

## Views on Quality Requirements in Academia and Practice: Commonalities, Differences, and Context-Dependent Grey Areas

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**Abstract:** This article originally appeared in Information and Software Technology (IST) [Vo20]. **Context:** Quality requirements (QRs) are a topic of constant discussions both in industry and academia. While many academic endeavors contribute to the body of knowledge about QRs, practitioners may have different views. **Objective:** We report on a study to better understand the extent to which available research statements on QRs from academic publications, are reflected in the perception of practitioners. Our goal is to analyze differences, commonalities, and context-dependent grey areas in the views of academics and practitioners. **Method:** We conducted a survey with 109 practitioners to assess their agreement with the selected research statements about QRs. Based on a statistical model, we evaluate the impact of a set of context factors to the perception of research statements. **Results:** Our results show that a majority of the statements is well respected by practitioners; however, not all of them. When examining the different groups of respondents, we noticed deviations of perceptions that lead to new research questions. **Conclusions:** Our results help identifying context-dependent differences about how academics and practitioners view QRs and statements where further research is useful.

**Keywords:** quality requirements; non-functional requirements; context factors; requirements engineering; survey; empirical study

We want to better understand the extent to which available research statements on quality requirements [GI07] are consistent with the perceptions held by practitioners. In particular, we aim at understanding the extent to which the views and perceptions held by practitioners are corroborated by those of academics. More precisely, we want to understand how well research statements frequently referred to in academic works are perceived by practitioners in their respective context. Questions we opt for answering are: (1) What is the agreement of practitioners with existing research statements about QRs? (2) Which context factors (e.g., industrial sector, company size, experience) influence the agreement of practitioners with research statements about QRs? (3) Can we assign a specific perception of QRs to stereotypical groups of practitioners?

Our hope is that an increased understanding of the practitioners' beliefs and views helps us identifying differences, commonalities, and context-dependent grey areas and pinpoint to existing (and regularly cited) statements where further context-dependent research would

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be useful. The paper makes the following contributions: (1) We define a set of 21 research statements about quality requirements from a total of 17 exemplary and commonly cited research papers from the RE research community. (2) We survey practitioners from several application domains and business contexts regarding their agreement with the previously identified statements about quality requirements. The survey results suggest that practitioners hold strong, and diverse opinions, and that some results inspire more passion and dissension than others. (3) We provide a statistical model that allows evaluating the impact of specific context factors on the perception of research statements. The results of the evaluation show that the perception of some research statements is homogeneous across different development contexts while the perception of others strongly depends on the context. (4) We provide a detailed discussion of the results and contrast them with the original studies from which the statements emerged.

Our intention is not to criticize selected academic manuscripts but to increase our understanding on (1) how much practitioners' views differ with respect to their daily working context, and (2) what we, the research community, can learn from it. Our vision is to contribute to reducing the gap between industrial practice and problems, and academic contributions and solution proposals.

In the past, we have conducted a number of studies in which we investigated the perception [EVM16b] and use [EVM16a, EMV15] of quality requirements by practitioners. The research questions, results, and the underlying data presented in this article are original in the sense that they have not been addressed in a previous analysis and consequently in a publication. The only commonality between the study at hand and one of our previous publications [EVM16b] is that the data underlying these studies have been collected using the same questionnaire (but different parts of it).

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