The ProR Requirements Engineering Platform

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August 5, 2010

Overview

One aim of the Deploy project[1] (of many) is to make advances in requirements management in general and requirements traceability in particular. Various partners did research in this area and applied some of their insights in industrial case studies [1].

So far, little effort has been invested in tool support. The existing requirements plugin [2] is currently not in use, as far as we know, and no other tool efforts have been initiated. (However, there is an effort in Southampton to use UML-B to support requirements management.)

In order to provide tool support for the requirements traceability method developed in Düsseldorf [3], we started to develop a platform for requirements engineering called ProR[2]. As of this writing, the rudimentary tool Platform exists as a proof-of-concept. We plan on having a fully functioning tool, including Event-B integration, by the end of the year.

Vision

The vision of ProR is to provide reliable traceability between natural language requirements and formal models. Interoperability with existing industrial processes is also a requirement.

We decided to build a general purpose platform, rather than a specialized tool, which can be customized with plugins. This approach will allow interested parties to customize ProR for their needs, without having to develop yet another RE tool.

Architecture

We decided to abandon the existing requirements plugin and to start a new development, for the reasons outlined below:

Eclipse Modeling Framework (EMF) Rather than communicating with the Rodin database, we decided for communication via the EMF-Interface for Rodin. EMF is proven within Rodin and makes it easy to exploit many powerful features of Eclipse.

[1] http://deploy-project.eu
[2] http://www.pror.org

ReqIF ReqIF[3] is an emerging standard for requirements exchange, driven by the German automotive industry. It consists of a data model and an XML-based format for persistence. We built ProR directly onto the ReqIF data model. By supporting ReqIF, we automatically get interoperability with many industrial RE tools, including IBM Doors.

GUI The "Specification view" is the central ProR editor (Figure 1). Every row represents a requirement, organized in a hierarchy. Attributes are shown in columns. The appearance and functionality can be customized with plugins. In addition, the GUI contains standard EMF-elements like outline and property view.

Extensibility Using Eclipse Extension Points, the application can be customized extensively. This includes the synchronization of Event-B variables, sets and constants, as shown in Figure 1. Plugins can attach themselves to a requirements model when it is opened to perform a wide range of actions.

Outlook

An Alpha version of ProR is available for installation from the ProR update site[4]. Documentation, including a tutorial to get started, is available as well. However, currently ProR supports only a subset of the ReqIF data model. It should be enough to get a feel for the platform.

[3]Requirements Interchange Format, currently in RFC-stage by the Object Management Group. See http://www.omg.org/cgi-bin/doc?mantis/2010-3-7

[4]http://update.pror.org

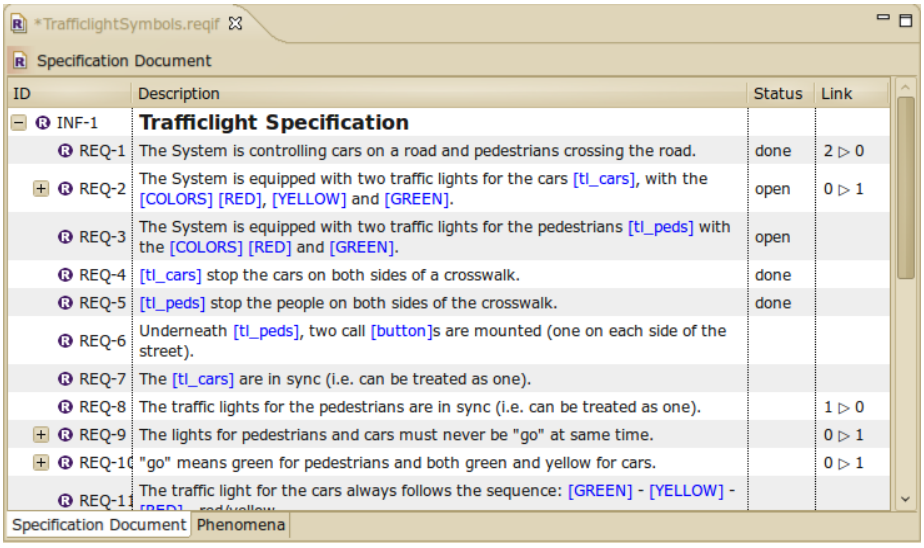

Figure 1: The ProR Specification View

Collaboration We are actively reaching out to other public research projects and started talks with representatives from the ITEA VERDE[5] and ISYPROM[6] projects. We also are in contact with members of the ReqIF standardization effort at OMG. We are actively compiling a list of industry contacts that we will use for validating the platform, once it reaches a more complete state.

References

[1] DEPLOY Deliverable D15. Advances in methods. Technical report, EU-IST "RODIN" Project, 2009.

[2] DEPLOY Deliverable D9.1 (D6). Model Construction Tools and Analysis Tools I. Technical report, EU-IST "RODIN" Project, 2009.

[3] Michael Jastram, Stefan Hallerstede, Michael Leuschel, and Aryldo G Russo Jr. An approach of requirements tracing in formal refinement. In *VSTTE*. Springer, 2010.

[5] http://www.itea-verde.org/
[6] http://www.isyprom.de/