Is RE Research Relevant for Practitioners? First Results from the RE-pract Study

Andreas Vogelsang*, Daniel Méndez†, Xavier Franch‡
* Technische Universität Berlin, Germany
andreas.vogelsang@tu-berlin.de
† Technische Universität München, Germany
daniel.mendez@tum.de
‡ Universitat Politècnica de Catalunya (UPC), Spain
franch@essi.upc.edu

I. Introduction

The relevance of Requirements Engineering (RE) research to practitioners is a prerequisite for problem-driven research in the area and key for a long-term dissemination of research results to everyday practice. To better understand how industry practitioners perceive the practical relevance of RE research, we have initiated the RE-Pract project [1], an international collaboration between 10 researchers conducting an empirical study with the goal to assess the perceived relevance of RE research in industry. Based on a survey, practitioners rated the practical relevance of 435 RE research papers published between 2010 and 2016 at the major RE research conferences. We received 154 answers from all over the world with an overall of 2,164 ratings for single research papers. In this paper, we summarize our initial results.

II. Study Design

The main audience of our research outcomes is the overall RE research community. Our hope is that the results support ongoing reflections on the practical relevance chosen research topics might have (without any prejudice to the individual judgment of the researcher herself and without judgment about papers where the practical relevance is not and should be not the primary quality attribute). In the following, we briefly introduce the overall study design:

Paper selection and summarization. The basis for our study is a pool of 435 papers published between 2010 and 2016 at the RE, ICSE, ESEC/FSE, ESEM, and REFSQ conferences, which are the major conferences where RE research is presented. We included all full papers from the research and industry tracks, even if, for some conferences, industry track papers are required to be shorter compared to research track papers. We excluded short, vision, or ongoing research papers regardless of research or industry track. For each paper, we created a short, one sentence summary of the paper's content. We created these summaries in pairs of researchers. After the summary creation, another pair of researchers then validated the overall outcome. Each summary included the main contribution of the paper and the contribution type, such as "solution proposal" or "evaluation". For instance, for a paper proposing and evaluating a specific requirements elicitation technique, we formulated the summary in the form "An evaluated requirements elicitation technique that [details of the technique]." Finally, for each paper, we documented (in addition to the authors' names and abstracts), the venue, the year, whether the authors had any ties to industry based on their affiliation, and whether it was an industry track submission or not. In addition, we labeled each paper based on its content by means of a content labeling system that we developed. In that labeling system, we assigned tags to each paper to characterize it in terms of its addressed *challenge*, the style of *documentation* referenced in the paper, the primary *matter of subject*, and the affected RE *phase*.

Feedback elicitation via survey. We used an online survey to elicit feedback in three categories: (1) Demographics: Basic information about the participants. (2) Ratings of research ideas: We presented a subset of 15 randomly selected paper summaries to each participant (in a random order). For each summary, the respondent was asked to rate the research idea based upon the question "In your opinion, how important are the following pieces of research?" Participants could label a research idea as "Essential", "Worthwhile", "Unimportant", "Unwise", or "I don't understand". (3) Qualitative Feedback: We additionally asked for two types of qualitative feedback. First, to understand the rationale behind the ratings, we randomly selected two of the summaries the participant rated and asked them to "provide a brief explanation for why you found it either relevant or not to your work." Second, we gave the participants an opportunity to provide guidance to the research community about topics of interest. We asked them "Suppose that you could provide guidance to a team of RE researchers, what problems should they focus on first?".

III. First Results

In the current stage, we have a set of preliminary results that we will present in the following:

Practitioner's Overall Perception of RE Research: Figure 1 shows the overall perception ratings for all paper summaries. In most cases, practitioners consider RE research as worthwhile or even essential, however, also in 25% of the cases, respondents have rated pieces of research as unimportant, and in almost 5% even as unwise.

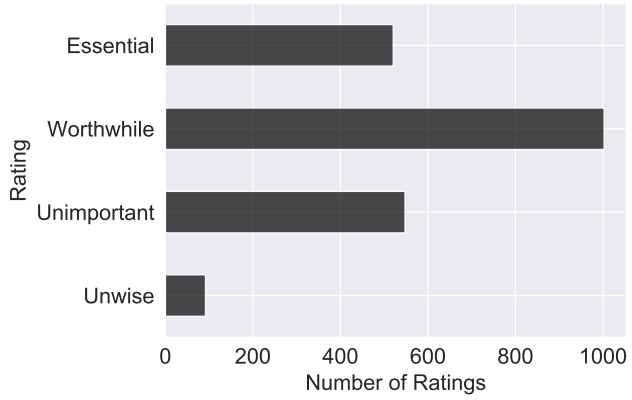

Fig. 1. Overall practitioner's perception of RE research.

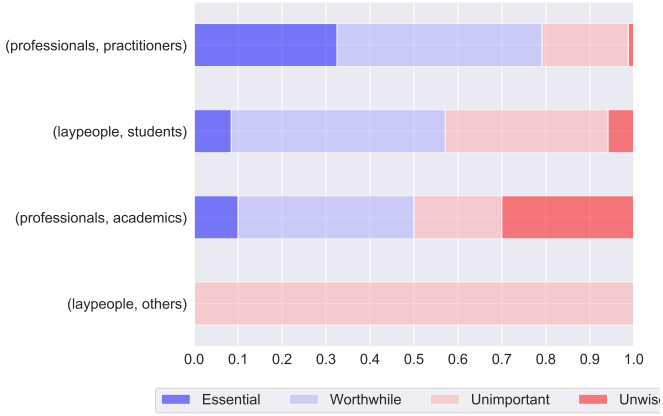

Fig. 3. Perception of different styles of evaluation.

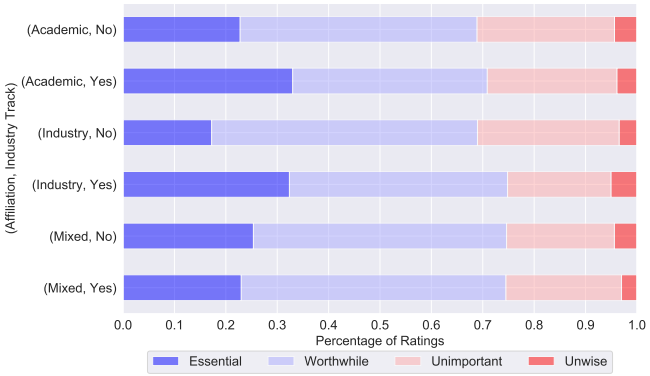

Fig. 2. Perception of academic- and industry-driven research.

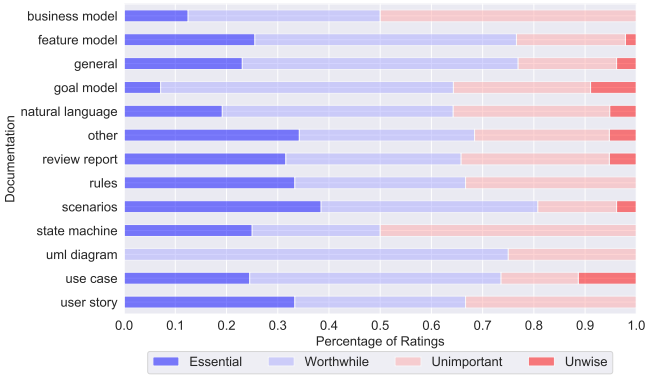

Fig. 4. Perception of addressed documentation styles.

Research Driven by Academics vs. Practitioners: Figure 2 shows the perception ratings for research that has been published by pure academic, pure industrial, and mixed teams in a research track or in an industry track. The results suggest that research in an industry track is more often considered as essential by practitioners regardless whether it is conducted by academics or practitioners. Mixed teams, however, show a divergent trend.

The Value of Professional Evaluations: Figure 3 shows the perception ratings for research that has been evaluated with professionals or with laypersons in industry or in academia. The results clearly indicate the importance of industrial evaluations for the perceived relevance of the research. Research that has been evaluated with academics as subjects has been perceived as unwise in many cases.

Relevant Content: Figure 4 shows the perception ratings for research based on the addressed documentation style. The results indicate that documentation of scenarios is perceived especially relevant, whereas research is not perceived as relevant when, for example, goal models or UML diagrams are considered as documentation style. We have analyzed a few other content dimensions such as addressed challenge, subject matter, and development phase, which we cannot show here for reasons of space.

IV. Conclusions

In this paper, we have shown first results from a survey-based international study to assess the relevance of RE research from the point of view of practitioners. The results suggest that the majority of research is considered as essential or worthwhile. However, we also found interesting factors in terms of collaboration models and content that correlate with perceived relevance. These results may shape future research and help RE researchers to better align their research with industry needs.

References

[1] X. Franch, D. Mendez, M. Oriol, A. Vogelsang, R. Heldal, E. Knauss, G. H. Travassos, J. C. Carver, O. Dieste, and T. Zimmermann, "How do practitioners perceive the relevance of requirements engineering research? an ongoing study," in *25th IEEE International Requirements Engineering Conference (RE)*, 2017.