A Tacit-Knowledge-Based Requirements Elicitation Model Supporting COVID-19 Context

ABSTRACT

Effective software requirements elicitation plays a vital role in the success or failure of a project. However, ambiguity in the requirement's statements indicate the presence of a tacit knowledge, which ultimately act as a root cause of critical complications in later stages of software development as user's needs might remain hidden. Additionally, the existence of numerous stakeholders escalates the problem as their perceptions may contrast mainly due to their experiences and roles in a specific application domain. Hence, witlessness of relevant stakeholder(s) and ambiguous requirements cause the compromise for a product quality. Eventually, it paves the way towards the failure of a project. Furthermore, COVID-19 has affected all walks of life, more specifically requirements elicitation process as it heavily depends on human-to-human interaction. Motivated by this, current study aims at identifying the requirements elicitation techniques and challenges through a systematic literature review protocol. Furthermore, we have performed an exploratory study to identify the traditional elicitation techniques that can be used specifically for eliciting the tacit requirements. Additionally, we validate the top 15 critical challenges in a normal and pandemic scenario. To validate the result's authenticity and legitimacy, appropriate statistical tests have been applied on the obtained results. Based on the attained results, it is observed that transfer of tacit knowledge remains a most crucial challenge. To effectively handle the tacit knowledge challenge, we propose a novel conceptual model supporting COVID-19 context. Similarly, we employ expert-validation mechanism for empirically evaluation of the proposed conceptual model. Moreover, the current study provides the guidelines for the practitioners to mitigate the highlighted effects on the requirements elicitation process during current pandemic time. Finally, we believe that proposed conceptual model supports the practitioners in effectively gathering the tacit-knowledge based requirements in the COVID-19 context.