

# SCCharts, KIELER and the Eclipse Layout Kernel

## Statecharts for Safety-Critical Applications and a Pragmatics-Aware Modeling Environment

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We present a graphical language, SCCharts<sup>1</sup> [4], designed for specifying safety-critical reactive systems. SCCharts use a statechart notation and provide determinate concurrency based on a synchronous model of computation (MoC), without restrictions common to previous synchronous MoCs. Specifically, we lift earlier limitations on sequential accesses to shared variables, by leveraging the sequentially constructive MoC [5].

The SCCharts demonstrator is part of the Kiel Integrated Environment for Eclipse Rich Client (KIELER)<sup>2</sup>, see Fig. 1. The demonstration shows how to write an SCChart model using a textual notation, from which a graphical view is generated on the fly using the Eclipse Layout Kernel (ELK)<sup>3</sup> [3]. This allows *pragmatics-aware modeling*, which aims to combine the best of the textual and graphical modeling worlds [1] by separating the underlying model from automatically generated, adaptable views. We also present a compilation chain that allows efficient synthesis of software and hardware [2].

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<sup>1</sup><http://www.sccharts.com>

<sup>2</sup><https://www.rtsys.informatik.uni-kiel.de/en/research/kieler>

<sup>3</sup><https://www.eclipse.org/elk>

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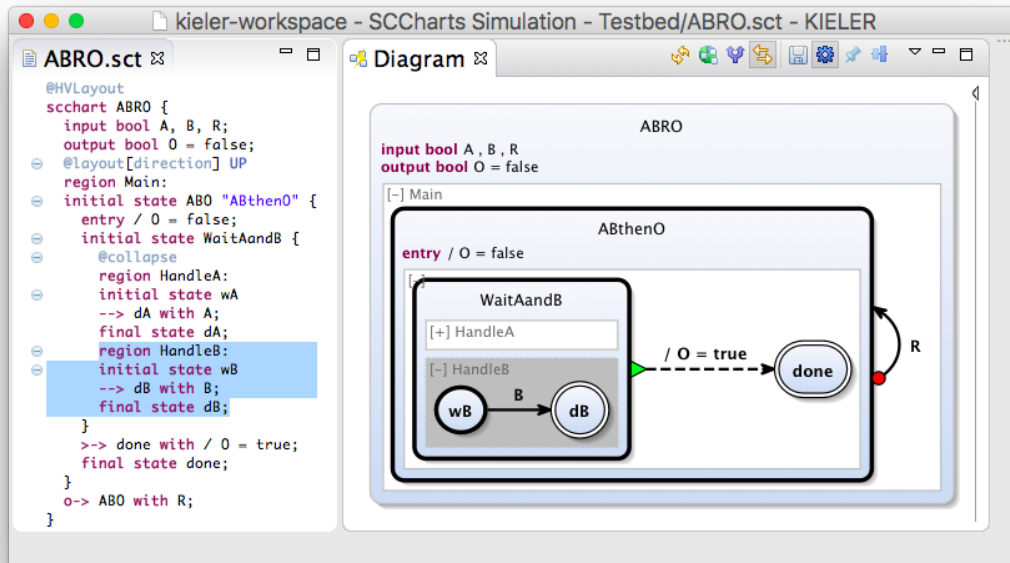


Fig. 1. An SCChart modeled with KIELER. The graphical view is synthesized automatically from the textual ABRO.sct model. *Layout directives* (starting with @) govern the filtering and drawing, e.g., region HandleA is collapsed. The view also helps to navigate in the model; here, the user has clicked in region HandleB, which selects the corresponding part in the text.