

The  
**ProR**  
Requirements Engineering Platform

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# Agenda

- Overview
- Background & Motivation
- Technologies
- Rodin Integration
- Outlook / More Information

# ProR – Overview

- Platform for managing natural language requirements
- Industry interoperability
- Extensible (Eclipse / EMF-based)
- Rodin Integration (RE Traceability)
- Usefulness (hopefully) beyond Academia

# ProR GUI (running in Rodin)

The screenshot displays the ProR GUI interface within the Rodin environment. The main window shows a 'Specification Document' for 'Trafficlight.reqif'. The document contains a table of requirements with columns for ID, Description, Status, and Link. Annotations highlight specific features: 'View-specific Attributes' points to the table headers; 'Requirement' and 'Link' point to the left-hand navigation tree; 'Custom Presentation with color highlighting' points to the color-coded rows in the table; 'Event-B Integration' points to the description text of a requirement; 'Specifications' points to the 'Properties' panel at the bottom; and 'Requirements Properties' points to the 'Requirement Type' section in the properties panel.

ID	Description	Status	Link
INF-1	<b>Trafficlight Specification</b>		
REQ-1	The System is controlling cars on a road and pedestrians crossing the road.	done	2 ▷ 0
REQ-2	The System is equipped with two traffic lights for the cars [tl_cars], with the [COLORS] [RED], [YELLOW] and [GREEN].	open	0 ▷ 1
LINK-1			▷ REQ-8
REQ-3	The System is equipped with two traffic lights for the pedestrians [tl_peds] with the [COLORS] [RED] and [GREEN].	open	
REQ-4	[tl_cars] stop the cars on both sides of a crosswalk.	done	
REQ-5	[tl_peds] stop the people on both sides of the crosswalk.	done	
REQ-6	Underneath [tl_peds], two call [button]s are mounted (one on each side of the street).		
REQ-7	The [tl_cars] are in sync (i.e. can be treated as one).		
REQ-8	The traffic lights for the pedestrians are in sync (i.e. can be treated as one).		
REQ-9	The lights for pedestrians and cars must never be "go" at same time.		0 ▷ 1
LINK-2			▷ REQ-1
REQ-10	"go" means green for pedestrians and both green and yellow for		0 ▷ 1

Selected Object: REQ-1

# Background & Motivation

# Goals & Approach

- Goals
  - Realization of WRSPM Traceability
  - Useful beyond Rodin
  - Useful in Industry
- Approach
  - Requirements Platform (vs. specialized Tool)
  - Use of EMF
  - Use of RIF / ReqIF
  - Find Collaborators

# Requirements in Rodin (today)

- Comments not adequate
- Current Plug-in barely used
- Why not improve the existing Plug-in?
  - No EMF
  - No RIF / ReqIF

# Eclipse Modeling Framework

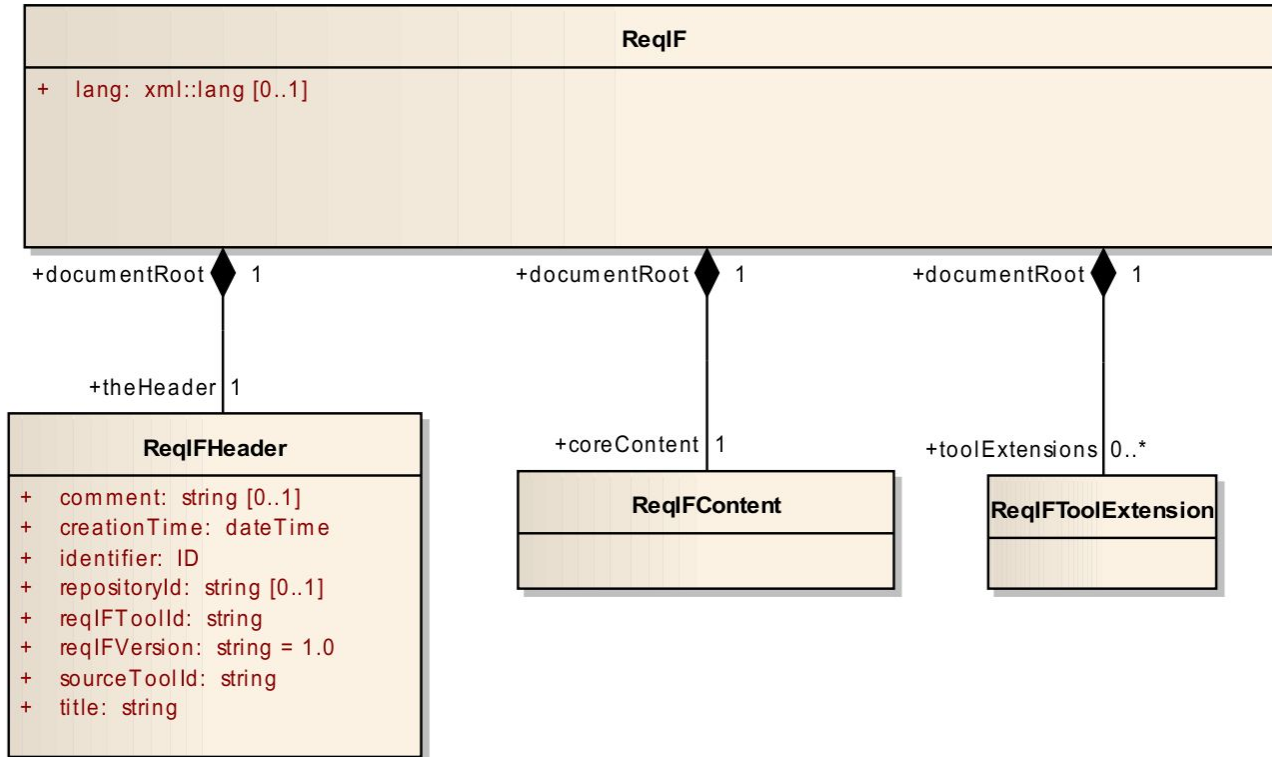
- Modeling Framework
  - Extensible
- Code generation facility
  - For Data Model
  - For GUI
- Adapter for Rodin Available
  - Used by UML-B
  - Used by Camille



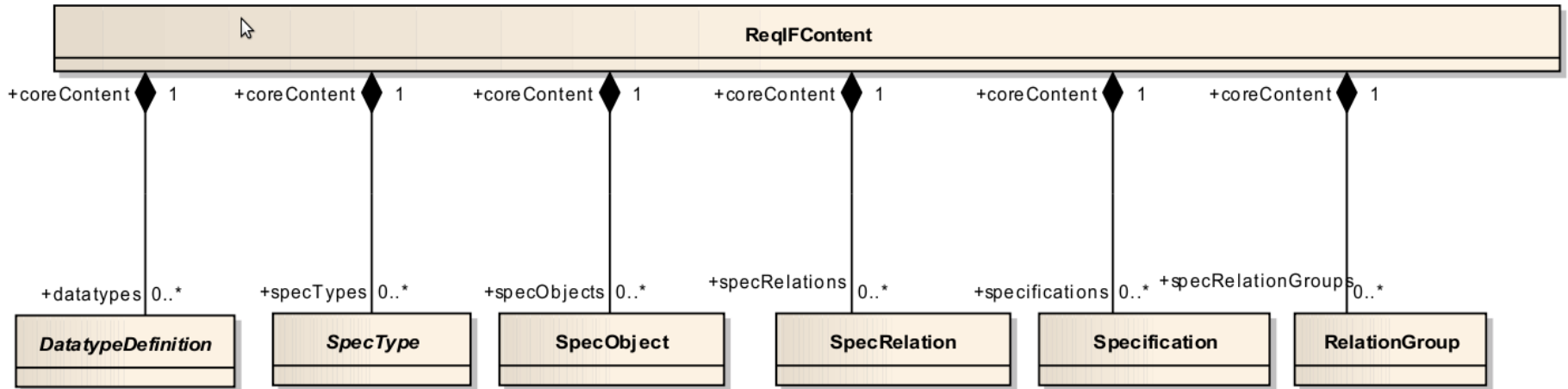
# RIF /ReqIF Standard

- Emerging Standard for Requirements Exchange
- Driven by Car Industry
- Data Model + XML Exchange Format
- RIF 1.0 created in 2004
  - RIF 1.2 in 2008
  - ReqIF 1.0 currently in development
- Already supported by a number of tools
  - Including IBM DOORS

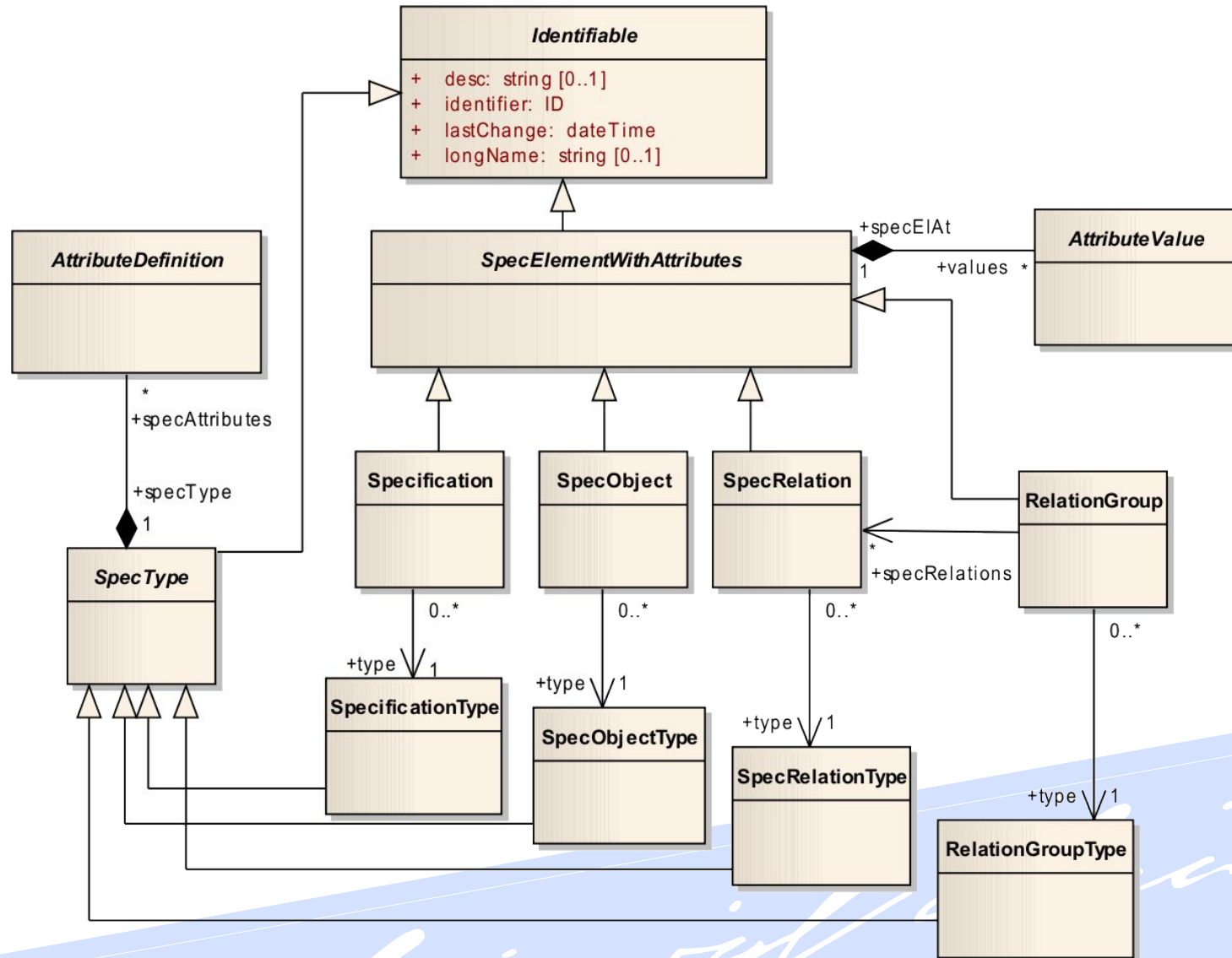
# ReqIF: Top Level



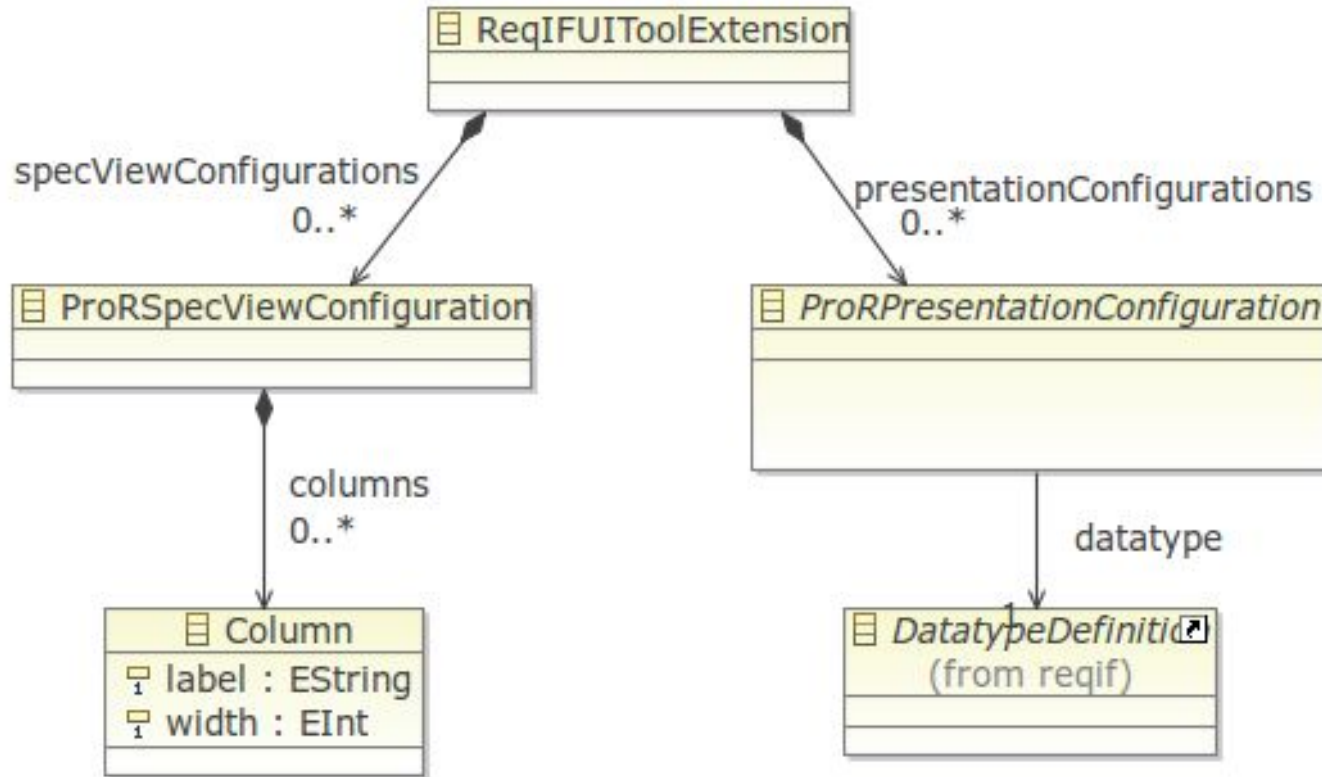
# ReqIF: Core Content



# ReqIF: Attributes



# Extending ProR



# Demo

# ProR & Rodin

# Goals (Rodin Integration)

- Method drives Tool
- First Method: WRSPM
  - Reference Model for Requirements and Specifications



# WRSPM

Artifacts are:

- W – World
- R – (Proper) Requirements
- S – Specification
- P – Program
- M – Machine

Phenomena are:

- $e_h$  – hidden environmental
- $e_v$  – visible environmental
- $s_v$  – visible system
- $s_h$  – hidden system

WRSPM	Event-B
e and s	Constants, Sets, Variables + Typing
$e_h$	Typically not Modelled
W	Invariants & Axioms
R and S	Invariants, Axioms, Dedicated Refinements, Other Formalisms

# WRSPM Prototype

- “Proof of Concept”
  - Highlighting of Event-B phenomena
- Current work on Traceability model
  - Implementation after Model is done

# Demo

# Collaborators

- Deploy
  - Partly funds ProR Development
  - Main driver
- ITEA Verde
  - Represented by itemis AG
  - Provides RIF Core
- ISYPROM
  - Represented by ModelAlchemy
  - General Interest
- OMG
  - Represented by HOOD GmbH
  - Provides RIF expertise



# More Information at [www.pror.org](http://www.pror.org)

- Downloads
- Documentation
- Tutorials
- Bug / Feature Tracker
- Forum
- Blog

The screenshot shows the ProR Requirements Engineering Platform website. The browser address bar displays <http://www.pror.org/>. The website header includes the ProR logo and the text 'Requirements Engineering Platform'. The navigation menu on the left lists: User Manual, Developer Manual, Bugs, Forum, My account, Create content, Administer, and Log out. The main content area is titled 'The ProR Platform for Requirements Engineering and Formal Modeling' and includes the following sections:

- Vision**: ProR is a tool for requirements engineering that supports the ReqF 1.0 Standard natively. It is Eclipse-based and is built for extensibility.
- Rodin (Event-B) Integration**: One of the primary goals of ProR is integration with the Rodin Platform to support traceability between Natural Language Requirements (NLRs) and formal Models (initially Event-B Models).
- Open Source**: While ProR will eventually be released in the open source, we won't publish the code until we have a stable foundation.
- Download**: We plan on making the first public download available in Fall 2010. If you are interested in testing ProR or to support development, please contact us.
- Staying in Touch**: There are a number of ways for staying in touch:
  - Subscribe to our newsletter (to the left) or receive the same content via RSS. Or read the Blog directly below.
  - Use the forum to discuss user and developer aspects of ProR.
  - If you find bugs or have feature requests, add them to our issue tracker.

A screenshot of the ProR software interface is shown on the right side of the page, displaying a table of requirements and a sidebar with a tree view.

# Future Plans

- Integrate RIF-Engine from itemis
- Complete GUI
- Validation
- Continue work on Traceability (WRSPM)
- Implement WRSPM-Support
- Recruit Industry Pilots for ProR

# Thanks & Acknowledgements

- Work supported in Part by Deploy
- Thank you
- Questions?

**ProR**