Very lightweight requirements modeling

Glinz, M

Abstract: We argue for the creation and use of a very lightweight requirements modeling language as an alternative to textual and pictorial requirements specifications.

DOI: https://doi.org/10.1109/RE.2010.73

Posted at the Zurich Open Repository and Archive, University of Zurich
ZORA URL: https://doi.org/10.5167/uzh-43241

Originally published at:
DOI: https://doi.org/10.1109/RE.2010.73
Very Lightweight Requirements Modeling

Martin Glinz
Department of Informatics, University of Zurich, Switzerland
glinz@ifi.uzh.ch

Abstract—We argue for the creation and use of a very lightweight requirements modeling language as an alternative to textual and pictorial requirements specifications.

I. INTRODUCTION AND MOTIVATION

Despite all effort that went into the development of requirements modeling languages, the vast majority of requirements specifications created today are still written in natural language, augmented with tables, pictures, and, increasingly, some model diagrams. This situation is not just due to the inability of industry to adopt modeling technology. It is a strong indicator that heavyweight modeling languages such as UML don’t fit the needs of industrial requirements engineers [1]. Moreover, requirements at an early stage are by their very nature mainly narrative and pictorial.

This situation motivates us to propose the creation and use of a very lightweight modeling language (or VLML, for short), a small language with little formal expressive power, but one that easily integrates with natural language, helps structure a natural language specification and provides simple modeling constructs for those things that people hate to express textually: structure, relationships, influence, and flow. On the other hand, the envisaged language shall be constructed such that powerful tool support for editing, navigating [6], and analyzing specifications is possible.

We don’t aim at replacing heavyweight modeling languages such as UML or ADORA [2] or competing against lightweight formal modeling languages such as Alloy [5], but at improving the huge number of textual specifications that have no structure beyond a section-subsection classification and are not analyzable beyond careful reading.

In this position paper, we make a case for such a modeling language and present a case study. For more details see [3].

II. THE CASE FOR VERY LIGHTWEIGHT MODELING

A VLML must provide strong support for writing textual requirements and drawing pictures. However, it also shall harness the power of modeling for overcoming the greatest weakness of text and pictures: their unstructuredness and total informality. We illustrate the power of a VLML with a case study (Fig. 3), using a preliminary VLML design as a sample. Fig. 1 summarizes the visual syntax.

A model in this language is a set of objects that may be specialized by modifiers and can have relations among each other. Technical items can have a hierarchical inner structure. The context of an object is given by its embedding in a hierarchical structure or an explicit context name path. An object may have multiple contexts. Attributes provide information analyzable by tools. The basic objects and relations may be enriched with additional semantics. Hierarchical structure and options for hiding information from diagrams provide powerful abstraction capabilities that can be exploited by tools [2] [6]. We also envisage tool support for converting sketches into models (Fig. 2).

Our work on very lightweight requirements modeling is still in a rather preliminary stage. We hope that this position paper will stir the discussion on VLMLs and motivate other researchers to contribute critique and ideas.

REFERENCES


---

This specification is based on a hypothetical letter in which the Fire Chief of the Gotham City Fire Department asks for a requirements engineering consultancy company for help [4]. He wants a replacement for his current fire engine dispatch system. The specification captures the initially provided information for a stakeholder meeting.