tf

KIEL ER

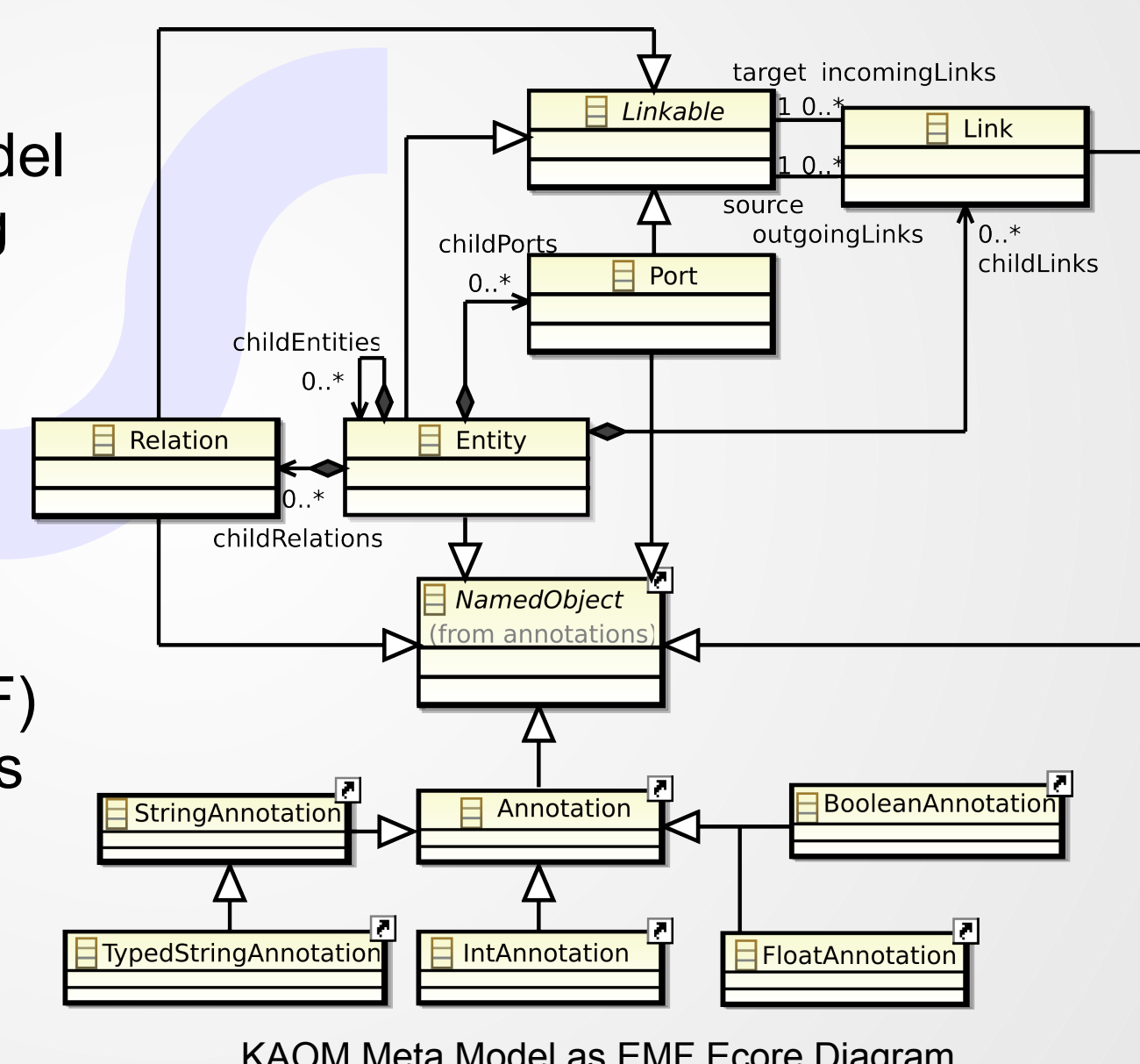**Kiel Integrated Environment for Layout**

Eclipse Rich Client

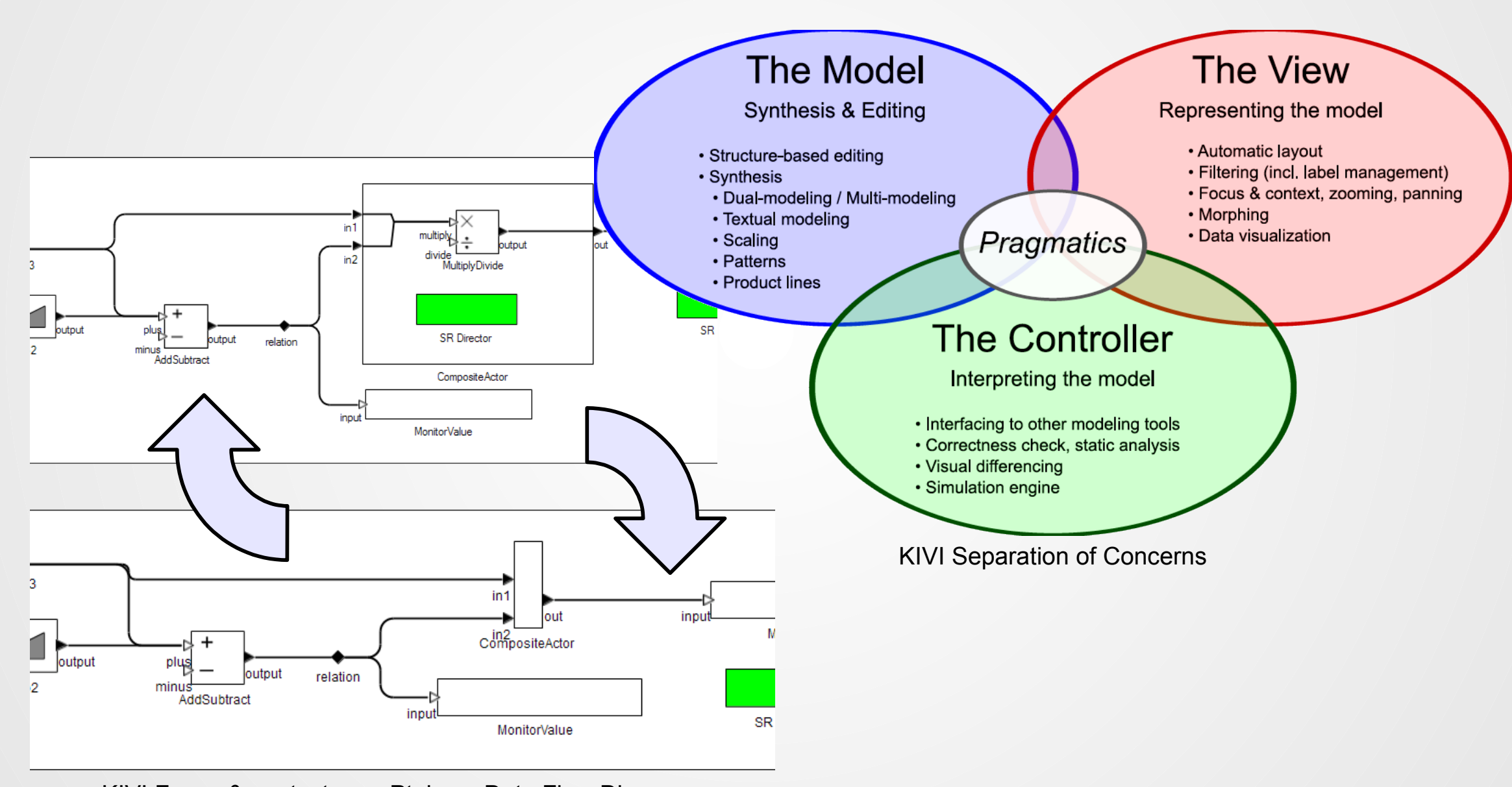# KIELER Actor Oriented Modeling

Meta Modeling
KAOM – KIELER Actor Oriented Modeling

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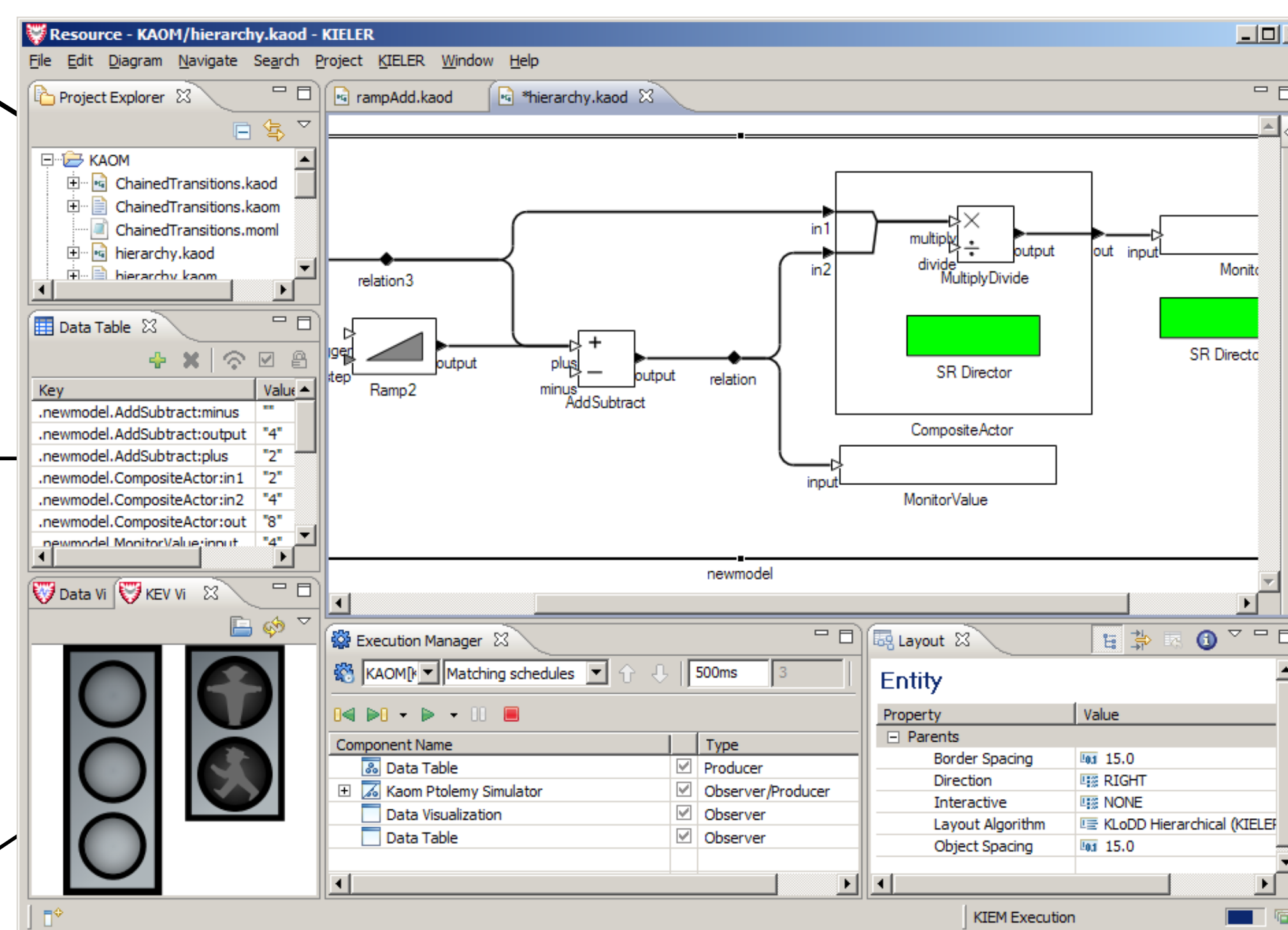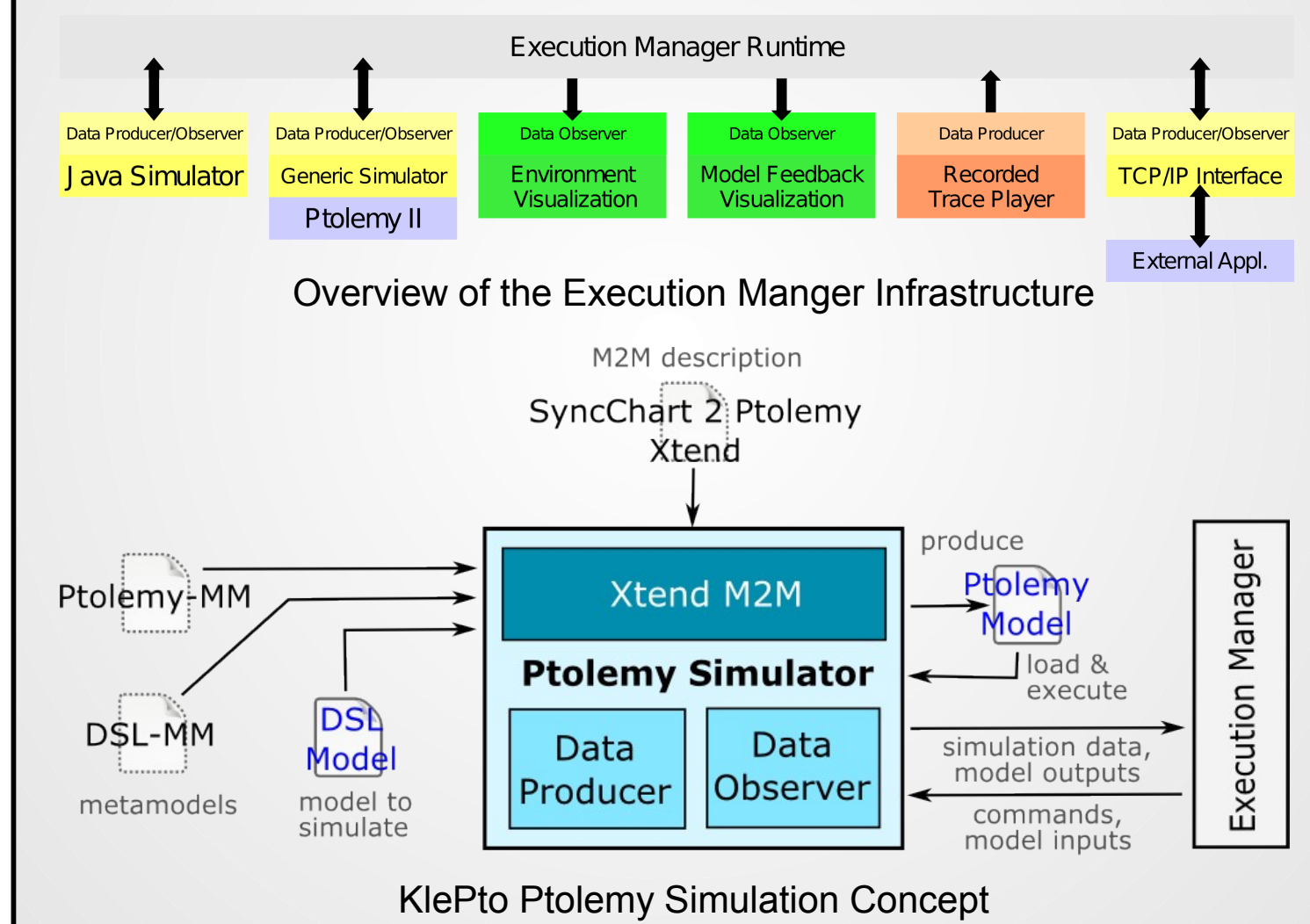- Multiple editing frameworks supported: EMF, GMF, Graphiti, Xtext

KAOM Meta Model as EMF Ecore Diagram

View Management
KiVi – KIELER View Management

The Model — Synthesis & Editing
- Structure-based editing
- Synthesis
- Dual-modeling / Multi-modeling
- Textual modeling
- Scaling
- Patterns
- Product lines

The View — Representing the model
- Automatic layout
- Filtering (incl. label management)
- Focus & context, zooming, panning
- Morphing
- Data visualization

The Controller — Interpreting the model
- Interfacing to other modeling tools
- Correctness check, static analysis
- Visual differencing
- Simulation engine

Pragmatics

KIVI Separation of Concerns

KIVI Focus & context on a Ptolemy Data Flow Diagram

Model Execution
KIEM – KIELER Execution Manager [3]

Overview of the Execution Manger Infrastructure

KlePto Ptolemy Simulation Concept

KAOM with Automatic Layout, Ptolemy rendering and Simulation in KIELER

Data Visualization

Visualization of a Railway Installation

Traffic Light Environment Visualization

Ptolemy Plotter

Animated Data Tokens
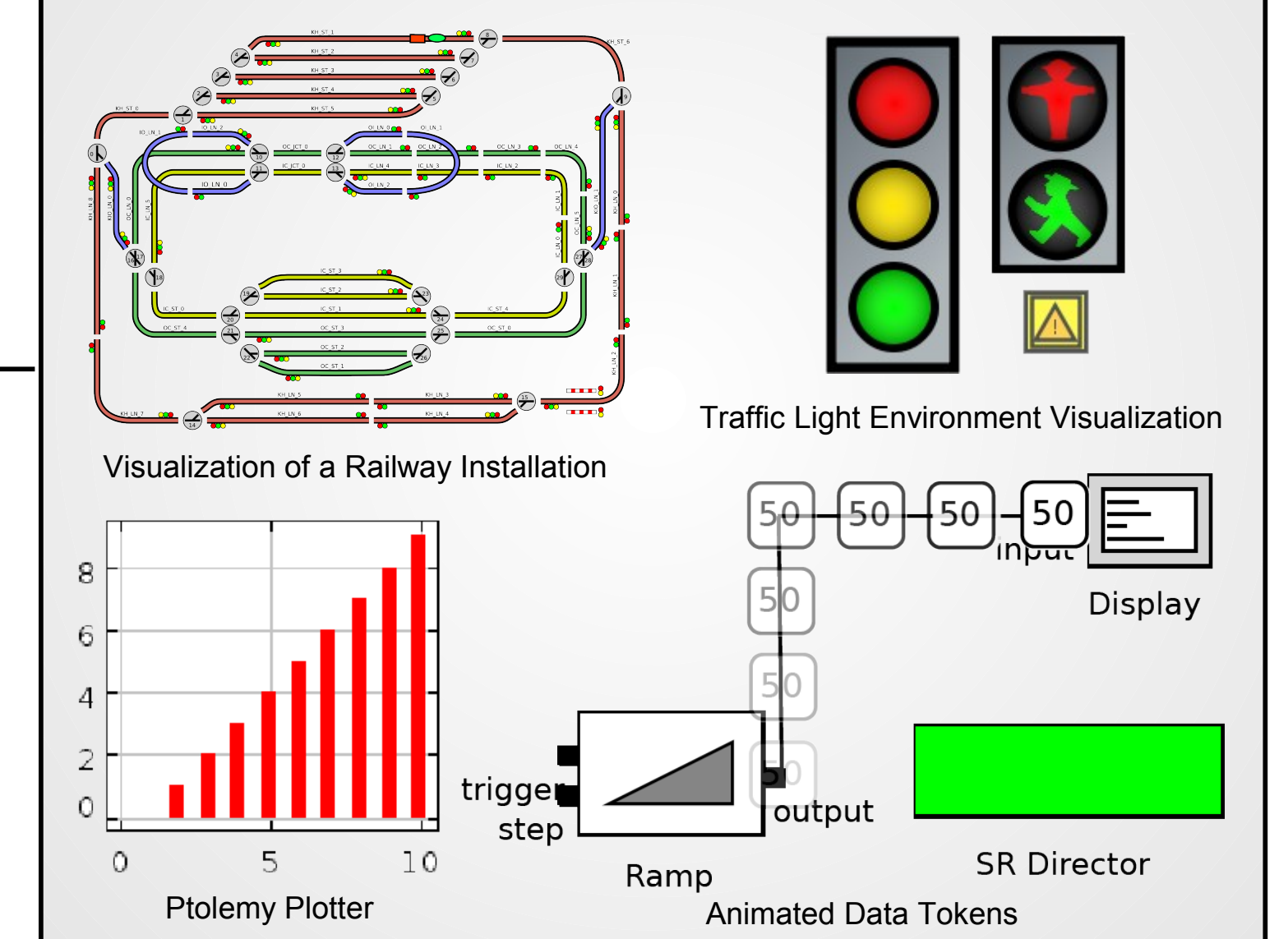
Automatic Layout
KIML – KIELER Infrastructure for Meta Layout [2]

Layout of a State Chart Diagram

Layout of a Data Flow Diagram
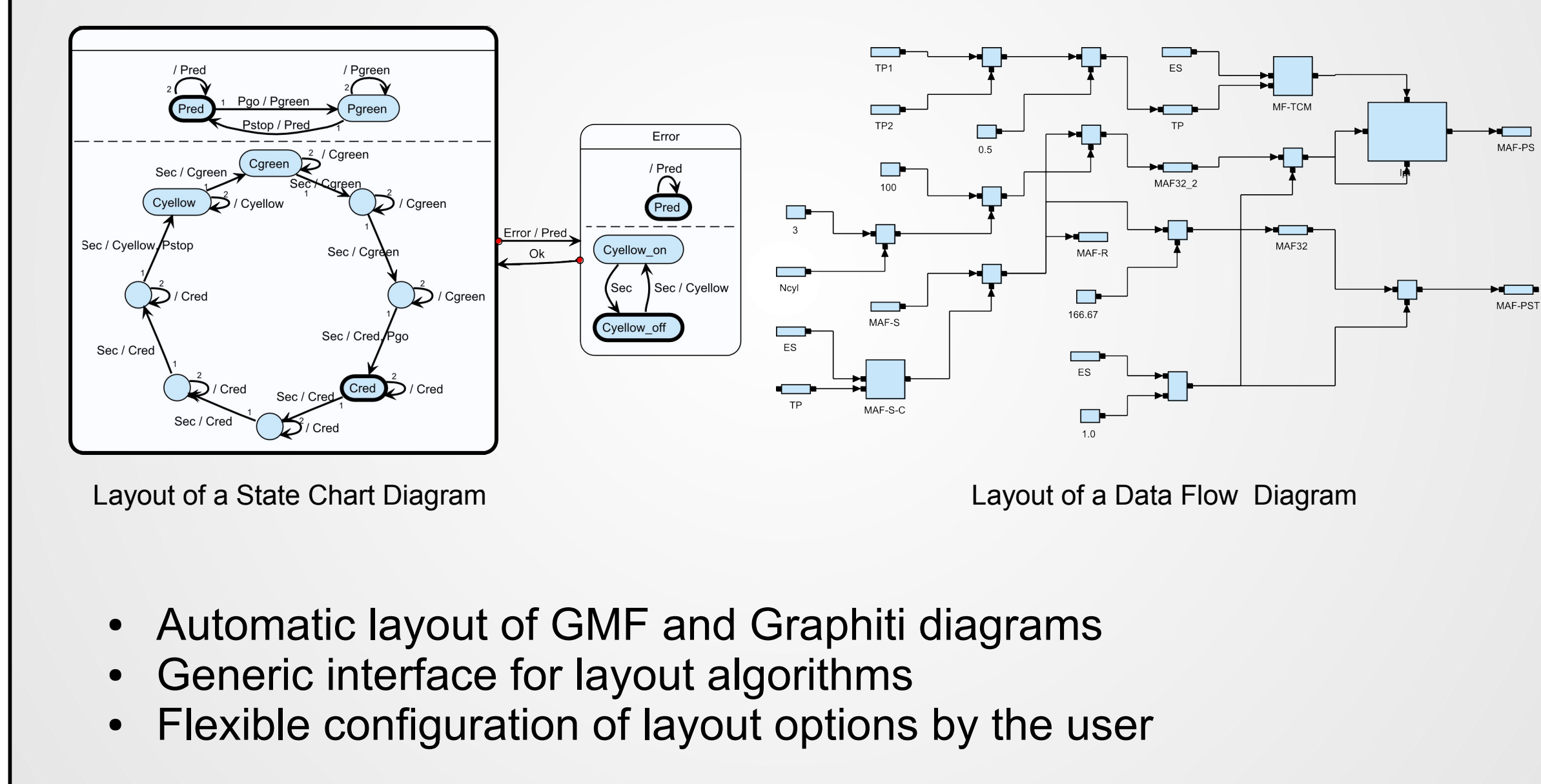
- Automatic layout of GMF and Graphiti diagrams
- Generic interface for layout algorithms
- Flexible configuration of layout options by the user

Model Rendering
KARMA – KIELER Advanced Rendering for Model Appearance

Ptolemy Actor Rendering

- Possible customized model rendering options: E.g., Ptolemy, LabView, Simulink, ASCET, SCADE
- GMF editor support, Graphiti (planned)

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

Rendering Ptolemy annotations

Rendering Ptolemy Data Flow

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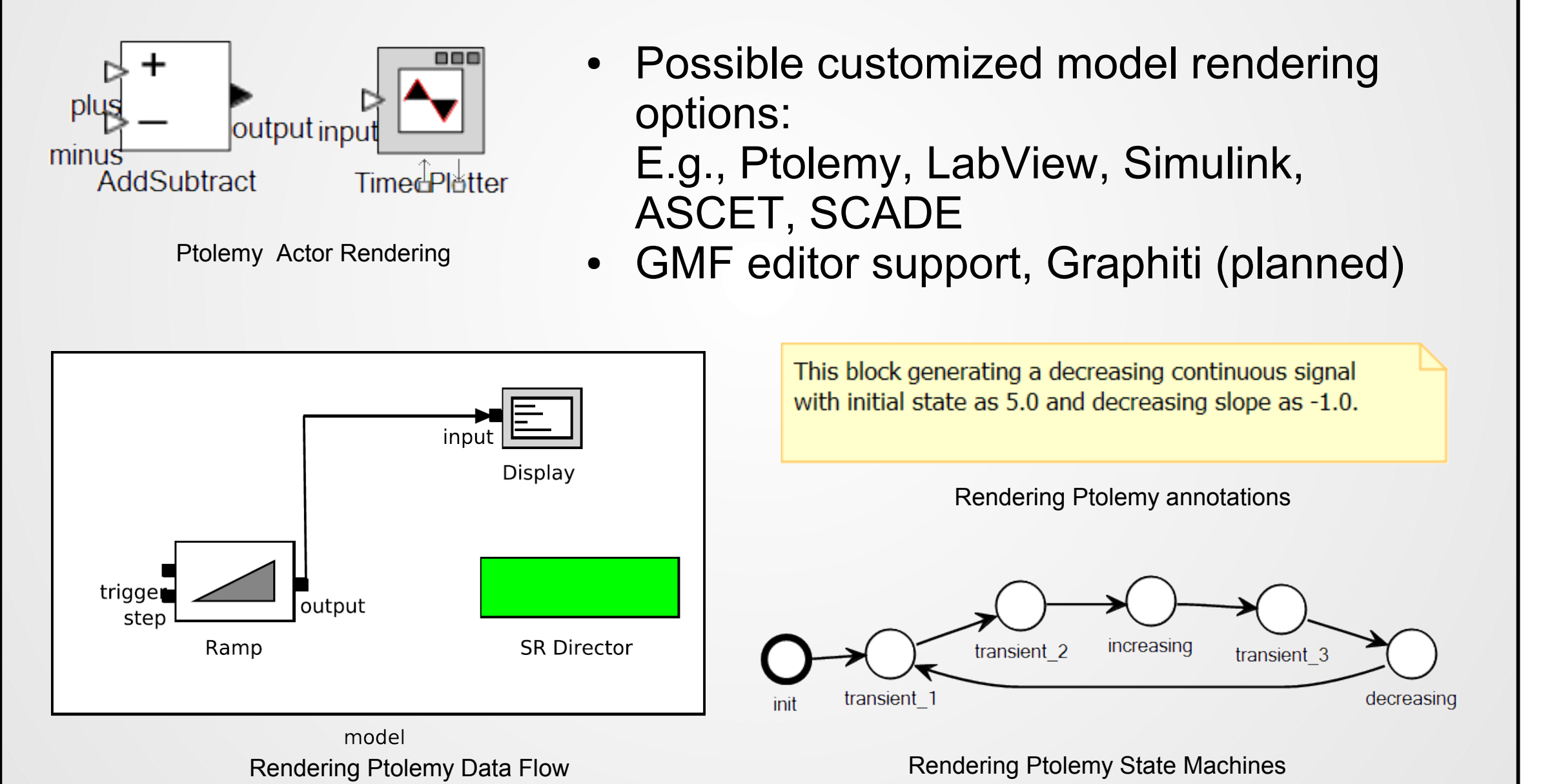
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[1] Hauke Fuhrmann and Reinhard von Hanxleden. Taming Graphical Modeling. In Proceedings of the ACM/IEEE 13th International Conference on Model Driven Engineering Languages and Systems (MoDELS'10), LNCS, Oslo, Norway, 2010. Springer.

[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.