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ICWE 2012 marked the 12th edition of the International Conference on Web Engineering and was held during July 23–27, 2012, in Berlin, Germany. As in previous years, the conference’s main program was complemented by a number of co-located workshops, tutorials, and a doctoral consortium. All of these satellite events are designed to give researchers and practitioners an opportunity to interact in a setting that is both more informal and focused at the same time. This volume presents revised contributions to the workshops and the doctoral consortium, while summaries of the tutorials have been published in the main conference proceedings (LNCS Volume No. 7387).

Workshops have always played an important role in the ICWE community as they are a vessel both to explore new trends and for in-depth discussions on core topics of Web engineering. While this year’s workshop program did not include any newcomers, most of the well-established workshops broadened their focus to harbor contributions addressing novel and emerging requirements and opportunities, such as cloud computing, agile development, end-user development, linked data management, or social data and networks. At the same time, classic themes, such as Web modeling, the semantic Web, service-oriented architectures and mashups, or rich Internet applications, were also represented in the workshop program.

A total of nine workshop proposals were submitted and reviewed by the workshop Program Committee with respect to topicality and chance of success. Based on their recommendations, the Workshop Chairs accepted seven workshops. Of these seven workshops one had to be canceled as it did not meet the expected number of submissions. Another two workshops were withdrawn by their organizers. The final four workshops, which are listed below, all share a long-standing tradition in the Web engineering community and were successfully held once again at ICWE 2012.

- **MDWE 2012**: 8th International Workshop on Model-Driven and Agile Engineering for the Web
- **ComposableWeb 2012**: 4th International Workshop on Lightweight Integration on the Web
- **WeRE 2012**: Third Workshop on the Web and Requirements Engineering
- **QWE 2012**: Third International Workshop on Quality in Web Engineering

The doctoral consortium, which featured five presentations, complemented the conference and workshop program. In contrast to previous editions of ICWE, the format of the doctoral consortium was revised this year to put more emphasis on mentoring. Each participating PhD student was assigned two mentors to whom they presented their poster. This formal part was followed by a lunch that provided an opportunity for informal discussion.
This proceedings volume would not have been possible without the work of the enthusiastic and committed workshop and doctoral consortium organizers. Therefore, our first thank you is to all our colleagues who dedicated their time and skills to making the ICWE 2012 satellite events a success. In particular, we would like to thank the members of the workshop Program Committee whose careful evaluations of the submitted workshop proposals were an invaluable asset in assembling the ICWE 2012 workshop program. The success of any individual workshop largely depends on the quality and quantity of submissions. Keeping this reality in mind, our thanks also go out to the researchers, practitioners, and PhD students who contributed their work to this volume. Finally, we would like to thank the General Chair of ICWE 2012, Robert Tolksdorf, and the Program Chairs, Marco Brambilla and Takehiro Tokuda, for their feedback and constant support.

August 2012

Michael Grossniklaus
Manuel Wimmer

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The 8th International Workshop on Model-Driven and Agile Engineering for the Web (MDWE 2012) continued with the successful series of the Model-Driven Web Engineering workshops that have been held jointly with ICWE conferences since 2005, with exception of MDWE 2008 that was held jointly with MoDELS 2008 in Toulouse.

MDWE promotes a more systematic development of Web applications, i.e., focusing on methods, techniques, and tools that support the development process. This year we invited submissions of original high-quality papers on both model-driven and agile approaches covering different steps of the software development life cycle.

In response to the call for papers, a total of nine submissions were received. Each submitted paper was anonymously peer reviewed by at least three referees, and six papers were finally accepted for presentation at the workshop and publication in the proceedings. The workshop was the occasion for very lively discussions following the presentations, covering current and critical topics in the model-driven Web engineering domain. Some glimpses of the discussion are available online on the Instant Community website that was set up as support to the workshop. The community site contains all the presentations, papers, and issues that were raised during the discussion.

The workshop also included a keynote talk by Arne Berre, from SINTEF, Norway, entitled “An Agile Model-Based Framework for Service Innovation for the Future Internet.” The selected papers address, among others, the improvement of the model-driven approaches introducing new concerns such as non-functional requirements for cloud computing applications, social network elements, and an ontology perspective. The focus of other contributions are the improvement of MDWE processes with software engineering techniques such as test-driven modeling, aspect-orientation, and reverse engineering for converting a traditional Web into a RIA. Further information about the presented papers and all the information relevant to the workshop is available on the website of the event: http://mdwe2012.pst.ifi.lmu.de/.

The most important contribution of MDWE is the open discussion space that provides for solid theory work with practical on-the-field experience in model-driven approaches. In these proceedings you can find the papers that reflect this spirit, and how different approaches respond to the new challenges in the

\[1 \text{http://ic.kspaces.net/#!event/10749} \]
development of Web applications. We hope you find these papers useful reading material for your research in model-driven software engineering.

We would like to thank the ICWE 2012 organization team for giving us the opportunity to organize this workshop, especially to the Workshop Chairs, Manuel Wimmer and Michael Grossniklaus, who were always very helpful and supportive. Many thanks to all those who submitted papers, and particularly to the presenters of the accepted papers and to Arne Berre for his interesting keynote talk. Our thanks go to the reviewers and the members of the Program Committee, too, for their timely and accurate reviews and for their help in choosing and suggestions for improving the selected papers.

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ComposableWeb focuses on research, practical experiences, and novel ideas in the context of component-based development of Web applications, lightweight composition on the Web, and Web mashups. The goal of the workshop is to provide a discussion forum for researchers and practitioners working in these areas and to jointly advance the state of the art. The workshop typically attracts enthusiastic people that like to play with novel technologies and that try to make application development accessible also to less-skilled developers or—as envisioned by many—even to end-users.

ComposableWeb 2012, the fourth edition of the workshop, was again held in conjunction with the International Conference on Web Engineering (ICWE), which it complements with a more experimental and technology-centric focus.

The scientific program of this year’s edition of the workshop consisted of six papers and one keynote. All submissions went through a rigorous review process by our Program Committee, and only submissions with positive feedback were selected for publication. Among the accepted papers, the reader will find a model-driven approach to data mashups, an extension of the W3C widget model for inter-widget communication, an approach for the development of cooperative mobile mashups, a natural language-based development paradigm for mashups, a visualization technique for RSS feeds, and work on how to extract API models from API documentations. The keynote was held by Oscar Díaz from the University of the Basque Country in Spain and concentrated on Web augmentation, the practice of enhancing existing Web applications with new features and functionalities inside the client browser.

ComposableWeb 2012 was a full-day workshop. It started with a short intro by the organizers, followed by the keynote by Oscar Díaz. The second and third sessions of the workshop were dedicated to the presentation and discussion of the selected papers. Thanks to the lively participation of the audience (40–50 people), the last session turned into an interesting debate of the topics related to the presented papers as well as of some considerations regarding the scientific approach and rigor that characterizes the specific area of mashups and that of Web engineering in general. The main outcome of this discussion is the identification of the need for rigorous validation and evaluation of proposals, and, related, the comparison of approaches and results. This comparison may come in different forms, such as the implementation of a common reference scenario by different authors (as known from the various scientific ‘challenges’ competitions) or the availability of benchmark data for specific application areas (as know from
database research). Both options may be taken into account in the next edition of the workshop.

Concluding, we would like to thank all the authors who contributed to the workshop with their papers and presentations, Oscar Díaz for his insightful keynote speech, our Program Committee for the constructive and competent feedback, and the audience for participating and actively contributing to the final discussion. We thank the ICWE organizers and Workshop Chairs for hosting the workshop and for providing a nice, relaxed, and constructive environment.

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Nowadays, the advance of the Internet and the increasing need for high-performing information systems that agree with user expectations advise highlighting the requirements engineering tasks in the software development lifecycle. In the context of Web engineering, end users are frequently unknown, maintenance and traceability requirements are complex, and aspects such as navigation, safety, or interface acquire a high level of criticality. Therefore new technologies, tools, and methodological solutions are needed to ensure the quality of the results according to the elicited requirements.

The International Workshop on Web and Requirements Engineering (WeRE) aims to bring together experts interested in the proposal and development of solutions that help to improve the quality of work requirements in the environment of Web engineering. In this third edition, we received a total of eight papers, four of which were accepted, representing a 50% acceptance rate. The contributions belong to authors of seven countries from both academia and industry. As in previous years, we put a special emphasis in the relationship with the enterprise environment and the need to involve the business community. Therefore, we invited Pilar Calvo Charneco, in charge of the Administration and Finance Office of Everis Seville, Spain. She presented a keynote on the relevance of motivation in the field of requirements engineering. The companies Everis and Sadiel Inc. demonstrated their interest in the workshop by sponsoring the event.

The workshop was a meeting point that allowed for discussion and debate on different crucial aspects in the field of Web requirements engineering. We focused the discussion on traceability of requirements, application of early testing and its advantages and drawbacks, and the use of the model-driven paradigm for monitoring. These points attracted great interest from the audience. All editions of the workshop showed the need to continue with research in the WeRE area and seek better solutions for the treatment, maintenance, and management of software requirements in the context of Web engineering.

We would like to thank the ICWE 2012 organization for giving us the opportunity to organize this workshop, especially the Workshop Chairs, Manuel Wimmer and Michael Grossniklaus. Many thanks to all those that submitted papers and, in particular, to Pilar Calvo Charneco for presenting the point of view of her company in her keynote talk. Our thanks also go to the reviewers and the members of the Program Committee, for their timely and accurate reviews,
for their help selecting the papers, and for their constructive comments that allowed for improvement of the contributions. Finally, we would like to mention that WeRE 2012 was partially organized within the context of the MANTRA project (GV/2011/035) from Valencia Government (Spain) and the Tempros project of the Ministerio de Educación y Ciencia (TIN2010-20057-C03-02).

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The development of Web applications is continuously increasing. In fact, they enable companies to deliver services and products at a distance. The main goal of such applications should be the satisfaction of the customer needs, and thus quality aspects should be one of the main factors of Web application projects. Recent studies have instead found that quality features are scarcely considered.

New methods and techniques that help to improve the quality of delivered Web applications are needed. This is the motivation that led us to organize the third edition of the International Workshop on Quality in Web Engineering (QWE 2012) that was held in conjunction with the 12th International Conference on Web Engineering (ICWE 2012).

The purpose of the workshop was to discuss the effectiveness of existing approaches for evaluating and managing the quality of Web resources (e.g., quality models, quality evaluation methods, information quality tools, logging tools, automatic metric capture tools), with the final objective of allowing researchers and practitioners to discuss recent trends and open issues. Special emphasis was placed on Web engineering methods, and the way in which their early artifacts (process and product models) can improve both the quality of the development process and the quality of the final applications and content. This includes, among other aspects, discussing the way in which Web engineering methods can be further empowered by taking into account quality principles and by integrating sound quality assessment techniques that have proven their effectiveness (review guidelines, usability models, usability evaluation methods, usability checkers, accessibility verifiers, information quality tools, logging tools, automatic metric capture tools, statistical tools, etc.). The accepted papers mainly contribute to this direction. In fact, they focus on the quality assessment of courseware Web applications and on the quality measurement and evaluation strategies of generic Web applications, the latter also providing guidelines for improvement. Furthermore, the workshop also tried to encourage a discussion on the current trends in the creation of modern Web applications, commonly referred to as Web 2.0 applications. Such discussion was also facilitated by the invited talk, which, in particular, highlights issues related to the knowledge that can be retrieved from Web 2.0 sources. The talk confirms that the coverage and quality of the Web sources are important issues, but it is also necessary to consider that much of the knowledge they contain is uncertain. Methods to quantify this uncertainty are needed.

We would like to thank the invited speaker Gjergji Kasneci from the Hasso-Plattner-Institut and the authors for submitting their papers to the workshop.
and contributing to the interesting discussion during the workshop. We are also grateful to the members of the Steering Committee for their support and advice, to the members of the workshop Program Committee for their efforts in the reviewing process, and to the ICWE organizers for their support and assistance in the production of these proceedings. More details on the workshop are available on its website http://users.dsic.upv.es/workshops/qwe12/.

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ICWE 2012
Doctoral Consortium

The ICWE 2012 Doctoral Consortium aim was to improve the research of PhD students and broaden their perspectives by giving them the opportunity to share and develop their research ideas in a critical but supportive environment in an international atmosphere. This event brought together PhD students working on topics related to the Web engineering field. They got feedback from mentors who are senior members of the Web engineering community, they improved their communication skills, exchanged ideas, and built relationships with other international Web engineering PhD students.

We received a total of nine papers; five of them were accepted, representing a 55% of acceptance. The submissions were from seven different countries: Germany, Slovakia, Japan, Tunisia, France, Spain, and Argentina.

Participants discussed their research ideas and results and they received constructive feedback from an audience consisting of their peers as well as more senior researchers experts in the field. After the presentation of the work, there was a further discussion during lunch in a relaxed atmosphere, with the support of Doctoral Consortium PC members.

We would like to thank the support of the ICWE 2012 organization team, especially the Workshop Chairs, Manuel Wimmer and Michael Grossniklaus. Also we would like to thank the students participating and the Doctoral Consortium PC members for their accurate reviews and constructive comments. We would especially like to thank the PC members who acted as mentors, who did an excellent job and gave very good feedback to students.

August 2012

The Chairs

Doctoral Consortium Chairs
Irene Garrigós University of Alicante, Spain
Óscar Pastor Universidad Politécnica de Valencia, Spain

Program Committee
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Peter Dolog Aalborg University, Denmark
Martin Gaedke Chemnitz University of Technology, Germany
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