

## Report on the Working Conference on Requirements Engineering: Foundation for Software Quality (REFSQ'09)

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### Abstract

This report summarizes the presentations and discussions at REFSQ'09, the 15th International Working Conference on Requirements Engineering: Foundation for Software Quality which was held on June 8-9, 2009 in Amsterdam, The Netherlands.

**Keywords:** Requirements, Requirements Engineering, Software Quality, REFSQ

### Introduction

REFSQ is an annual working conference on Requirements Engineering (<http://www.refsq.org>) which is especially devoted to all aspects of quality in RE. REFSQ is a European conference with an international spirit, attracting submissions from all over the world. REFSQ has a reputation both for the quality of the presented research and its unique interactive format. Each session is organized in order to provoke discussion among the presenters of papers, discussants and all the other participants. Typically, after a paper is presented, it is immediately discussed by one or two pre-assigned discussants, then subject to a free discussion involving all participants. At the end of each session, an open discussion of all the papers presented in the session takes place.

In this report, we summarize the presentations and discussions at REFSQ'09 which was held on June 8-9, 2009 in Amsterdam.

The special theme of REFSQ'09 was value and risk in relation to RE and quality. Ensuring that requirements, and eventually running systems, meet the values of the individuals and organizations that they are meant to serve has always been at the core of RE. Nowadays, continuously changing technology, ubiquitous software, ever-growing system complexity, and unheard of market pressure, simultaneously with new business models based, for example, on crowdsourcing, make the concern for value all the more present and challenging. The notion of value is inseparably connected to the notion of risk. We are challenged both by product risks, i.e., risks that threaten the value we want to achieve with the systems we build, and project risk, i.e., the risk of not achieving the intended value when building a system. Identifying and mitigating risks is a core task of RE.

REFSQ'09 received 60 submissions, consisting of 49 full papers and 11 short papers. Each submission was carefully assessed by three reviewers. Finally, the Program Committee selected 14 top-quality full papers (11 research papers and 3 experience reports), resulting in an acceptance rate of 29% (14/49) for full papers. In addition to those 14 papers, 7 high-quality short papers were selected: 4 were shortened versions of very promising but not fully mature long papers, while the remaining 3 were selected from the 11 submitted short papers. The overall acceptance rate of the conference was thus of 35% (21/60).

The authors of the accepted papers come from twelve countries (Australia, Austria, Belgium, Canada, France, Germany, Greece, Spain, Sweden, Switzerland, United Kingdom, and USA), thus underlining the international character of REFSQ. The proceedings are available from Springer Verlag [1].

### Session 1: Value and Risk

The papers in the first session of the conference focused on this year's special theme: value and risk. Interestingly, all the speakers related their work to insights from other disciplines or industrial practice.

In *When Product Managers Gamble with Requirements: Attitudes to Value and Risk* by Nina D. Fogelström, Sebastian Barney, Aybüke Aurum, and Anders Hederstierna, the first two authors started the presentation with a short game illustrating the insights from prospect theory: people approach risk differently when faced with loss or gain. This insight was transferred to the context of RE and a student experiment was performed. It confirmed the general theory. One of the implications is that internal quality requirements (such as maintainability) are typically associated with cost. So their value could be improved by phrasing them in terms of revenue. More generally, requirements engineers should be educated about prospect theory and these implications. In the discussion it was highlighted that such biases can be counteracted by experience and knowledge. Furthermore it was noted that the attitude to risks also depends very much on context factors such as age of the stakeholders or economic conditions.

Gil Regev presented a short paper jointly written with Oliver

Hayard, Donald C. Gause and Alain Wegmann: *Toward a Service Management Quality Model*. They observed that in service management frameworks such as ITIL requirements are phrased in terms of utility and warranty. This requires new ways of dealing with quality requirements, e.g. in terms of norms and tolerances. The discussion emphasized the fact that we have to link our research better to such established practices.

In the paper *A Controlled Experiment of a Method for Early Requirements Triage Utilizing Product Strategies* by Mavish Khurum, Tony Gorschek, Lefteris Angelis and Robert Feldt, the first author sketched the method MERTS. The purpose of MERTS is to state a product strategy explicitly and link the requirements to it. A student experiment was presented which showed that the outcome of MERTS helped the students to perform requirements triage (in comparison with a typical natural language description of a product strategy). The discussion focused on the cultural differences between management and RE, pointing out that, for example, management is not so keen on explicit product strategies due to accountability issues. This might hinder the acceptance of a more structured method such as MERTS.

The last presentation of the session was the research preview paper *Demystifying Release Definition: From Requirements Prioritization to Collaborative Value Quantification* by Tom Tourwé, Wim Codenie, Nick Boucart, and Vladimir Blagojevic. The first author presented five myths and why they do not work. Root causes seem to be that there is no clear definition of value (to support the selection) and that there are too many requirements to be treated all in the same depth. As a first attempt to handle these problems, a tool is proposed which allows to tag requirements so that the most important requirements and the criteria for the assessment can emerge from the crowd.

As a discussion facilitator, Barbara Paech summarized three main issues in the research on value and risk. The first issue is that a lot of psychological and cognitive factors have to be considered and we as software engineering researchers are not trained for that. So we have to look for interdisciplinary partners. A second related issue is that it is difficult to integrate strategic and RE thinking and artifacts due to the different cultures in management and RE. Therefore our methods must take these cultural issues into account. The third issue is the way how we evaluate our methods. The presented papers typically used student experiments. While evaluation of software engineering methods is difficult anyway, it is even more difficult when it relates to strategy, because strategic decisions have visible effects in the long term only. From that, the discussion focused on the similarities and differences between requirements triage in medicine (where the term originally comes from) and RE. One important outcome was the clarification that triage is a first high-level screening of requirements and has to be combined with a detailed prioritization of the borderline requirements.

## Session 2: Change and Evolution

The experience report *Specifying Changes Only – A Case Study on Delta Requirements* by Andrea Herrmann, Armin Wallnöfer, and Barbara Paech reported on an industrial case study trying out an approach called TORE (Task-Oriented RE) to specify only delta requirements when products need to change, rather than developing an entire requirements specification afresh. The method

addresses the specification of both the system as-is and the system to-be on several hierarchical levels. The discussant raised the issue of how to keep the link with business goals when using delta requirements. Also put forward in the discussion was the viewpoint that some kind of delta approach is common in industry, and while little has been published about it in RE research, there may be relevant publications in other fields, such as product management.

In *Requirements Tracing to Support Change in Dynamically Adaptive Systems* by Kristopher Welsh and Pete Sawyer, the authors argue for the need to record claims and rationale in the development of dynamically adaptive systems, for the purpose of traceability, requirements management and for considering the impact of various design alternatives. Claims are described by augmenting  $i^*$ 's SD and SR models. The case of a flood-warning system was used as an illustrative example. The rationale makes it possible to see why different design trade-offs may be preferred in different states for a dynamically adaptive system. The discussant raised the question whether it would be feasible to document the rationale of all decisions. It was agreed by the authors that this would probably not be a good idea. Focus should remain on documenting key trade-offs in the design.

## Session 3: Interactions and Inconsistencies

The first paper, *Early Identification of Problem Interactions: A Tool-Supported Approach* by Thein Than Tun, Yijun Yu, Robin Laney and Bashar Nuseibeh, was presented by the first author. He presented a bottom-up approach to solving complex problems involving software-intensive systems based on the application of problem frames. An abduction procedure (from conclusion to premises) is employed to identify conditions where the conjunction of sub-problem requirements is not satisfied. The solution is deemed complete but not sound because some feature interactions may be desired. The tool support offers full automation, currently using the Event Calculus, but other formalisms can be considered. Thein Than described the use of the method on a home automation example where security, climate control and window control interactions must be coordinated. The discussant noted that one of the challenges of complex problems is to model the environment, that the sub-problem descriptions must be individually consistent for the method to work, and that the composition process seemed simplistic. Thein Than explained that Problem Frames is a pattern-based approach that makes it very probable that sub-problems are indeed individually consistent. The questions from the audience concerned the reasons that motivated the authors to use the Event Calculus and abduction as well as the relation between this work and the state of the art in feature interaction. Thein Than noted that the Event Calculus is very simple, well known in AI and well suited to the smart home example. Additionally, abduction is very efficient, much less expensive than deduction, and under certain conditions it is complete and sound.

In the second paper, *Composing Models for Detecting Inconsistencies: A Requirements Engineering Perspective*, Gilles Perrouin, Erwan Brottier, Benoit Baudry, and Yves Le Traon describe a model-driven tool for requirements verification. The tool takes a software requirements specification (SRS) as input and verifies it for inconsistencies. The tool supports multiple input

requirements languages (IRL), such as UML or Jacobson-style use cases. A specific metamodel is used for each IRL. A metamodel contains interpretation rules defined by experts. Static analysis verifies the global requirements model for inconsistencies, such as under-specification, logical contradictions and static semantics contradictions. The discussant summarized that (i) this work does not assume much as it uses a general metamodel rather than, e.g., Problem Frames; (ii) the main contributions (static analysis, traceability, multi-formalism) go beyond Zave and Jackson's proposal; (iii) the main problems seem to be that detecting underspecification is too ambitious and tool support is limited; (iv) a lightweight study is needed to verify whether the approach scales to large requirements documents. Questions centered around the kind of inconsistencies that can be detected, whether there needs to be a difference between inconsistency and ambiguity, whether the tool may not prevent the important phase of conflict resolution between stakeholders. This eventually led to the conclusion that the tool was probably best suited for use during late requirements rather than early requirements, where conflict is better dealt with explicitly.

The session closed with the summary that both approaches were complementary and a debate about problem complexity, ambiguity vs. inconsistency, and the kind of problems that can be solved with automation.

#### Session 4: Organization and Structuring

In their experience report *Experiences with a Requirements Object Model*, Joy Beatty and James Hulgán argue that inconsistencies in terminology (e.g., between different stakeholders in software development projects) make it difficult to align software product concepts properly with the business objectives. The proposed Requirements Object Model will help achieve a unified terminology. The method of working is to start out with the product concept and ask why (e.g., why are we building exactly this product?) until reaching an answer relating to money (e.g., expected increase in sales or reduction of costs because of the new software). The paper reports on several promising experiences with applying the method. A major issue raised in the discussion was whether "money" should always be the ultimate goal of the questioning chain.

In the short paper *Architecting and Coordinating Thousands of Requirements – An Industrial Case Study* by Krzysztof Wnuk, Björn Regnell, and Claes Schrewelius, the role of 'requirements architect' is discussed. This role is responsible for quality and coordination of large requirements repositories, a need emerging in projects with thousands of requirements. The study is based on interviews with seven persons with experience from such roles. It should be noted that *requirements architecture* as seen from this perspective is *not* a tool for making the transition from requirements to architectural design, but rather a tool for structuring the requirements repository itself to get better overview and ease the management. A point noted in the discussion was therefore that this is different from requirements clustering (with the purpose of proposing a design). Another point made was that requirements architecture might not only be concerned with structure, but also with organization and people issues.

#### Session 5: Experience

The first paper presented was an experience report on *BPMN-Based Specification of Task Descriptions: Approach and Lessons Learnt* by Jose Luis de la Vara and Juan Sánchez. The first author presented a BPMN extension with task descriptions for extracting functional requirements. Those include role, trigger events, business rules, and alternatives. The empirical test involved relatively inexperienced analysts who tried other methods, e.g. use cases, *i\** and business process diagrams enriched with goal trees. None of these methods produced adequate results. Among the main lessons learnt, we retain: (1) a detailed methodological guidance is essential to the use of the approach; (2) notation extension and graphical representation can facilitate the understanding of business process diagrams; (3) there is a semantic gap between BPMN and functional requirements; (4) alternatives of task modeling in BPMN do not affect task description; (5) the content of the textual templates is variable. The discussant appreciated the extension of state of the art with empirical data, although it is limited to one experiment only. He also noted that it would be really interesting to analyze the alignment in the context of the co-evolution of business and system. The participants sought clarifications about the difference between use cases and task descriptions, how analysts proceed from the task descriptions, and the problem of not seeing the intent of the work when dealing with business process diagrams, therefore leading to non-optimal solutions. Jose Luis explained that their task descriptions are different from traditional use cases in the interaction section, where they use essential use cases; that task descriptions give the functional requirements directly; and that they use goal trees and as-is/to-be analysis to enhance the BPMN diagrams.

The second presentation was a problem statement paper: *Clarifying Non-Functional Requirements to Improve User Acceptance – Experience at Siemens* by Christoph Marhold, Clotilde Rohleder, Camille Salinesi and Joerg Doerr. The paper was presented by Camille Salinesi. The authors analyze early user feedback on Siemens' Product Lifecycle Management (PLM) software related to the definition of Non-Functional Requirements (NFR). NFRs that are ambiguous, inconsistent, incomplete, unusable, under-specified, or under-sized may result in rejection of the deployed system by users. Camille proposed an ISO 9126-based framework for understanding the impact of NFRs on user acceptance. Finally, he presented a planned experiment to determine the correlation between the clarity of NFRs and user acceptance. The three hypotheses to be tested are (1) The quality of NFR specification influences user acceptance, (2) User acceptance increases when users are involved in the NFR prioritization, and (3) Improving user acceptance is not a continuous function of satisficing NFRs. The subsequent discussion focused on how user acceptance was measured and how emotions were taken into account in an ISO 9126 framework.

#### Plenary Discussion

In the joint plenary discussion of sessions 2-5, facilitated by Guttorm Sindre and Gil Regev, Guttorm Sindre saw some commonality of the four papers in sessions 2 and 4 in addressing change and structure rather than development from scratch, and asked whether RE research and teaching have over-focused on custom devel-

opment from scratch and similarly under-focused on RE in the context of maintenance, evolution, legacy systems integration, and COTS. Many agreed to this statement; however, a point was also made in the discussion that there is always a legacy system present (although in some cases it is only manual), hence even development from scratch must consider the legacy. Another point made was that a too extensive study of the as-is situation might hamper innovation in some cases. A major challenge for RE research is that the majority of research solutions do not scale, due to the increasing level of complexity, both in terms of legacy systems, products, and projects with subcontractors.

Gil Regev pointed out that sessions 3 and 5 exposed the opportunities and difficulties in studying complex problems, with the issues of ambiguity vs. inconsistency, and the determination of the kind of problems that can be solved through automation. Camille Salinesi noted that there are new situations that RE methods do not deal with yet, such as ERPs, PLMs and the question is how to deal with the moment where the system will be deployed and customized. It seems that the problem is to match requirements with existing features. The evolution of requirements also is a complex problem, especially flexibility and variability in time. We don't have many solutions for the adaptation to requirements that are yet unknown.

### Session 6: Elicitation

This session featured two research papers. In *Scenarios in the Wild: Experiences with a Contextual Requirements Discovery Method* by Norbert Seyff, Florian Graf, Neil Maiden, and Paul Grünbacher, the first author presented a method combining contextual inquiry and scenario-based techniques for on-site requirements discovery. The method is especially meant to deal with situations where the user is mobile, and is validated through a case study discovering requirements for an application for ski tour navigation. The study indicated that the method discovered requirements not found by more traditional techniques, thus showing promising results for the method, as was also agreed in the following discussion. A critical point noted by the discussant, though, was that the gathering of necessary domain knowledge before the practical run of the requirements gathering exercise seemed to be a bit lacking (e.g., not thinking about battery limitations, difficulties of using the tool while walking on show shoes, etc.). With better preparation, the outcome of the study could possibly have been even more convincing.

In *Inventing Requirements with Creativity Support Tools* by Inger K. Karlsen, Neil Maiden, and Andruud Kerne, the first author presented an integration of two tools, one for software engineering and one for stimulating analysts to think creatively. The ART-SCENE tool supports a scenario-oriented approach for eliciting and specifying requirements. This paper describes the integration of ART-SCENE with another tool, combinFormation, to stimulate creativity. The effectiveness of the integrated tool was evaluated by a preliminary study. While the integration as such worked fine and the data indicated that it prompted the generation of some requirements that would otherwise not have been found, the study did not provide conclusive evidence whether the integration might be more effective than using ART-SCENE alone.

### Session 7: Research Methods

In *A Quantitative Assessment of Requirements Engineering Publications – 1963-2008* by Alan Davis and Ann Hickey, Alan Davis presented an extension of an earlier analysis of long-term trends in RE publications with two more years, in which the number of publications increased by 30% from 4000 to 5200. In addition to trends found earlier (e.g., that the European Union leads in terms of number of published papers, and that the UK surpasses most countries in annual production), some new trends have emerged, too. The two most important ones are that the number of authors per paper is increasing, and that fewer non-RE conferences and journals publish RE papers. Also, the number of first-time authors of RE paper continues to decrease rapidly. This could indicate a trend towards insularity in the RE field. The data do not give an explanation of these trends.

In *Assurance Case Driven Case Study Design for Requirements Engineering Research*, a short paper by Robin Gandhi and Seok-Won Lee, the first author argued for using a reasoning pattern used in legal reasoning, called an assurance case, to link case study propositions to possible case study evidence in advance of conducting the case. An assurance case includes a top level goal or claim, and an argument in the form of a continuous refinement of the claim until sub-claims can be specified in operational terms relating to evidence that can be obtained. The paper argues that this improves case study design. It refers to an application of this scheme to case study research done by the authors.

### Plenary Discussion

In the joint plenary discussion of the two sessions on Elicitation and Research Methods, discussion facilitator Nazim Madhavji started by pointing out the difference between 'knowledge-seeking' and 'solution-seeking' research, and stated that although the four papers in question were quite diverse, they also had something in common, namely that all either contained or related to empirical studies. While the two papers in the Elicitation session were found to be both solution- and knowledge-seeking, Davis and Hickey's paper was solely knowledge-seeking, and Gandhi and Lee's paper solely solution-seeking (but with a solution meant to support empirical studies). In the discussion that followed, there was general consensus about the distinction between these two types of research (although some might want to use other terms, like empirical research vs. design science / engineering research), and also agreement with Madhavji's statement that every researcher needs to have a research model in mind and map their research processes and outcomes to this model. Compared to some other research fields, RE was still felt to have some way to go to improve the focus on, and understanding of, empirical research methods, and the proper integration of these into solution-seeking research.

### Session 8: Behavior Modeling

In *Translation of Textual Specifications to Automata by Means of Discourse Context Modeling* by Leonid Kof, the author presented a discourse analysis method (based on a rather simple tagging scheme) by which a natural language specification of desired system behavior can be transformed into an automaton that formally

describes the behavior informally described in the text. In order to evaluate his approach, the author performed this transformation for a part of the well-known steam boiler controller specification both manually and automatically, and compared the results. In both cases, missing information had to be supplied and in both cases, ambiguities had to be resolved. This missing information can be supplied using discourse analysis methods.

In the short paper *A Requirements Reference Model for Model-based Requirements Engineering in the Automotive Domain* by Birgit Penzenstadler, Ernst Sikora, and Klaus Pohl, the first author reported on an analysis of requirements specifications in the automotive domain. Specifying requirements turns out to be difficult in practice and the paper provides guidelines by classifying the requirements along two dimensions: abstraction layer and content category. The abstraction layers in the automotive domain are the system, its functional groups and its hardware/software components. The content domains are context, requirements and design, at the interfaces of which there are goals (between context and requirements) and functions (between requirements and design). A few additional sub-domains are identified, too.

In the discussion, discussion facilitator Roel Wieringa asked for each paper what exactly its claims are, why these would be interesting, and what the impact of this is. This last “So What”-question was further specified into: (i) What do we know now? (ii) What can we now? (iii) Whose goals does this serve? In the case of Kof’s paper the discussion revolved about what we can do with this result; one possible answer is to use translation into an automaton to make the original natural language requirements specification less ambiguous. In the case of the paper by Penzenstadler *et al.* the discussion revolved about what the claim exactly is. The division into context, requirements and design resembles the general structure of requirements specifications defined by Zave and Jackson, and so might be more generally applicable than to the automotive domain.

### Session 9: Empirical Studies

The first paper, by Richard Berntsson Svensson, Tony Gorschek and Bjorn Regnell was titled *Quality Requirements in Practice: An Interview Study in Requirements Engineering for Embedded Systems*. This paper investigates how Quality Requirements (QR) are handled in industry by studying the problem from both product and project perspectives. The study uses semi-structured interviews with data collected from 5 software companies. 10 subjects were interviewed – one product and one project manager from each company. The findings show that:

- Usability and performance requirements were perceived as the most important QR;
- The majority of companies did not take a proactive approach when searching for interdependencies among QRs;
- There were no specific processes applied for elicitation, analysis and documentation of QRs;
- The most important challenges were seen as (i) How to get QR into the projects with prioritized functional requirements, (ii) How to determine when the QRs are satisfactory, and (iii) How to achieve testable QRs.

The second paper, by Zude Li, Quazi Rahman, Remo Ferrari and

Nazim Madhavji, was a research preview titled *Does Requirements Clustering Lead to Modular Design?* The research aims to empirically validate a technique that was developed for clustering software requirements. The authors used students’ assignments (who have previously taken an OO design course) to empirically test their technique. Students formed in 9 groups of 4-6 students each. After the project was completed, the authors analyzed their system design using an evolutionary coupling index and requirements clusters which were derived using their specific approach. To investigate how their approach achieved better design modularity, they compared the design achievable by their clustered requirements to the design modularity achieved by an expert design from the same set of classes. The results showed that the clustering approach produced better modular design.

Aybüke Aurum, the discussion facilitator, posted the following two topics for discussion: alignment and research methods in RE. Value is created when a company makes a profit. It is vital for a software company to maximize value creation for a given investment. For this reason, it is essential to understand the relationships between the technical decisions, including decisions on software requirements and the business strategy that drives value. She pointed out that, according to some critics of IT alignment, alignment between software development and business may not always be desirable, especially if the business strategy is unknown or business strategy is subject to continuous change [2]. Hence the important question is: do we really need alignment? If yes, to what extent do we need to consider alignment in RE? The participants discussed the consequence of misalignment on cost and value, as well as possible desirable points of alignment, e.g. innovative alignment, alignment between the company’s software development approach and business management. In recent years, RE researchers have made extensive use of small case studies and qualitative approaches in their empirical work. This led Aybüke to ask the following questions: What type of research methods are used in RE empirical work? Which methods are best for which situations? Is there a roadmap for research students? The discussion topics were (i) Small case studies versus a big case studies; (ii) Usage of student subjects versus practitioners; and (iii) Usage of qualitative, quantitative and mixed approaches (triangulation) as a research methodology.

### Session 10: Open-Source RE

The final session contained one single paper, authored by Paula Laurent and Jane Cleland-Huang. In her presentation, Paula described a study that explores and evaluates forum-based requirements gathering and prioritization processes adopted by vendor-based projects. The effectiveness of various requirements gathering and prioritization practices adopted by vendor-based open source projects are evaluated, through observing how feature requests are managed in the forums, and also through a survey of vendor-based forum users and project managers. The main strength of the forum approach was its inclusive nature, which enabled large numbers of stakeholders from geographically distributed regions operating in different time-zones to engage in the feature gathering process. The study also identified several typical requirements elicitation practices that are difficult to perform in a forum. The main challenges are (i) ineffective processes and tools for bringing the right groups of users together to discuss related

needs, (ii) problems in capturing users' priorities, (iii) problems in establishing two-way conversations in which administrators communicate process and decisions, and seek clarification or otherwise engage users in the requirements process, (iv) problems in managing the feature requests in the forum, and finally (v) problems in differentiating between the roles of anonymous users. The authors of the paper claim that the results highlight practices that could lead to more effective requirements processes in web-based requirements gathering and prioritization tools.

### Closing Discussion

In the closing discussion, discussion facilitator Anne Persson presented some reflections on the 2009 edition of the conference. Firstly, she said that the theme of value and risk had been timely since it had inspired so many of the participants to contribute to a lively discussion. The conference participants agreed and pointed to the fact that RE in general lacks concrete methods and tools to describe and assess value and risk. On a philosophical note, Daniel Berry brought up the question if we get more careful with increasing age. Also, the participants identified the need to understand which factors influence risk taking. One factor that was mentioned was changes in economy.

Then, Anne Persson compared the 2009 conference to previous conferences and concluded that RE research seems to be shifting its focus from detail to more general RE issues such as:

- Where are the boundaries of RE?
- How do we deal with complexity?
- How do we take legacy into account?
- How do we generalize our techniques?
- How does x relate to y?
- People issues.

A completely new theme was RE for Open Source development projects. Here we need to understand the similarities and differences with other types of projects.

In the general discussion someone expressed that we should not pay too much attention to the boundaries for RE. One participant noted that quite a bit of the work presented this year was not along the traditional lines of RE, which is good. The field is opening up. Gil Regev expressed that it is good that RE opens up to more people issues. It's about relating a system to a context. One particular context that was mentioned was the agile context which, according to Nazim Madhavji, is not fully understood by RE research. He said that we should not study it from the perspective of what we think is elicitation, analysis etc.

The organizers asked the participants to suggest topics that they would like to see discussed at future conferences. The following were mentioned:

- How domain specific does RE methods need to be?
- We should not be afraid of inconsistencies. How can we deal with inconsistencies?
- Agile and open source RE
- More value and risk of RE
- Research methods
- Business and IS alignment from an RE perspective
- Requirements for services
- Requirements evolution
- Requirements for adaptive systems, uncertainty management
- Ghost requirements, hidden requirements
- Replicated studies
- How to eliminate a requirement, how to clean up a set of requirements
- The way requirements are developed in industry without considering our methods
- Regulatory requirements, certification, and accreditation.

On a more general note, Camille Salinesi suggested that the conference perhaps should elicit papers that reflect on things that did *not* work, because we tend to learn more from failure stories than success stories.

Martin Glinz closed the conference by thanking the participants and his fellow organizers and inviting everyone to submit papers to next year's REFSQ conference.

### Conclusions

Generally, REFSQ'09 was perceived as a successful event that achieved its goal of spreading and discussing both new ideas and experience in Requirements Engineering with special emphasis on software quality.

### References

- [1] M. Glinz and P. Heymans (eds.). *Requirements Engineering: Foundation for Software Quality*. 15th International Working Conference, REFSQ 2009, Amsterdam, The Netherlands, June 8-9, 2009, Proceedings. Lecture Notes in Computer Science 5512, Springer, Berlin Heidelberg, 2009.
- [2] Y. E. Chan and B. H. Reich. IT Alignment: What Have We Learned? *Journal of Information Technology*, 22(4): 297-315, December 2007.