

Towards Model-Driven Requirements Analysis for Context-Aware Well-Being Systems

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Introduction

■ General context

Context-aware applications use sensors to gather information about the user's context in order to select options (functions, quality) that improve the user's experience. Health-care and well-being are interesting application domains.

■ Project context

The well-being of knowledge workers is an important concern for several stakeholders.

The COMMIT SWELL project aims to improve both physical and mental well-being by developing a sensor-based context-aware system. The intended working of this system is two-fold: (i) the user is aided in improving his lifestyle to become more healthy, and (ii) the user is supported in his work, relieving him of routine or distracting tasks.

Problems, Objectives, Approach

■ Problem

Requirements engineering and architecture development for context-aware systems is largely unexplored territory. Applications are often developed bottom-up, without serious RE, and little attention for design reuse, risking a misalignment between features offered by the final product and the demands of users.

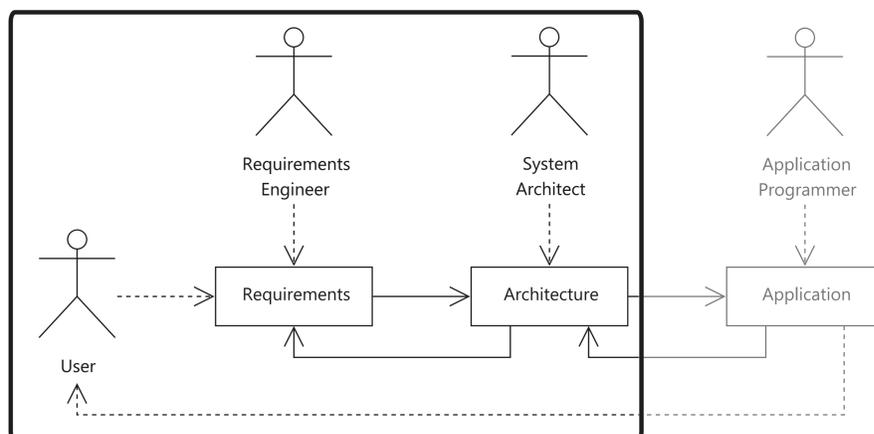
■ Objective

Improve reuse of system requirements and architecture, resulting in an improvement of alignment between these artifacts.

■ Approach

Creation of a model-driven method that allows for bi-directional transformation between requirements and architecture. This method is intended for use in the process of creating context-aware well-being applications.

Process and Focus



Current Results and Outlook

■ Literature study

Current methods of requirements engineering are either too high, or too low level. This prevents reuse of developed artifacts, or requires high levels of both domain and system modeling expertise.

Tools currently available for model-driven development lack support for the specific demands of the context-aware well-being domain.

■ A list of user and domain requirements for context-aware well-being systems.

■ An overall system architecture and description that is to be used in two demonstrators.

■ Research questions and goals

- What RE techniques are currently being used for elicitation of context-aware systems requirements?
- What RE methods can be used in MDD?
- Can all requirements be translated to architectural components?
- Can (changes in) architectural components be traced back to (new) requirements?
- How can we quantify the suitability of an architecture, given a set of requirements?
- How can we automatically align or transform system requirements and architectures?



<http://www.swell-project.net>

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References

S. Bosems, "Towards model-driven requirements analysis for context-aware well-being systems," in OTM 2012 Workshops, ser. LNCS, P. Herrero et al., Ed., no. 7567, 2012, pp. 43–50.

