



Digital Rail Summer School

Event

The *Digital Rail Summer School* is designed for students of computer science with an interest in the railway system. The event offers an insight into the development of embedded systems in critical infrastructures in the field of tension between IT, rail operations and approval procedures. The content and agenda of DRSS 2020 and the video of DRSS 2019: www.hpi.de/drss. Further information on registration and participation fee can be found on the link mentioned above. The *Digital Rail Summer School* is organized by *DB Institute of Technology*, under the academic leadership of the *Hasso-Plattner-Institut* (HPI) of the University of Potsdam.

Termin and Venue

The *Digital Rail Summer School* takes place in Kw 39 at the Digital Test Field:

21st – 25th September 2020

Digital Test Field

Lecture Theatre and Cafeteria: 09477 Jöhstadt

Test Station: 09481 Scheibenberg

Theme

The topic of the *Digital Rail Summer School* is EULYNX, the European standard for digital interlocking. As a demonstrator, the co-simulation 'EULYNX live' was implemented in the network of many participating partner universities using MBSE in the summer semester:

Model-based system development with “model-in-the-loop”

The EULYNX specifications are modeled as executable SysML state machines. Using automated *code generation*, executable program code is created from the models as a simulation of the specification. Further developments to the program code of the simulator are transferred back into the modeled EULYNX specifications by means of *reverse engineering* and are available for the next iteration of the development cycle.

Functional conformance testing with “hardware-in-the-loop”

The various simulators correspond to EULYNX components and are integrated via interface adapters into a functionally complete, executable co-simulation of the overall EULYNX system as a *test control & logging platform* in accordance with the Shift2Rail TCL-ZOST specification. Subsequently, the adapter interfaces hardware components integrated through adjustments to the real in co-simulation. Thus, 'EULYNX live' becomes an integrated test stand for functional conformity tests and automated regression tests of EULYNX hardware components and software algorithms, and thus the tool for verification processes that are required in assessments and reviews for approval.

Outlook

The co-simulation “EULYNX live“ is the first step towards a complete, executable *TCL-ZOST simulation model* of the digitalized, automated rail system according to the RCA / OCORA specifications, which forms a test bench for software and hardware of the digital rail as a software laboratory platform and acts as the operating system of the digital test field to test the scenarios of operational and technical target image.