KIEL ER

Kiel Integrated Environment for Layout

Eclipse Rich Client

KIELER Actor Oriented Modeling

Automatic Layout
KIML – KIELER Infrastructure for Meta Layout [2]

Layout of a SyncChart diagram

Layout of a data flow diagram
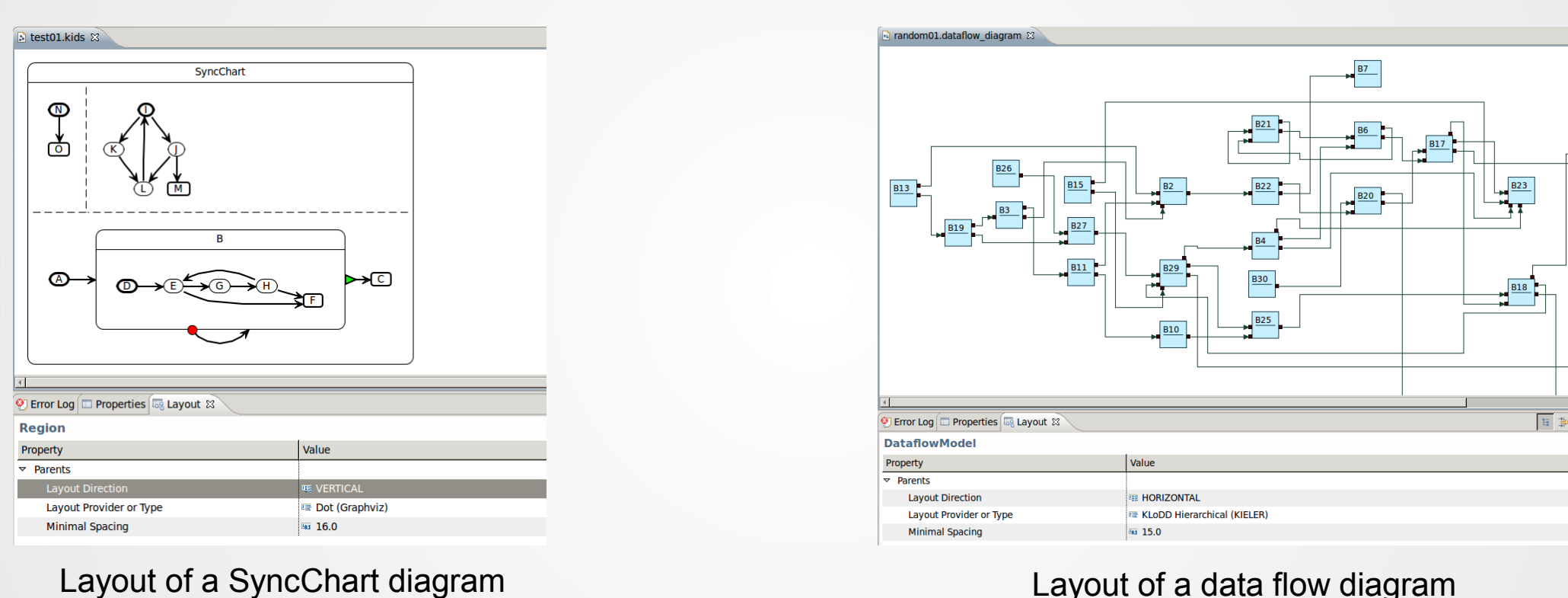
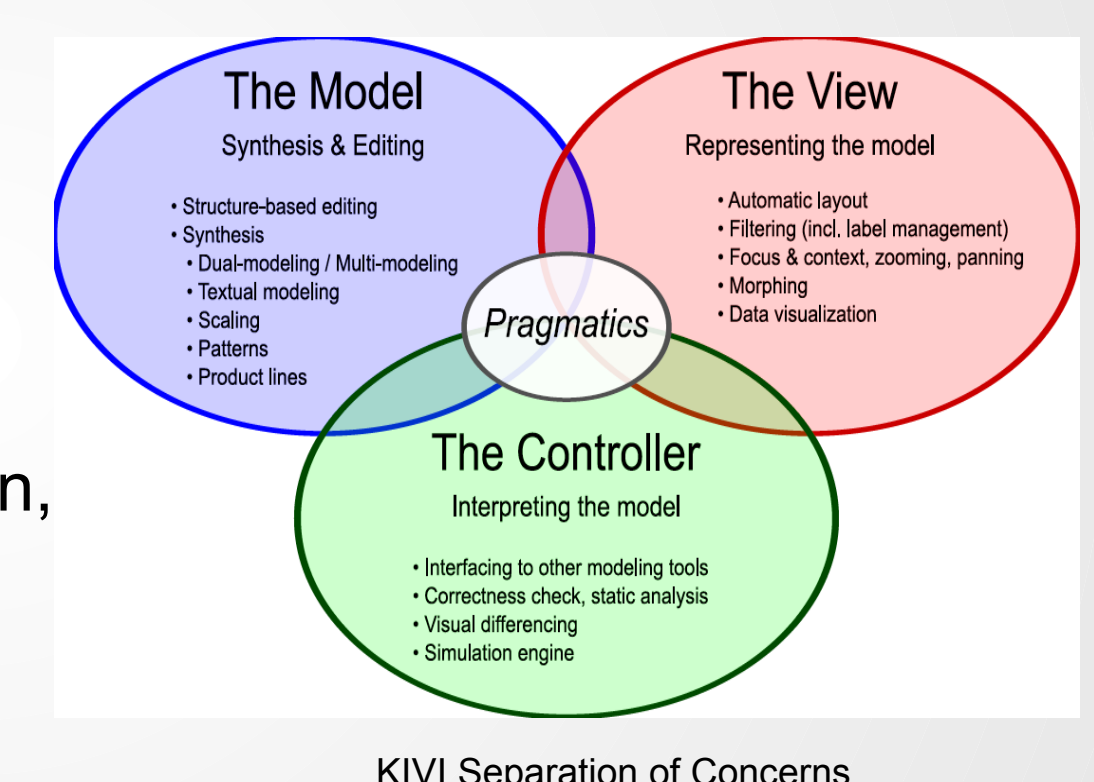- Automatic layout of GMF and Graphiti diagrams
- Generic interface for layout algorithms
- Flexible configuration of layout options by the user

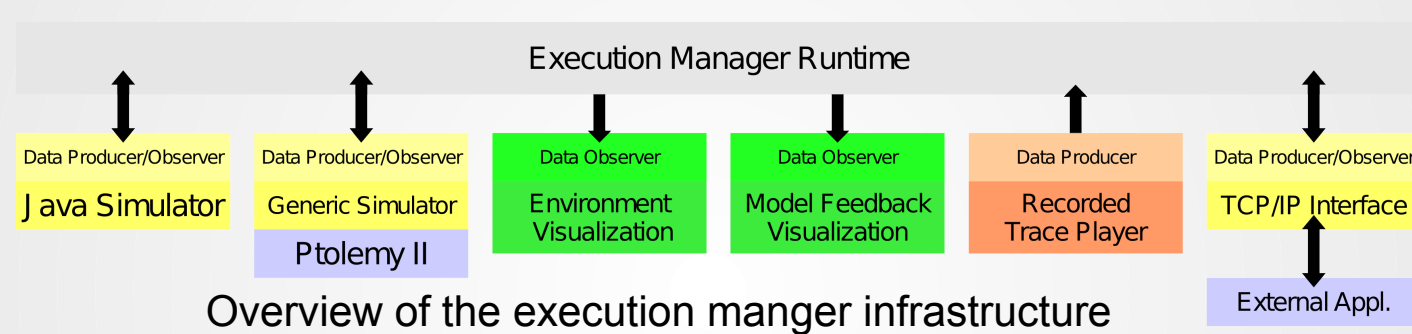## View Management
KiVi – KIELER View Management

- Dynamic Views
- Decouple trigger and effects
- Advanced effect scheduling/ filtering
- Button/UI trigger
- Focus&Context, Zoom-To-Selection, Diagram highlighting, Layout effect

The Model — Synthesis & Editing
The View — Representing the model
Pragmatics
The Controller — Interpreting the model

KIVI Separation of Concerns

Model Execution
KIEM – KIELER Execution Manager [3]

Execution Manager Runtime

Data Producer/Observer	Data Producer/Observer	Data Observer	Data Observer	Data Producer	Data Producer/Observer
Java Simulator	Generic Simulator	Environment Visualization	Model Feedback Visualization	Recorded Trace Player	TCP/IP Interface
	Ptolemy II				External Appl.

Overview of the execution manger infrastructure

- Simple Interface for generic model execution
- Simulation, code generation, online debugging, visualizations, stepwise transformations, model verification
- Ptolemy as one simulation backend
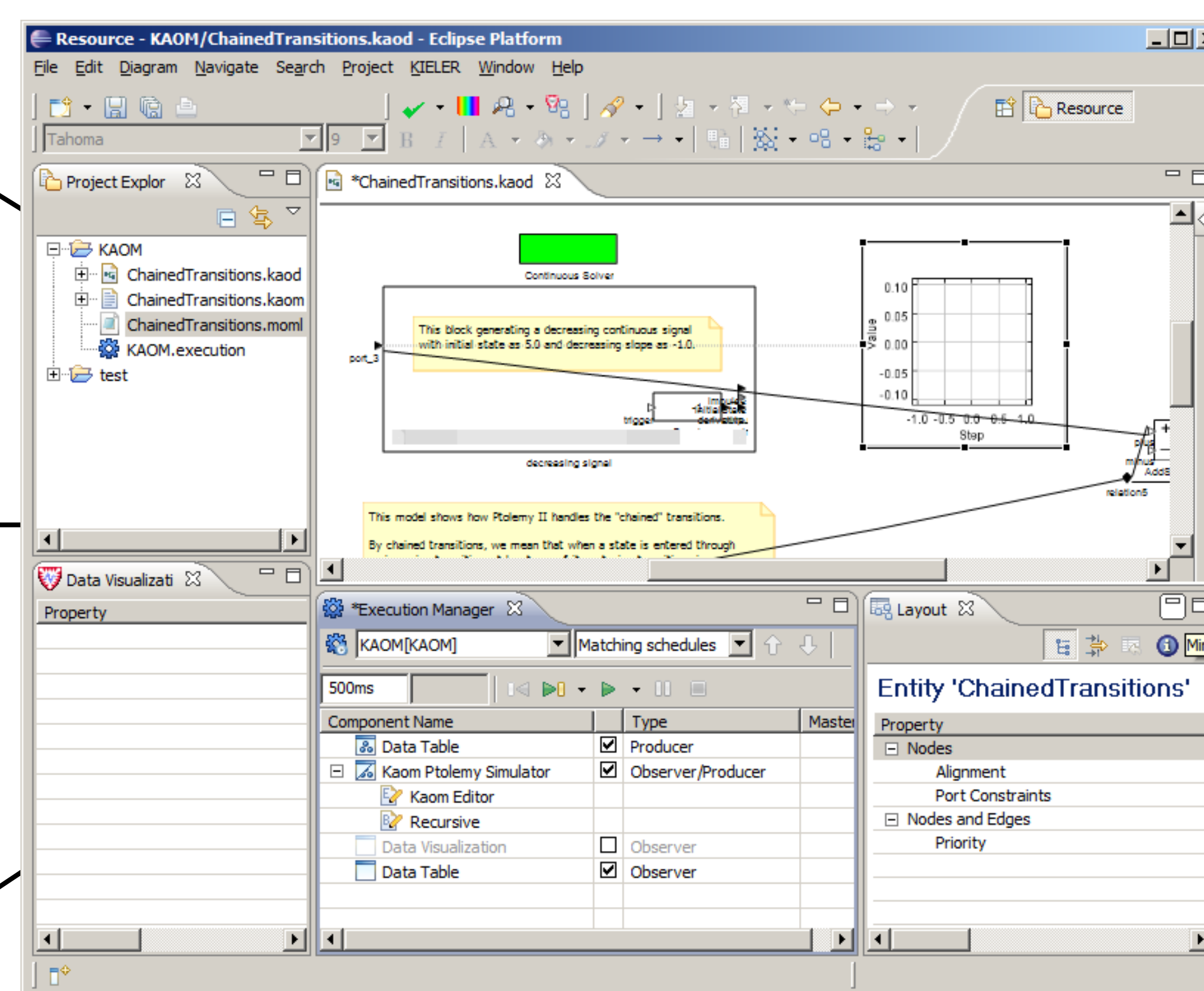
KAOM with automatic layout, Ptolemy rendering and simulation in KIELER

Data Visualization

- Animated tokens
- Plotter scopes
- Environment visualizations

Ptolemy plotter

Traffic light environment visualization

Animated data tokens
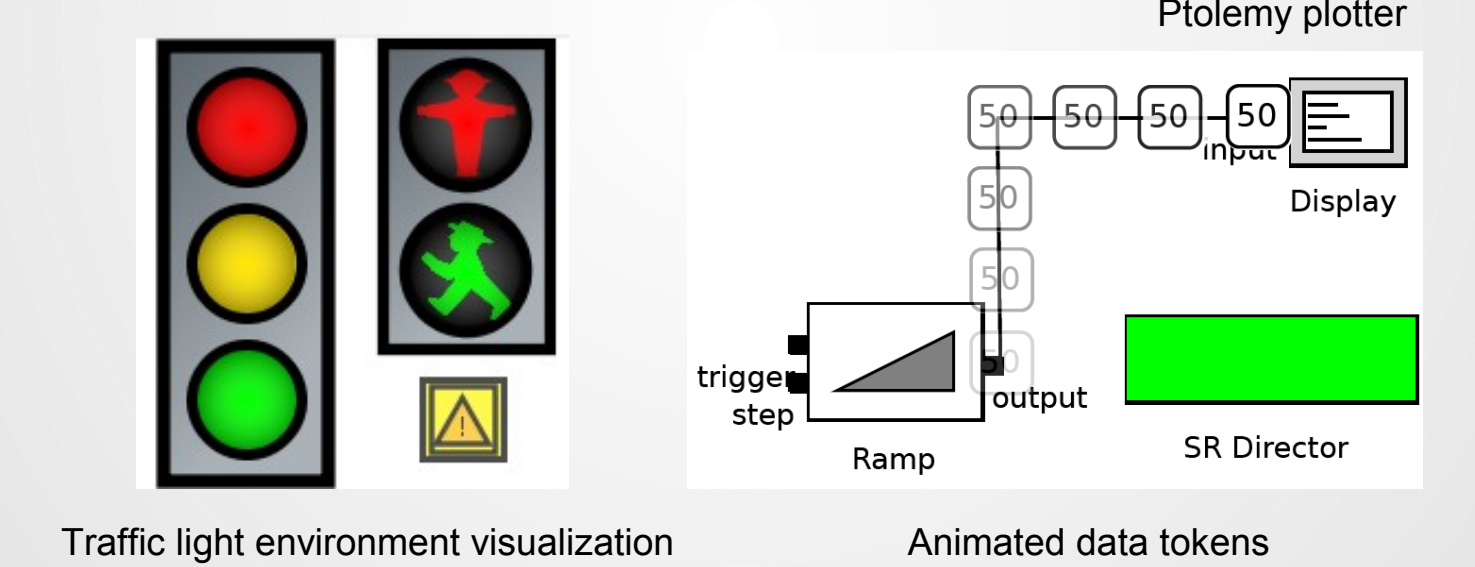
Meta Modeling
### KAOM – KIELER Actor Oriented Modeling

- Flexible, generic meta model for actor-oriented modeling languages
- Extendable Annotation concept
- Exploiting the Eclipse Modeling Framework (EMF)
- Code Generation w/ Xpand/Xtend
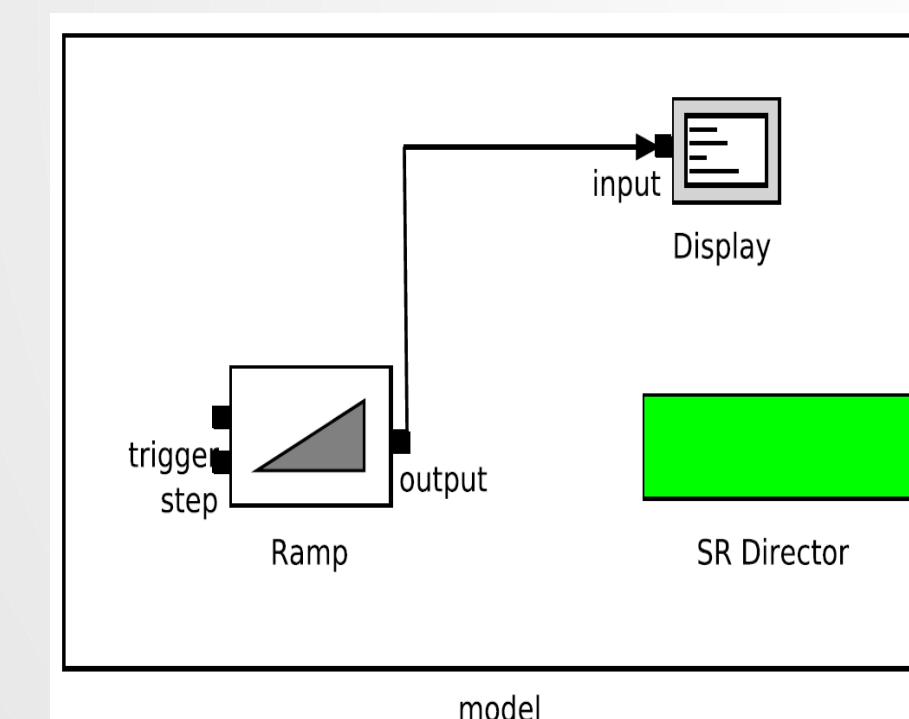- Multiple editing frameworks supported: EMF, GMF, Graphiti, Xtext
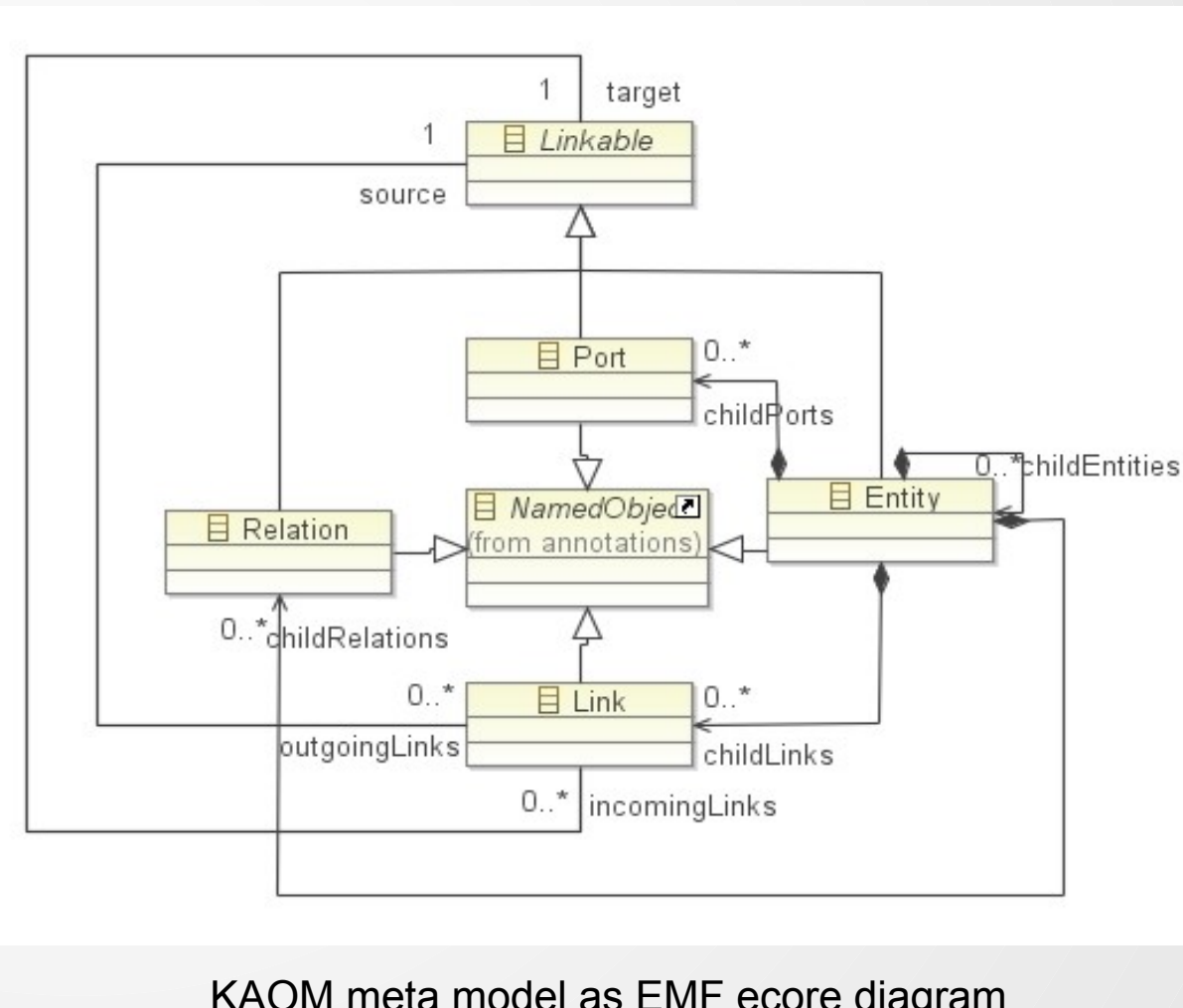
KAOM meta model as EMF ecore diagram

Model Rendering
KARMA – KIELER Advanced Rendering for Model Appearance
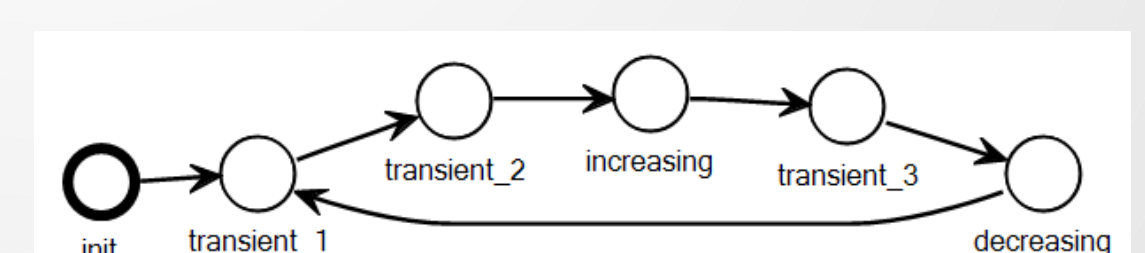
Ptolemy actor rendering
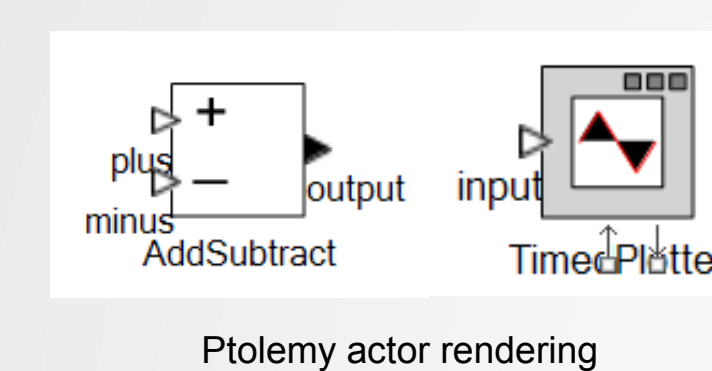
- Customized model rendering options: E.g., Ptolemy, LabView, Simulink, ASCET, SCADE
- GMF editor support, Graphiti (planned)

Rendering Ptolemy dataflow

This block generating a decreasing continuous signal with initial state as 5.0 and decreasing slope as -1.0.

Rendering Ptolemy annotations

Rendering Ptolemy state machines

Contact Person:
Miro Spönemann
Department of Computer Science
Christian-Albrechts-Universität zu Kiel
Olshausenstr. 40, 24098 Kiel, Germany
Phone: +49 (0) 431 880-7282
Fax: +49 (0) 431 880-7615
msp@informatik.uni-kiel.de
http://www.informatik.uni-kiel.de/rtsys

Contact Person:
Prof. Dr. Reinhard von Hanxleden
Department of Computer Science
Christian-Albrechts-Universität zu Kiel
Olshausenstr. 40, 24098 Kiel, Germany
Phone: +49 (0) 431 880-7281
Fax: +49 (0) 431 880-7615
rvh@informatik.uni-kiel.de
http://www.informatik.uni-kiel.de/rtsys

Further Information:
http://www.informatik.uni-kiel.de/rtsys/kieler

[1] Hauke Fuhrmann and Reinhard von Hanxleden. Taming Graphical Modeling. In Proceedings of the ACM/IEEE 13th International Conference on Model Driven Engineering Languages and Systems (MoDELS'10), LNCS, Oslo, Norway, 2010. Springer.

[2] Miro Spönemann, Hauke Fuhrmann, Reinhard von Hanxleden, and Petra Mutzel. Port constraints in hierarchical layout of data flow diagrams. In Proceedings of the 17th International Symposium on Graph Drawing (GD'09), LNCS, Chicago, September 2009.

[3] Christian Motika, Hauke Fuhrmann and Reinhard von Hanxleden. Semantics and Execution of Domain Specific Models. In 2nd Workshop Methodische Entwicklung von Modellierungswerkzeugen (MEMWe 2010) at conference INFORMATIK 2010, GI-Edition – Lecture Notes in Informatics (LNI), Leipzig, Germany, 2010.

[4] Reinhard von Hanxleden. SyncCharts in C—a proposal for light-weight, deterministic concurrency. In Proceedings of the International Conference on Embedded Software (EMSOFT'09), Grenoble, France, October 2009.