

Requirements Engineering and Management with Eclipse

Ömer Gürsoy

itemis AG

Agenda

- ✦ Context & Motivation
- ✦ Technologies
- ✦ Live-Demo
- ✦ Conclusion & Next Steps

How is it?

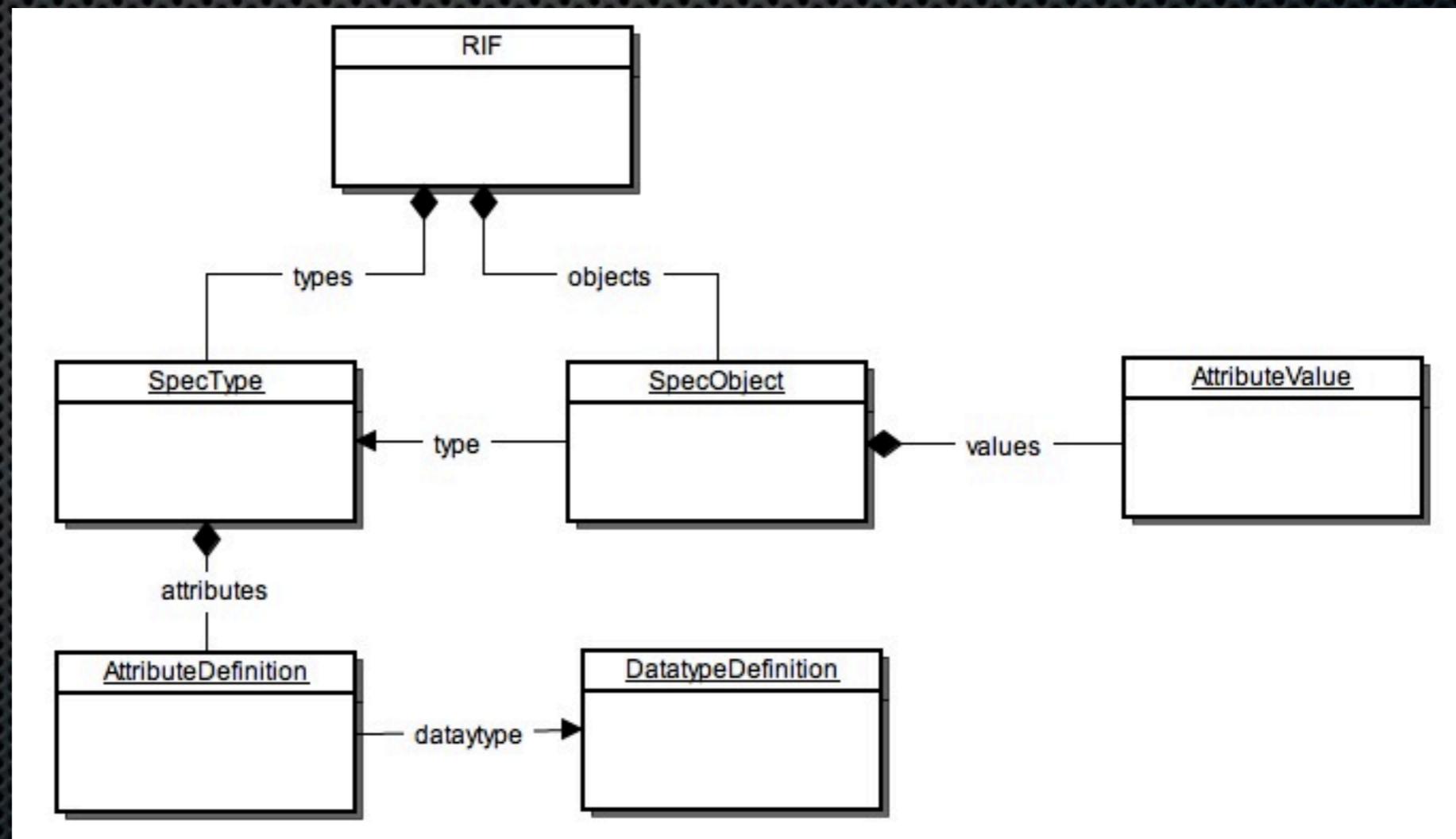
- ✦ Heterogeneous tools & artefacts are usual
- ✦ Bundled/integrated requirements engineering solutions address only parts of the overall landscape
- ✦ Quality: Tracing is important to do good Requirements Management
- ✦ Weak tool support: Requirements-Tracing throughout the complete development chain is difficult and is not a favourite development activity

VERDE

- ✦ „VERification- oriented & component-based model Driven Engineering for real-time embedded systems“
- ✦ Aim of providing a generic tool platform for the verification- and validation-orientated development of embedded systems
- ✦ Verde develops new tools and methods in the areas where there are gaps in existing tool-chains and procedures

RIF/ReqIF

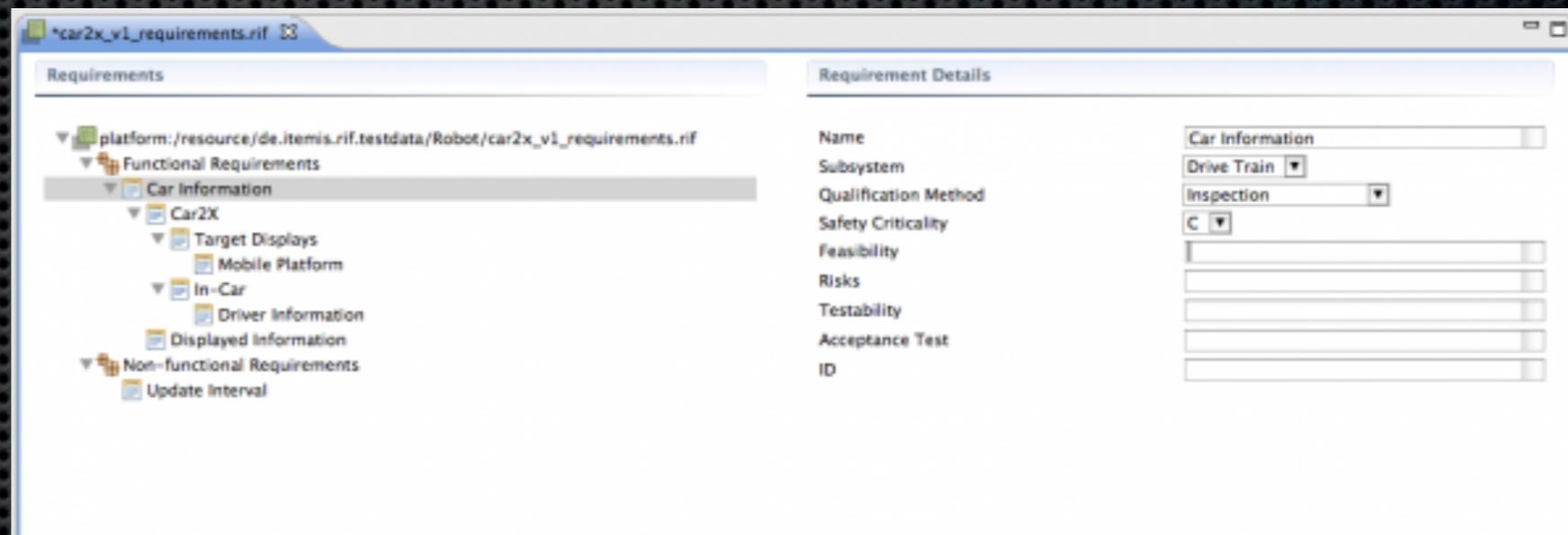
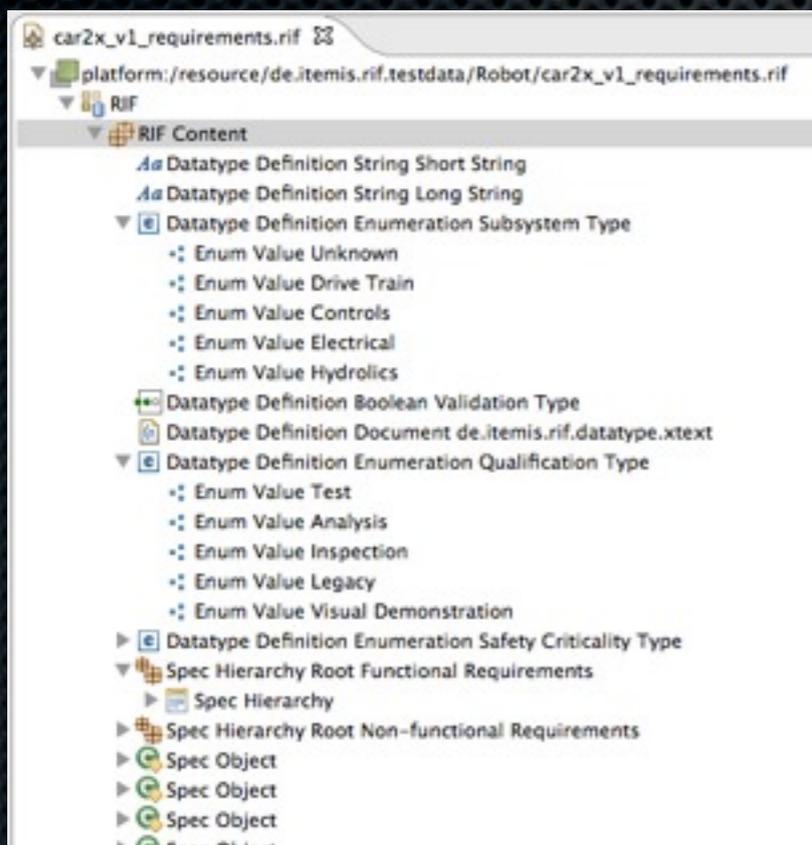
- ✦ Modular
- ✦ Internal DSL



RIF/ReqIF Core

- ✦ Ecore Model, including serialisation to XML
 - ✦ RIF 1.1a - planned
 - ✦ RIF 1.2 - done
 - ✦ ReqIF Beta2 - almost done
- ✦ Derived from the specification by model transformation
- ✦ Driven by itemis
- ✦ EPL (Eclipse Public License)
- ✦ Currently submitting an Eclipse project proposal

RIF/ReqIF Editor



Be more formal with Xtext

The screenshot displays a software interface for managing requirements. On the left, a 'Requirement Details' panel shows fields for 'Name' and 'Subsystem'. The main area on the right shows a requirement text: 'leftArm3 and rightArm s equal to "50" accelerometer_speed is greater than "100"'. A dropdown menu is open, listing formal operators such as 'SHALL', 'and', 'is disabled', 'is enabled', 'is equal to', 'is greater than', 'is less than', 'is not equal to', 'or', and 'xor'. The requirement text is color-coded to match these operators.

Requirement Details

Name

Subsystem

Requirement Details

Car Information

Drive Train

leftArm3 and rightArm s equal to "50"
accelerometer_speed is greater than "100"

Subject1 - ID

- SHALL
- and
- is disabled
- is enabled
- is equal to
- is greater than
- is less than
- is not equal to
- or
- xor

Alternative UI



- ✦ Deploy-sponsored project
- ✦ Cooperation of itemis and Heinrich Heine University Dusseldorf
- ✦ Uses the Verde RIF/ReqIF Core
- ✦ Xtext feature integrated

Alternative UI

Pro³

Resource - platform:/resource/de.itemis.tracing.test/requirements.rif-xmi - Eclipse Platform

Project Explorer

- de.itemis.tracing.test
 - META-INF
 - bd.blockdiagram
 - build.properties
 - model_profile.di
 - model_profile.notation
 - model_profile.uml
 - model.di
 - model.notation
 - model.uml
 - requirements.rif-xmi
 - sm.statemachine
 - sm.statemachine_diagram
 - test.txt
 - UTP.xsd
- de.itemis.tracing.test.c

Specification Document

ID	Description	Link
1	REQ-1 The system shall ...	
2	REQ-2 The system should ...	
2.1	REQ-2.1 The system shall ...	
3	REQ-3 The system should ...	

Outline

- Specifications
 - Specification Document
 - The system shall ...
 - The system should ...
 - The system shall ...
 - The system should ...
 - SpecObjects
 - SpecRelations

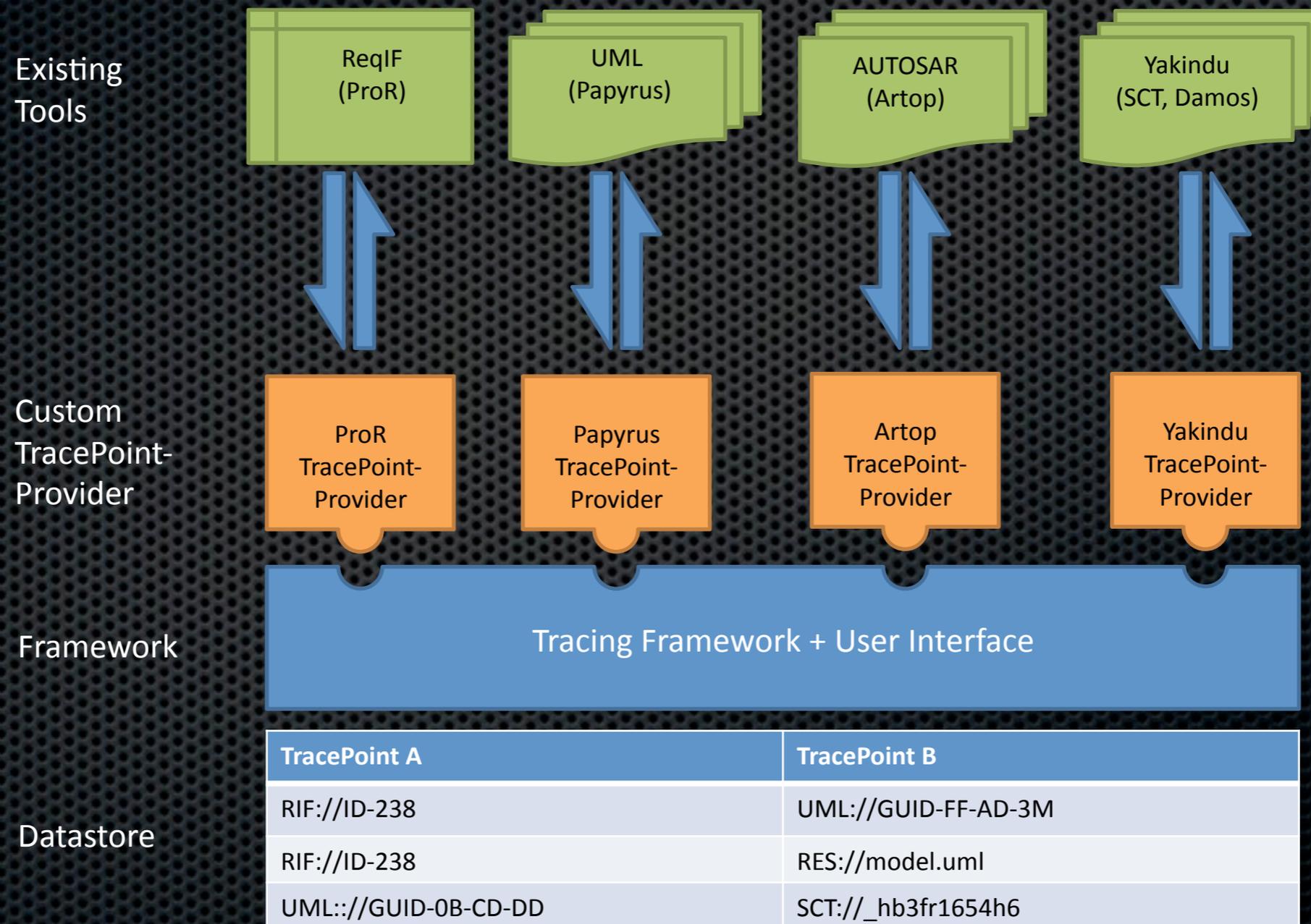
Tracing Explorer

Tasks CDO Sessions Tracing Editor Properties

Property	Value
Misc	
Identifier	..._yGol0VFTeCCm_mgFmJDrQ
Long Name	...
Object	The system shall ...
Requirement Type	
Description	The system shall ...
ID	REQ-1

Selected Object: The system shall ...

Tracing



Tracing



- ✦ Editor
- ✦ Navigator
- ✦ Reports
- ✦ EPL

The screenshot displays the Eclipse IDE interface for a tracing project. The main window is titled "Resource - platform:/resource/de.itemis.tracing.test/requirements.rif-xmi - Eclipse Platform".

Tracing Explorer: This view shows a tree structure of the project. It includes a "clear selection" button and a list of elements such as "TestClass [Class] [/de.itemis.tracing.test/model.uml]", "REQ-1 [/de.itemis.tracing.test/requirements.rif-xmi]", and "Z [TransferFunction] [/de.itemis.tracing.test/bd.blockdiagram]".

Specification Document: This view displays a table with requirements:

ID	Description	Link
1	REQ-1 The system shall ...	
2	REQ-2 The system should ...	
2.1	REQ-2.1 The system shall ...	
3	REQ-3 The system should ...	

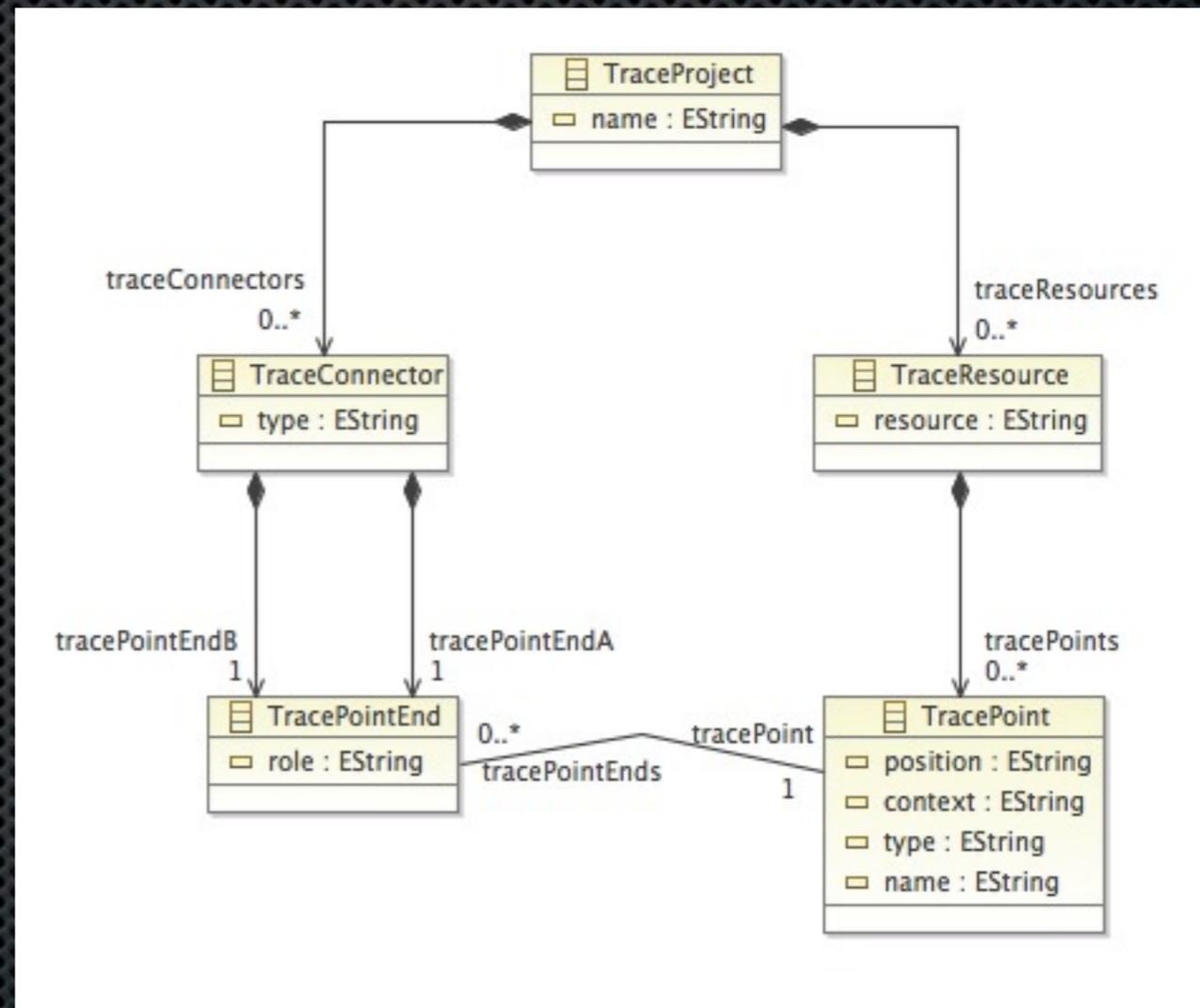
Tracing Editor: This view shows the configuration for a trace point. It includes fields for "Name", "Type", "Position", and "Resource". Below these fields are two buttons: "Set as Trace Point A" and "Set as Trace Point B".

Tracing Connector: This view shows the configuration for a tracing connector. It includes a "Type" dropdown set to "VERIFY". Below are two sections for "Trace Point A" and "Trace Point B", each with fields for "Name", "Type", "Role", "Resource", and "Position". At the bottom are "Save" and "Reset" buttons.

Tracing

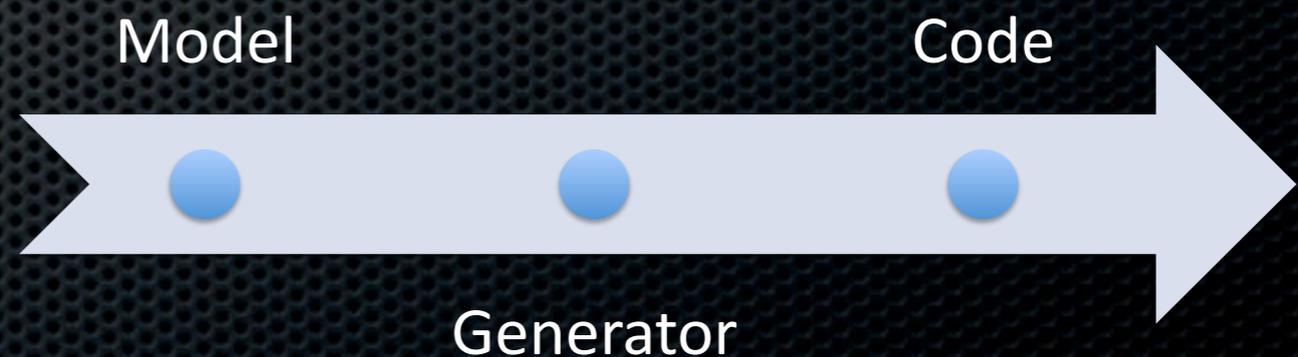


- ✦ Loose coupling
- ✦ EMF serialization
 - ✦ CDO resources
 - ✦ File resources



Next steps

- ✦ Custom Queries
- ✦ Reports
- ✦ Sync features
- ✦ Import features
- ✦ Generator Tracing





Questions ?

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Software | Consulting | Coaching