



Requirements Engineering Research: News From the Trenches

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THIS ISSUE'S "PRACTITIONERS' Digest" department reports on papers from the 2019 International Conference on Requirements Engineering. Feedback and suggestions are welcome. In addition, if you try or adopt any of the practices included in this article, please send me and the authors of the paper(s) a note about your experiences.

Design Thinking for Requirements Elicitation

"Design Thinking in a Nutshell for Eliciting Requirements of a Business Process: A Case Study of a Design-Thinking Workshop" by Levy and Huli¹ describes a design-thinking workshop for facilitating requirements elicitation for business processes. The paper describes simple guidelines to facilitate such workshops:

- identify the problem
- exercise empathy (persona and empathy-map development)
- define (map out the context)
- ideate (discuss solution options following divergent–convergent steps)

- prototype and test (low fidelity, time-boxed).

When these workshops are conducted in a business context, with appropriate time constraints, participants can identify perceptions and uncover business-process problems at a higher level, such as across group or division boundaries. The addition of emotional language to the analytical analysis of the business process creates an opportunity to change the culture among the practitioners involved in the process. The use of design thinking for business-process analysis is a new way of applying these concepts, and it indicates a promising new perspective that could become a useful best practice in IT organizations. The main limitations of the process are convincing people to devote the effort required and creating a proper environment (i.e., noncritical) in which creative ideas can surface. Finally, it is important for an organization to follow up and ensure that workshop outcomes are actually implemented.

To test this approach, the authors conducted an exploratory case study in a large IT development organization. The results showed that

applying design-thinking tools increased discussion among stakeholders. The inclusion of input from more stakeholders can lead to identification of new requirements. The authors also implemented the new approach in a health provider organization, to enhance the innovation processes, and a cable television organization, to understand how to motivate end users to use a self-guided problem-solving service. In both cases, the new approach enabled fruitful discussions.

Although they were skeptical at the beginning, participants reported that the Design Thinking Workshop was useful, creative, and engaging, leading to new ideas. The expected benefit for companies that use this approach is an easy, well-defined process that includes people across organizational boundaries and can identify innovative and creative solutions to business challenges, including technological and emotional aspects. This paper can be accessed at <http://bit.ly/PD-2020-March-01>.

Gender Differences

"Analyzing Gender Differences in Building Social Goal Models: A

Digital Object Identifier 10.1109/MS.2019.2959364
Date of current version: 12 February 2020

Quasi-experiment” by Gralha et al.² explores how problem-solving facets related to gender inclusiveness impact the creation and modification of social-goal models. The specific aspects examined are

- motivation for using the software
- information-processing style
- computer self-efficacy
- attitudes toward risk
- ways of learning new technology.

These facets tend to affect women and men differently. The results of a study in which 100 participants (including both university students and practitioners) either created or modified an iStar 2.0 model (a particular requirements modeling language) showed that participants with a comprehensive information-processing style and a more conservative attitude toward risk (characteristics more frequently seen in women) completed the tasks more slowly but more accurately. In addition, the results showed differences between men and women in visual effort, mental effort, and stress.

These results provide important insights to companies that are creating or modifying teams of people involved in requirements elicitation. It is particularly important for the organizers of those teams to consider including individuals with diverse personal characteristics. The results from people with different characteristics were complementary, suggesting that organizations can gain much by leveraging diversity in how people solve problems. In particular, when a team includes individuals who have different ways of processing information, computer self-efficacy, and attitudes

toward risk, it can benefit from higher-quality artifacts. This paper can be accessed at <http://bit.ly/PD-2020-March-02>.

User Feedback in Continuous Software Engineering

“How Do Practitioners Capture and Utilize User Feedback During Continuous Software Engineering?” by Johanssen et al.³ reports the results of interviews with 20 practitioners from 17 companies that use continuous software engineering. These results provide insights into the role of user feedback on software products. The companies make use of explicit and implicit user feedback related to both the overall application and its individual features. Users provide feedback in various ways, such as during events, periodically, and continuously. The companies capture feedback both manually and via tool support. They typically use the feedback to plan and make project decisions as well as for project improvements.

One of the weaknesses identified in the study was that companies do not yet make use of the feedback over time. Teams would benefit from continuous feedback if there were appropriate tool support that included traceability to product features. In addition, making the feedback more interactive and increasing communication may help. To address the identified weaknesses, the authors developed a framework called *continuous user understanding in software evolution (CuuSE)*, which will allow practitioners to gain a better understanding of their users' needs. This information should help them improve existing requirements and explore new requirements. The authors are working to introduce additional tools and practices into the CuuSE framework. Current

versions of the tools are available at <https://github.com/cures-hub>, and the paper can be accessed at <http://bit.ly/PD-2020-March-03>.

Learning How to Elicit Requirements

“Learning Requirements-Elicitation Interviews With Role-Playing, Self-Assessment, and Peer Review” by Ferrari et al.⁴ explores how to teach requirements-elicitation techniques to novice requirements engineers. Rather than lecturing about communication skills, the most effective approach is to put novices in real situations, let them practice role-playing, and then self-assess and provide peer review. To facilitate this process, the authors developed the SaPeer training approach. The steps in this approach, which can all be performed online, are

- preliminary training
- first interview
- mistake-based training
- self-assessment
- peer review
- second interview
- self-reflection.

The evaluation of this approach with students, a proxy for novice requirements engineers, showed a significant reduction in the number of mistakes made during the elicitation process compared with a more standard approach. The participants found the approach useful and easy to understand.

While experienced practitioners might not make the same types of mistakes as study participants, the self-assessment questionnaire could still help them improve their performance. Although the approach has not yet been validated in industry, if one considers students as a proxy for new hires, this approach could be useful for training and improving their


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initial performance. In fact, the industrial advisory board for the academic institution of the researchers had a very positive reaction to the work and thought that SaPeer could help students improve their interviewing abilities and build soft skills. The complete training is freely available online at <https://zenodo.org/record/2625706#.XZJqDpNKh24>, and the paper can be accessed at <http://bit.ly/PD-2020-March-04>. 

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Digital Object Identifier 10.1109/MS.2020.2967195

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