

## Editorial

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This special issue of the Requirements Engineering Journal is devoted to the papers presented in the papers track of the Conference on European Industrial Requirements Engineering (CEIRE '98) which took place in Hammersmith, London over the 19th and 20th of October 1998. The event was organized by the Requirements Engineering Specialist Group of the BCS. It would have not been possible without the sponsorship of the RENOIR network of excellence, Rational Software, QSS Limited and the Crews project.

In contrast to many other conference, symposia and workshop series on RE, CEIRE was not primarily a research forum. Its focus was on exchanging experience and good practice rather than in flagging promising but yet untried research. Our aim was to provide every participant with requirements engineering practices of direct and immediate relevance to their work. We hoped that practitioners would be able to compare experiences with colleagues in different companies and domains, get nuggets of wisdom from the invited "gurus" and discover at first hand what the tool vendors could do for them and their business. Similarly we hoped that researchers would get an insight into the state-of-the-practice and a view of the issues emerging from technology transfer exercises.

These conference aims impelled a diversity of threads concentrated into a highly parallel programme. A consequence of this was that rather than forming the core of the programme, the paper presentations were merely an equal partner to the tutorials, workshops, vendor demonstrations and informal events. To fit the conference theme, the papers chosen had to offer a clear take-home message for the expected audience.

This posed problems for selection of the papers since few practices or experiences are directly usable in all domains or by all organisations. However, the papers finally selected have all been informed by practical experience and are, we believe, of interest to at least some sectors of industry or technology transfer groups. Most of the papers have been written by or in partnership with industrial practitioners. Hence, they are all rooted in practice and give an insight into the problems faced at the coal face of RE, the practices adopted to cope with these, and snapshots of experiments situated in real RE processes.

Morris et al. and Kamsties et al.'s papers tackle head-on problems at the root of the divide between academic research and actual practice. Their findings should be of salutary interest to researchers looking to carry out technology transfer. They observe that many perils exist on the path to exploitation and that industry's perception of why RE is a problem doesn't always match that of the academic observer.

One of the observations made by Kamsties et al. is the concern felt by many organisations regarding the quality of their requirements documentation. This theme is explored further in Melchisedech's paper which analyses the requirements documents produced in 3 different industrial projects. He exposes the wide difference in practices used and draws out several revealing lessons regarding the choice and use of languages and notations. The paper by Armitage et al. continues the focus on documentation. They describe how tool support can be used to measure the degree of compliance to system engineering standards and help ensure that the documentation is of acceptable quality.

The role of standards also pervades Kirkman's paper which gives a view of common requirements problems from the trenches of the author's long RE experience. Significantly, many of the pitfalls which he identifies have been well known for many years and several industry standards mandate explicit defences against these problems. The fact that they persist calls into question the effectiveness - or the effectiveness of dissemination - of standards in RE. More importantly, it implies that the RE community continues to underestimate the practical problems posed by large, complex projects and, as a consequence, to overestimate industry's capabilities.

As if to emphasise our tendency to think we can run when we have barely learned to walk, Beus-Dukic and Wellings' paper focuses on some RE-specific problems posed by the seductive promise of components bought off the shelf

(COTS). This paper suggests that we have yet to learn how to reconcile business requirements for the use of COTS with user and system requirements.

Historically, most of the published RE practices and process models have been oriented towards customer-driven projects. RE for market-driven products pose quite different problems and product developers have often been forced to adapt practices in an ad-hoc way. The paper by Regnell et al. offers a wonderfully clear explanation of the experiences of piloting a carefully designed RE process for the incremental delivery of a software product. This work is timely, offers concrete lessons and advice and is likely to point the way to the future as economic factors increasingly compel the "productisation" of software.

Alexander and Santos and Carvalhos' papers both address the problem of reconciling the richness of users' operational and organisational environments with the finite resources available to the requirements engineer tasked with understanding, abstracting and specifying their requirements. Alexander's approach is to employ a cooperative enquiry cycle designed to foster users' engagement with requirements elicitation and validation decision-making. Practitioners and researchers have struggled with human factors problems in the RE process and many proposed approaches have proven impractical. Alexander's approach is light-weight and sensitive to resource constraints and the paper reports favourable early indications of cooperative enquiry's practicability. Santos and Carvalhos's approach is to break the problem down into 4 dimensions of the user's work: the structural, social, political and symbolic dimensions. An interesting feature of their approach is the recognition of the importance of all of these and their attempt to avoid skewing the analysis to a particular "viewpoint".

The paper by Papadopoulos and McDermid takes a close look at the transportation industry. They focus on the relationship between the systems development, safety assessment and safety case development processes in safety-related systems within this domain. They demonstrate how the requirements process needs to be aligned to the identification of hazards and risk assessments in order to identify and classify safety requirements and inform the development of the safety case. The diversity of the safety standards used in different transportation sectors is explained and they describe a harmonised development model which draws on best practice from these.

The special issue is introduced by a paper written by Michael Jackson to accompany his keynote talk to CEIRE'98. It sets out his view of RE as a discipline of description. The paper illustrates how the requirements engineer's task is to span the machine and the real worlds; to reconcile the messy realities of the system's environment with the formality needed to describe a machine to operate within and exert control on that environment.

Whatever your interest in RE, we are confident that somewhere in this volume, you will find something of relevance to your interest.

Finally, we would like to thank the following members of the CEIRE organising and industrial consultative committees for their help and advice in selecting the papers.

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