Editorial for the REFSQ'23 special issue

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EDITORIAL

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1 Introduction

The International Working Conference on Requirement Engineering: Foundation for Software Quality (REFSQ) is an established international forum. Its goal is to foster the establishment and maintenance of a strong Requirements Engineering (RE) community across industry and academia through contributions that report on novel ideas and techniques to enhance the quality of RE's products and processes.

According to the tradition of this forum, REFSQ 2023 reported novel ideas and techniques that enhance the quality of RE products and processes, reflections on current research and industrial RE practices, and new perspectives on RE. The special theme of REFSQ 2023 was "Human Values in Requirements Engineering".

RE is at the boundary of humans and technology, and values play a crucial role in the interplay between developers, users and systems. When developing technology, we get to be cognizant of how our values inform our designs, because we unconsciously embed them into our systems. In addition, we need to carefully consider possible conflicts between human values and business value. The theme of this year thus aimed to foster discussion around the following questions:

- How do we take care of human values in RE?
- How do we ensure that the systems we design incorporate the values we want them to stand for?
- How do we validate and measure values?
- How do we make sure that systems serve the human as opposed to having the human adapt to them?
- How much do developer habits and characteristics influence their designs?
- What is the interplay between developer and stakeholders' values?
- What is the interplay between human values and business value?

The program included three keynote addresses:

1. *Barbara Paech* (University of Heidelberg) on *Explicit and Implicit Values in and of Requirements Engineering practice and research*. Which human values are important for us as requirements engineers and requirements engineering researchers? Do we know about our values? Which customers do we have and what are their values? How do all these values influence each other? In this talk Barbara reflected on these questions and gave examples based on roughly 30 years of experience. Furthermore, she provided her view on how human values can shape future requirements engineering practice and research.
2. *Alessia Knauss and Hakan Sivencrona* (both ZenseAct) on *Software and System Safety Aspects and Requirements for Autonomous Vehicles*. To deliver a highly autonomous vehicle, usually called automated driving system (ADS), there are different dimensions of requirements that need to be met to guarantee safety and acceptability. This concerns basically everything from legal aspects, standards, and customer expectations. As with many fields of application, new paradigms exist to develop and maintain software products. Just to mention a few: (1) Using AI in software development, e.g., for

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the perception of the environment, (2) Continuous Integration and Continuous Deployment (CI/CD) as an enabler for an efficient ODD expansion, i.e. frequently your car becomes better and can handle ever more demanding situations, and (3) the agile way of working, allowing for a more flexible approach with the opportunity for updates as increasing amounts of data is available from the fleet. These new paradigms are also bearing some challenges, for example, an extensive architecture that we need to deal with, as well as compliance with standards that are not always in line with the agile way of working, but also new standards that focus on AI. How should we be able to argue that all components and their integration is safe, or rather, that we have a predictive safety case? Alessia and Hakan presented their insights in this regard, based on their industrial experience.

3. *Klaas Jan Stol* (University College Cork) on *The ABC of Requirements Engineering Research*. The choice of research strategy for studies is an important decision, and while there has been considerable attention for different research methods, there has been little reflection on those decisions. In this talk, Klaas Jan reflected on research strategies in requirements engineering and highlighted the importance of trade-offs.

The research track of REFSQ 2023 included 25 accepted papers in five different categories: technical design, scientific evaluation, experience report, research preview, and vision papers, selected through a careful review process by a program committee composed of experienced members of the research community. Six papers with the most positive reviews and with high potential for extension were invited to submit extended versions to this Special Issue. Five of those papers completed the process successfully.

These papers, included in this special issue, include at least 30% additional material with respect to the original paper presented at REFSQ 2023.

2 In this special issue

The contributions in this special issue are:

- Elisabeth Henkel, Nico Hauff, Vincent Langenfeld, Lukas Eber, Andreas Podelski: "An Empirical Study of the Intuitive Understanding of a Formal Pattern Language"
- Khan Mohammad Habibullah, Hans-Martin Heyn, Gregory Gay, Jennifer Horkoff, Eric Knauss, Markus Borg, Alessia Knauss, Håkan Sivencrona and Polly Jing Li: "Non-functional requirements for machine learning: understanding current use and challenges among practitioners"
- Lukas Nagel and Kurt Schneider: "Turning Asynchronicity into an Opportunity: Asynchronous Communication for Shared Understanding with Vision Videos"
- Dipeeka Luitel, Shabnam Hassani, Mehrdad Sabetzadeh: "Improving Requirements Completeness: Automated Assistance through Large Language Models"
- Hans-Martin Heyn, Eric Knauss, Iswarya Malleswaran, Shruthi Dinakaran: "An empirical investigation of challenges of specifying training data and runtime monitors for critical software with machine learning and their relation to architectural decisions"

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