MASTER THESIS Prototyping as a Requirements Engineering Technique
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Prototyping as a Requirements Engineering Technique

POPULAR SCIENTIFIC SUMMARY **Franz Lang, Alexander Mjöberg**

Prototyping is a widespread technique used for anything from illustrating ideas of a product to providing the foundation for a sales negotiation. This thesis presents a model that depicts the domain of prototyping and explores its use in the context of requirements engineering.

Software prototyping is a consolidated term for the creation and evaluation of a prototype that depicts a simplified version of a software product. Prototypes are used to explore certain aspects of a product throughout the product development process, such as testing the usability of a mobile application before release. There is a large number of different types of prototypes as each type is suited for exploring certain aspects. For example, evaluating physical properties of a flood barrier may necessitate the use of physical materials in a physical environment while user interaction in a mobile application may only require digital means. Subconsciously these are plausible connections but what factors do we take into consideration to determine what necessitates the use of a physical prototype and when it is sufficient to use a digital one?

We have set out to create a model that can be used to understand the domain of prototyping. We identified four aspects in a literature study of the domain; *purpose*, *strategy*, *scope*, and *review method*. The knowledge captured in our model can be used to identify the best prototyping approach for a given context.

The model was evaluated in an exploratory case study where we manipulated the aspect of scope, yielding three prototype variants. Subjects were shown one of the prototype variants after which they responded to a survey.
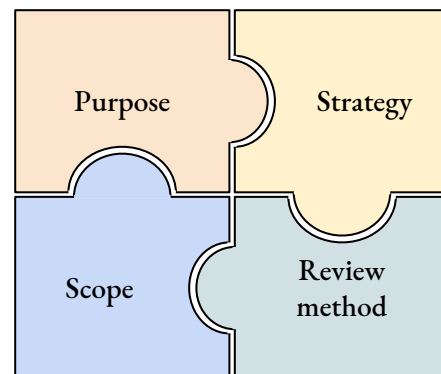
Our results indicate that manipulating the aspect of scope in prototyping can encourage users to focus on certain attributes such as how something looks or how it works. The feedback received from the user will vary depending on the scope of the prototype. This means that if you are looking to perfect the choice of colours in an interface you should focus your efforts on creating a prototype that looks good. If your goal is to evaluate a new functionality in a software you should create an illusion of functionality, such as with the use of *Sketch*, thereby increasing the amount of conceptual feedback.