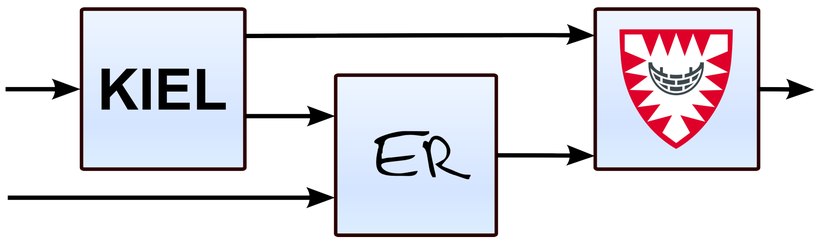
Institut für Informatik

Christian-Albrechts-Universität zu Kiel

Faculty of Engineering

Department of Computer Science

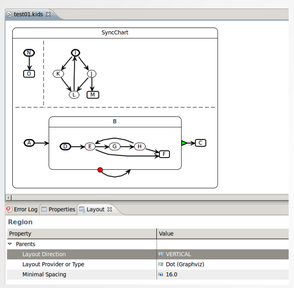


Kiel Integrated Environment for Layout

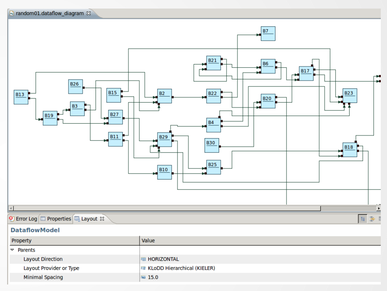
Eclipse Rich Client

Automatic Layout

KIML – KIELER Infrastructure for Meta Layout [2]



Layout of a SyncChart diagram



Layout of a data flow diagram

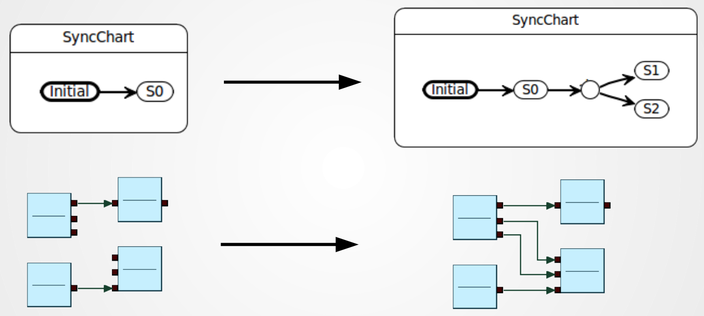
- Automatic layout of GMF diagrams
- Generic interface for layout algorithms
- Flexible configuration of layout options by the user

Textual Editing

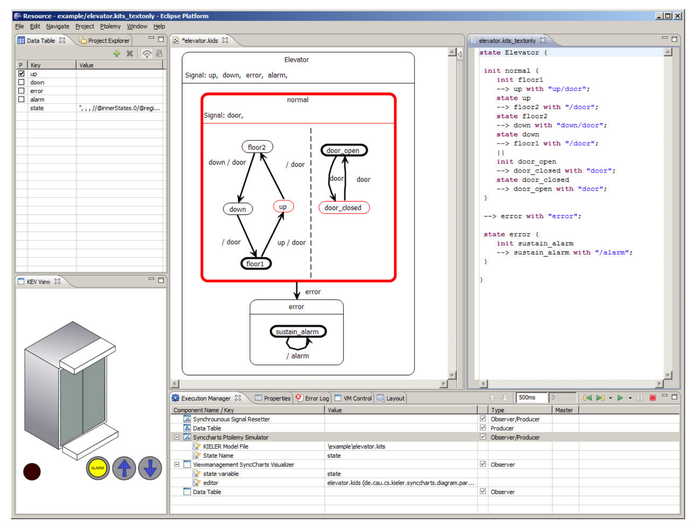
- Synchronization of graphical models with textual representations
- Connect textual editors created with Xtext to GMF editors
- Transformation of the Esterel language to SyncCharts

Structure Based Editing

KSBasE – KIELER Structure Based Editing

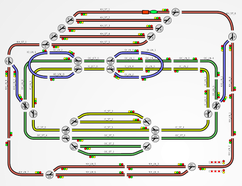


- Improve editing of graphical models by using model transformations for arbitrary operations
- Generic interface for GMF diagram editors



KIELER: Enhancing graphical modeling in Eclipse by integrating into existing frameworks such as EMF, GMF, and TMF [1]

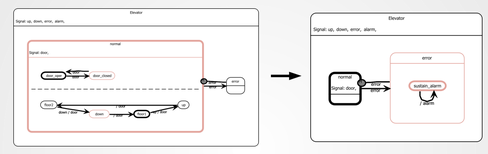
Environment Visualization



Example: Visualization of a railway installation

- SVG based rendering of arbitrary environments for simulation
- Specification of animations
- GUI for testing and demonstration of behavioral models

View Management

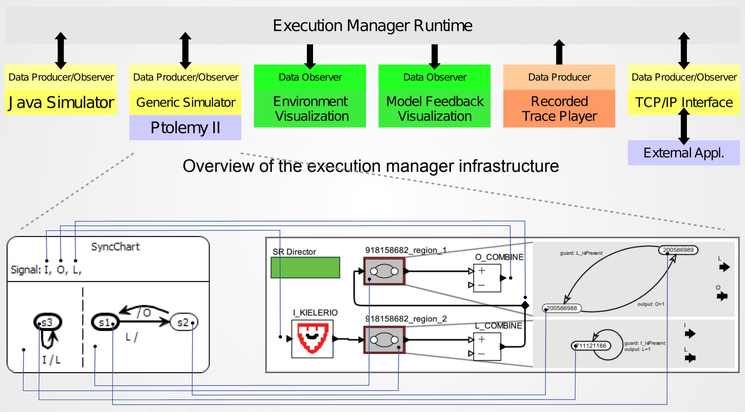


Focus and context: the active states of a SyncChart are fully shown, while other states are collapsed

- Dynamically create and layout graphical views of the model
- Arbitrary conditions can trigger different visual effects

Model Execution

KIEM – KIELER Execution Manager



A SyncChart model (left) and a generated Ptolemy model (right)

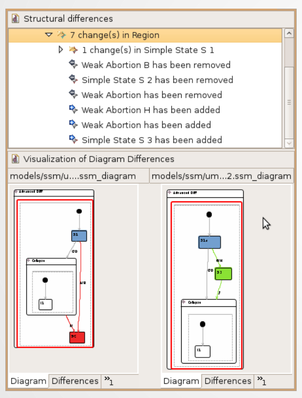
The semantic domain of Ptolemy is used as a possible simulation backend for KIEM.

Code Generation

- Generate code with Xpand
- Connect executable code to KIEM
- Examples:
  - SyncCharts in C [4]
  - Dataflow to Lustre

Model Comparison

KiViK – KIELER Visual Komparison [3]



- Visualizes differences in two versions of a model graphically
- Integrates into standard Eclipse GMF and comparison mechanisms
- Employs EMF Compare project as differencing engine
- Employs automatic layout and automatic zooming and scrolling for navigation

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

[1] Hauke Fuhrmann and Reinhard von Hanxleden. On the pragmatics of model-based design. Technical Report 0913, Christian-Albrechts-Universität zu Kiel, Department of Computer Science, May 2009.

[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] Arne Schipper, Hauke Fuhrmann, and Reinhard von Hanxleden. Visual comparison of graphical models. In *Proceedings of the Fourth IEEE International Workshop UML and AADL*, held in conjunction with the 14th International Conference on Engineering of Complex Computer Systems (ICECCS'09), Potsdam, Germany, 2009.

[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.