

## I. INTRODUCTION

Architecturally Significant Requirements (ASRs) are pivotal in defining the core elements of software architecture and shaping the system design process, encompassing structure, patterns, and critical components. Accurate identification of ASRs is imperative to avoid suboptimal software architecture, preventing potential project failure and ensuring adherence to expected quality standards [1]. Understanding ASRs and Quality Attributes (QAs) is essential to enhance software quality, as QAs encompass various factors determining software quality levels [2]. The misalignment between ASRs and QAs can significantly impact system performance, leading to negative user experiences and reduced operational efficiency [4][5]. Adopting the Agile Software Process Model, particularly employing Scrum in system design, offers an effective solution to address the ASR-QA mismatch. The Agile model facilitates iterative identification, implementation, and evaluation of ASRs and QAs through short iterations, enabling value-based prioritization and flexibility to adapt, thus mitigating non-conformance risks [6]. This research adopts an Agile approach, focusing on text processing to map ASRs to QAs in Requirement Specification documentation artifacts. This research aims to develop software for processing text information by mapping ASRs to QAs within the documentation artefact of an application named IdVar4CL, the focus of the case study. IdVar4CL is a method for identifying and forming causal loop diagrams (CLDs) in systems thinking. Documentation regarding the development of IdVar4CL is accessible through publications: <https://doi.org/10.5391/IJFIS.2022.22.4.373>. Therefore, the details of the research activities and the contributions are as follows:

- a. Develop a dataset derived from ASRs and QAs that will be processed in the research.
- b. Adopting the stages of the Agile Model, namely, the Scrum method in the software development process for processing text data contained in ASRs and QAs through extraction (using text pre-processing) and semantic similarity (using word2vec).
- c. Perform validity and reliability of mapping results between ASRs and QAs.

This paper is structured as follows: Related work, datasets, methodology, result and discussion, conclusion, and future works.