

Project Abstract: Comparison of Variability Analysis Outcomes – The SOVA Approach

As long as software products were relatively small and simple, each software product got its own variant of software. However, in recent years, systems become more complex and software-intensive. Therefore, adoption of a Software Product Line Engineering (SPLE) approach is essential, especially when the software products are similar. SPLE promotes developing and maintaining assets that can be systematically reused across similar software systems, termed Software Product Lines (SPL). SPLE has been proven to be cost effective in developing high quality products. A core activity in SPLE is variability analysis – identification and modeling of commonality and differences between product variants.

Variability analysis can be performed based on different artifacts, including code, architecture, design, and requirements. One such variability analysis approach is SOVA – Semantic and Ontological Variability Analysis. SOVA analyzes variability based on software requirements. The comparison uses semantic and ontological measures and a set of parameters enable tuning of the outcomes for different variability tasks and stakeholders' preferences. The aim of my project was to analyze the impact of SOVA parameters on the outcomes – feature diagrams capturing variability analysis.

The project consisted of two phases. First, I created two examples of SPLs based on real cases published on the Internet. I further categorized them into groups of similar requirements (in each SPL. Next, I ran SOVA on each SPLs with three sets of parameters (each of which represented a different variability profile) and analyzed the commonality and differences among SOVA's outcomes. The results showed that for some comparisons of requirements certain sets of parameters were better for capturing commonality, while for other comparisons in the same SPL different sets of parameters were better. This calls for extending SOVA to mine the appropriate perspectives (depicted by sets of parameters) to given variability tasks.