Software Development for Text Processing in Mapping Architecturally Significant Requirements Towards Quality Attributes

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Abstract— **Understanding Architecturally Significant Requirements (ASRs) and Quality Attributes (QAs) is crucial to improving software quality. A system's mismatch problem between ASRs and QAs can have serious consequences. System performance can be negatively affected, resulting in poor user experience and decreased operational efficiency. This research will focus on developing software to process text information derived from mapping ASRs against QAs in the documentation artifacts of an application called IdVar4CL, which is the object of the case study. The purpose of this research is to develop software that can map ASRs to QAs through text processing based on a Requirement Specification to contribute to the development of datasets, adopting the stages of the agile-Scrum model in conducting text extraction as well as in semantic similarity, and validity-reliability of the mapping results. This research has successfully identified 10 ASR documents and 11 QA documents. In addition, the results of adopting the stages of the agile model with the Scrum method are four sprint stages accompanied by Retrospective: Data preprocessing, Term Frequency Inverse Document Frequency (TF-IDF) Vectorization, Work embedding, and Semantic Similarity. Invalidity and reliability activities, this research has also managed to get 5 ASR documents with values below 0.8, namely D1(0.77), D2(0.775), D4(0.785), D5(0.79), and D7(0.765).**

Keywords— Architecturally Significant Requirements, Quality Attributes, Text Processing, Scrum, Semantic Similarity.