described are taken into account. Authors thus conclude by identifying: (i) on one hand, Web Engineering model properties that can be used to improve current automatic validation techniques; (ii) on the other hand, extensions to the analyzed models for expressing usability requirements that can then be easily validated by the CASE tool complementing such models.

The third paper by Balzerani et al. presents Koridol, a product line architecture that contributes to increase the productivity when developing and maintaining families of Web applications. This aspect is particularly important in a field where applications are highly volatile and requirements change at an even higher pace than in traditional software products. In order to achieve its goal, Koridol includes variation points to deal with functionality variance, and specific assets for each system family. Variability among applications is achieved by means of a reflective mechanism that facilitates the performance of the configuration activity of such applications not only during product instantiation but also after the application has been deployed. The resulting architecture has been totally implemented, together with management tools which allow the user to administrate both the system and the derived products.

The last paper by Böttger et al. proposes a language based on the concept of contract for improving the collaboration between interface designers and programmers jointly developing HTML pages. A contract represents the interface between the two parties, used by the former to decide the layout and the look-and-feel of the Web pages and by the latter to design their templates. The approach is supported by a tool that allows one first of all to define the contract for a new HTML application or to infer the contract from an existing one, and then to check at compile-time that both designers fulfil their obligations with respect to the agreed contract.

All the proposed approaches are based on sound methods and technologies; most of them are also supported by prototype tools validating them.

Before concluding this editorial message, we want to thank all the people that have contributed to the success of the WTA track and to the publication of this special issue. We are immensely grateful to the track PC members and to the external reviewers that contributed to put together a high quality and exciting program. We also sincerely thank the JWE reviewers that helped the authors to further improve the papers of this special issue. We finally thank the JWE editor, Wei Chen, for his valuable support.

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Guest Editors