Introduction to the Fourth International Workshop on Comparative Evaluation in Requirements Engineering 2006 (CERE’06)

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As a young, multi-disciplinary field, Requirements Engineering still lacks a broad consensus on appropriate research methodologies and evaluation criteria. Nor is there a strong base of existing evaluative research in RE upon which the discipline can build. This is a crucial shortcoming because we need to evaluate the results of our research if we are to develop and mature as a scientific discipline. Such comparisons are also a crucial component of technology transfer.

This need to assess the effectiveness and impact of RE research has been a growing concern within the RE community. One of the symptoms of this concern has been the interest shown at the 2003 - 2005 CERE workshops. These investigated the foundations of RE impact assessment and showed that RE is now mature enough for the community to begin to make detailed comparative evaluations of alternative techniques. CERE 06 continues this tradition by investigating the efficacy of RE methods, presents the results of empirical studies and comparative evaluations of RE techniques, methods and tools, and examines the role of theory in comparative evaluation.

While there clearly is a need for comparative evaluation in RE if we are to achieve respect as a scientific discipline, the six papers selected for presentation at this year’s CERE workshop also demonstrate the power and flexibility of comparative evaluation and some of the ways it can also enhance RE research.

The first two papers demonstrate how comparative evaluation can be used to compare RE techniques according to how they contribute to the effectiveness of the analyst using them, measured using three variables: theoretical knowledge, problem domain knowledge and practical skills.

• Evaluating the Effectiveness of a Goal-Oriented Requirements Engineering Method by Huzam Al-Subaie and Tom Maibaum evaluates KAOS and its support tool against a number of general RE criteria such as traceability, validity, and completeness.

While the first paper focuses on one specific criterion, expertise, vs. the more general criteria proposed in the second paper, it is designed to be applied to a broader range of techniques than the second which is targeted to goal-oriented approaches such as KAOS.

The second set of papers applies comparative evaluation to a sub-domain of RE focused on product line requirements by proposing frameworks for comparing techniques’ abilities to aid RE for product families.

• Criteria for Comparing Requirements Variability Modeling Notations for Product Lines by Olfa Djebbi and Camille Salinesi proposes an evaluation framework for comparative evaluation of feature models in product line engineering.

• Comparative semantics of Feature Diagrams: FFD vs. vDFD by Jean-Christophe Trigaux, Patrick Heymans, Pierre-Yves Schobbens and Andreas Classen presents a comparison of the semantics of two different languages for expressing feature dependencies in product line engineering.

While the first paper provides a general framework for comparing existing modeling notations for product line requirements, the authors of the second paper specifically developed its framework to evaluate the FFD they created and compare them to vDFDs.
Using comparative evaluation to evaluate research results is very common, as demonstrated in the final set of papers. The final pair of papers demonstrate two different ways that comparative evaluation can be used help develop or evaluate new RE techniques. In the first paper, comparative evaluation aids in the definition of the technique, while in the final paper, it plays an essential role in the evaluation of the effectiveness of a technique that had been developed during earlier research.

- **Using a Hybrid Method for Formalizing Informal Stakeholder Requirements Inputs** by Hasan Kitapci and Barry Boehm presents the authors’ experience with the problems of synthesising requirements from elicited information and then shows how they used a comparative evaluation of existing techniques as a basis to propose a new, combination of those techniques to bridge this gap.

- **On a Mixed-Methods Evaluation of a Social-Agent Scenario Visualization** by Thomas Alspaugh, Eric Baumer and Bill Tomlinson describes how using a multi-methodological analysis of the effectiveness of animated visualisations of scenarios for aiding stakeholders’ understanding allows comparative evaluation of the quantitative and qualitative results, with the final results providing a much richer understanding than either approach alone.

While the RE techniques and their focus differ, what unites all six of these papers is that they apply comparative evaluation. They give pointers about how evaluation can be performed even where, as in all aspects of RE, there are no absolutes against which we can measure. As such, they provide heartening evidence of the gradual, but perceptible maturation of RE as well as the essential role that comparative evaluation can play in that maturation.

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