

A Traceability-based Method to Support Conceptual Model Evolution

Marcela Ruiz

Estudiante de Doctorado en Informática, Departamento de Sistemas Informáticos y Computación DSIC

Investigadora, Centro de Investigación en Métodos de Producción de Software PROS
Universitat Politècnica de València

Camino de Vera s/n Edificio 1F – 46022, Valencia, España

lruiz@pros.upv.es

Advisors

Prof. Dr. Óscar Pastor López

Dr. Sergio España Cubillo

Motivation

Renewing software systems is one of the most cost-effective ways to protect software investment, which saves time, money and ensures uninterrupted access to technical support and product upgrades. There are several motivations to promote investment and scientific effort for specifying systems by means of conceptual models and supporting its evolution. As an example, the software engineering community is addressing solutions for supporting model traceability, continuous improvement of business process, organisational reengineering, information system maintenance, etc. Model-driven techniques have been developed in order to analyse systems raising the abstraction level of its specification. However, a support for conceptual model evolution by means of model-driven techniques is still needed. This thesis proposes a traceability-based method that involves model-driven capabilities for designing and providing guidelines, techniques, and tools to support conceptual model evolution. The main idea is to support information system analysts in the tasks related to: justify **why** the conceptual models have evolved, report and specify **what** elements have evolved, and guide **how** to carry out evolution in certain predefined organisational contexts. We plan to apply our method to guide the evolution of an E-shopping software. This way, we also provide mechanism to facilitate industrial adoption.

The main goal of my PhD thesis is to design a traceability-based method that involves model-driven capabilities in order to support conceptual model evolution. The main idea is to provide a model-driven method that can be used by information system analysts in order to provide them with reports and evidences to help decision making in information system evolution contexts. This paper summarizes the author's PhD work and project, working for two years and a half, under the supervision of Prof. Dr. Óscar Pastor and Dr. Sergio España Cubillo in the PROS Research Centre of the Universitat Politècnica de València.

Research development

Means

To achieve the main goal and solve the research questions, three main means are conceived:

- Expert views. My directors are experts to guide my decisions to provide solutions of the addressed problem.
- Technological support. We are expert in model-driven tools as Eclipse. This way, we have capabilities to provide tool support for the method.
- Collaboration with other research groups. Collaboration increases our perspectives to provide solutions.
- Action research. Our proposal is motivated by the needs of real information system analysts.

Achieved results and future plans

Method overview:

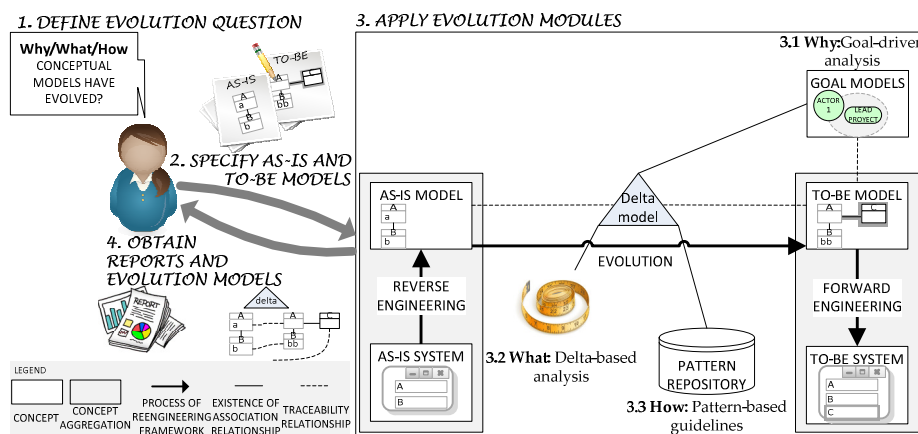


Fig. 1. Overview of the traceability-based Method to support conceptual model evolution

In 2012, organisational reengineering frameworks have been studied, the alignment between the process and the goal perspectives and We started a first version of the definition of the artefacts to support model evolution (Traceability support).

In 2013, the modules of the method were designed and reported. We carried out an experimental task with master students.

In 2014-2015 we plan to establish the method guidelines, delta analysis technique formalisation and we are looking for implementing pattern definition metamodel and evolution metamodel. We plan to validate the method by means of laboratory demos (estimation of scalability, trade-off and sensitivity). We plan to finalize the implementation and the implementation validation of the method in 2015.

Material para la presentación oral

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Information system evolution

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Evolution

