Challenges of development teams in a water-gile-fall organization

POPULÄRVETENSKAPLIG SAMMANFATTNING **Astrid Jansson**

Root causes and solutions are investigated in a multi-team software development setup losing efficiency and adaptivity. The codebase is becoming more complex and expensive to maintain, due to faulty implementation of Scrum and unclear code ownership.

In the study processes and performance are investigated in a multi-team setup developing a software product. The teams are using Scrum and operate in an environment affected by bureaucracy regarding certain procedures, many imposed by external factors.

There are concerns in the department about how efficiency and adaptivity in teams are decreasing even as IT processes are considered to work well and follow industry standards. Incoming requirements, and changes being difficult to include in the already ongoing sprints, are common. These requirements are imposed outside of department control, and therefore need addressing.

Teams becoming less productive and adaptive in the change process is the initiating problem explored by the following research questions.

- **RQ1:** What are the root causes for the teams becoming less productive and less adaptive regarding the use of the mono-repo?

- **RQ2:** What solutions could help to eliminate some of these root causes?

In the analysis, root causes are investigated answering RQ1. From analysis results, possible solution designs are explored answering RQ2.

In investigating RQ1, we identified 60 issues affecting the development. The issues are grouped into nine areas where the three most important ones are Agility and Scrum, Collaboration Between business and IT, and Code Ownership Creating Issues. Two main root causes are discovered: Scrum not being implemented suitably and unclear code ownership. The codebase is expensive to maintain and complex due to communicational and collaborative issues that stem from Scrum guidelines not being followed. The imperfect code ownership furthermore affects the overhead work of the employees, the solution scalability, and complexity. Leading to a difficult future (and present) maintenance and expansion.

In investigating RQ2, the solutions include enforcing clear code ownership, improving processes and the Scrum implementation, as well as enforcing and supporting team self-organization.

Based on the results, we recommend the organization to separate the code ownership through modularization and implement Scrum from the business value providers' perspective, allowing for long-term efficient and adaptive development implementation. The organizational focus striving to prioritize technical excellence, with the effort to not only follow the Scrum structure but also embrace the mindset and strategy principles.