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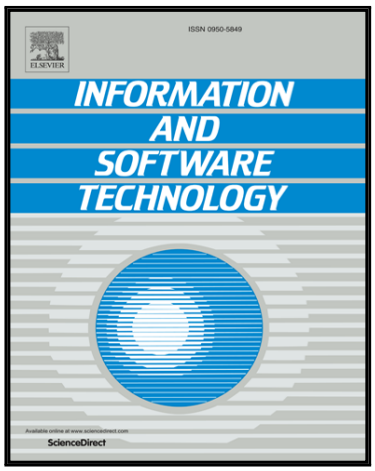

Contextual Attributes Impacting the Effectiveness of Requirements Elicitation Techniques: Mapping Theoretical and Empirical Research

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Contextual Attributes Impacting the Effectiveness of Requirements Elicitation Techniques: Mapping Theoretical and Empirical Research

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Abstract— *Background: Software engineers can utilise a myriad of elicitation techniques to capture relevant information in order to specify requirements. The effectiveness of these techniques varies depending on the context in which the elicitation takes place. So, it is important to identify the attributes that represent this context. Objective: This paper aims to match theoretical to empirical research on contextual attributes that influence elicitation technique effectiveness. Method: We conduct a systematic mapping study to identify proposed attributes (by theoretical works) and attributes studied empirically. Then we map empirical results with theoretical proposals. Results: 60% of theoretically proposed attributes have been studied empirically. There seems to be some degree of coordination between theory and empiricism. However, there is empirical confirmation of the impact of only a third of the theoretically proposed attributes. Conclusions: These results call for more empirical research in order to evaluate beliefs with respect to elicitation techniques*.

Keywords. Elicitation methods, Requirements elicitation, Contextual attributes, Systematic mapping study.

1 Introduction

Software requirements are often elicited by means of interviews [1], [2]. However, more elicitation techniques are likely to be necessary to gather the full range of requirements for most software systems. There are a variety of elicitation techniques that can be used. Some reviews account for tens of elicitation techniques [3], [4], [5]. Many of these techniques have been imported from fields like cognitive psychology, anthropology, sociology and linguistics [6].

Elicitation techniques are of different kinds [7], and they may therefore be more effective in some situations than in others. Each type of problem, development team or stakeholder group outlines a context that fits, to a greater or lesser degree, the conditions under which certain elicitation techniques get its highest performance. The contextual attributes describe such conditions. Contextual attributes characterise aspects of the environment in which the elicitation process takes place, such as characteristics of participants or problem. The values of the contextual attributes may or may not match the characteristics required by the elicitation techniques, determining whether or not they are suitable for use in a particular situation. For instance, if there is a set of stakeholders, group techniques fit better; People per Session is a contextual attribute. Such contextual attribute assesses whether exist groups or individuals and the matching between context conditions (number of stakeholders) and technique adequacy (appropriate for group conditions) allows to choose the most promising elicitation technique. If there are different points of view among stakeholders, techniques that facilitate convergence will be more appropriate; Consensus among informants is the attribute that describes whether in the

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