SPECIAL COLLECTION ON REQUIREMENTS ENGINEERING

In recent years, Requirements Engineering (RE) has become an important discipline in software and systems engineering. Requirements determination is a critical stage in software systems development because it is at this stage where purpose, functionality, and boundaries of systems are identified, analysed and defined. For some years now, it has been recognised that problems associated with capturing, analysing, specifying, and managing requirements are among the major reasons for project failures where the end product does not meet the real needs of the intended users. Errors in requirements specifications can have a major impact on software costs. Early detection and correction of potential problems during requirement analysis may alleviate many problems later on during testing and maintenance. Despite this, in comparison with the rest of the software systems development activities, relatively little time and effort is spent during the requirements phase. Furthermore, although much has been achieved for improving and automating many of the different activities making up the software development process, elicitation, analysis and specification of user requirements remain one of the least explored and have the least satisfactory scientific foundations.

RE is a multi-disciplinary, communication rich and a human-centred process. The RE research, tools, methods and techniques so far have drawn upon a variety of disciplines, the more obvious ones being computer science, software and systems engineering, information systems and others such as cognitive psychology, epistemology, sociology, and linguistics. Requirements Engineering research and practice has witnessed a great deal of interest in the last decade or so and hence it is timely to present this special collection of articles on RE for the first time in the Journal of Research and Practice in Information Technology.

In December 2003, I was the general chair of the 8th Australian Workshop on RE (AWRE'03) held at the University of Technology, Sydney. The authors of three papers who scored best by the program committee were invited to submit an extended version of their papers for an additional review process for this special collection of RE for JRPIT. In response to the standard Call for Papers a total of 23 papers were submitted including two extended articles from AWRE'03. Two of the submitted papers were concurrently submitted as regular articles to the JRPIT. The reviews for these two were handled in the usual way by the JRPIT editorial board and hence they were not included in the special collection review process.

All of the 21 submitted articles were reviewed by at least two and at most four reviewers. From the reviewed articles in the first round, nine papers were conditionally accepted for publication, either with minor or major revisions and 12 were rejected. The authors of the accepted articles were given a second opportunity to further improve their papers by addressing the issues and concerns raised by the reviewers. The second submission of the nine conditionally accepted papers were then sent to the same reviewers which finally resulted in the acceptance of six articles for publication that you can read in this special collection. All six papers present high quality RE research that is also very relevant to the practice of requirements engineering.

The first article "An Experiment in Inspecting the Quality of Use Case Descriptions" by Karl Cox *et al* is an extended version of their paper to AWRE'03. It presents the results of a laboratory experiment to explore the application of a checklist in the process of inspecting use case descriptions. The focus of this paper is on improving the quality of specified requirements driven by use cases.

The second article "COFRE: Environment for Specifying Coordination Requirements using Formal and Graphical Techniques" by Marisol Sánchez-Alonso *et al* presents a methodology and its associated formal tools for generating formal interpretable specifications for the reproduction of

coordinated environments. The method is based on the use of the formal language Maude (as a simulation tool) and Coordinated Roles as a coordination model.

The third article "Empirical Evaluation and Review of a Metrics–Based Approach for Use Case Verification" by Beatriz Bernárdez *et al* presents an empirical evaluation and review of some metrics–based verification heuristics for use cases. This evaluation is based on empirical data collected from requirements documents using REM, a free XML–based requirements management tool developed by one of the authors.

The fourth article "Strategy-Oriented Alignment in Requirements Engineering: Linking Business Strategy to Requirements of e-Business Systems using the SOARE Approach" by Steve Bleinstein *et al* is an extended version of their paper to AWRE'03. It introduces a novel approach for RE in e-Business systems. Goal modelling and goal refinement is employed to represent business strategy in a RE context as well as to link high-level strategic objectives to low-level requirements.

The fifth article "Improving Requirements Engineering by Quality Modelling" by Paolo Donzelli and Paolo Bresciani describe a structured, goal-oriented, agent-based RE Framework. Authors adopt quality modelling to enhance the capability of advanced agent- and goal-based requirements engineering techniques to deal with and resolve soft organizational and system issues.

Finally, the sixth article "Computer-assisted Discrepancy Management. A Case Study in Research Transfer to Industry" by Javier Andrade *et al* is an experience report that describes "repackaging" and transfer to industry the research results in Viewpoint-based Requirements Engineering.

I would like to thank Professor Sidney Morris, the Editor-in-Chief of JRPIT for providing this opportunity and to Rosemary Hay for her administrative assistance. I would also like to express my sincere gratitude to the reviewers whose valuable contribution made this publication possible. It is my hope that this special collection of papers on RE will contribute to highlighting the importance of Requirements Engineering research and practice in the years to come.

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