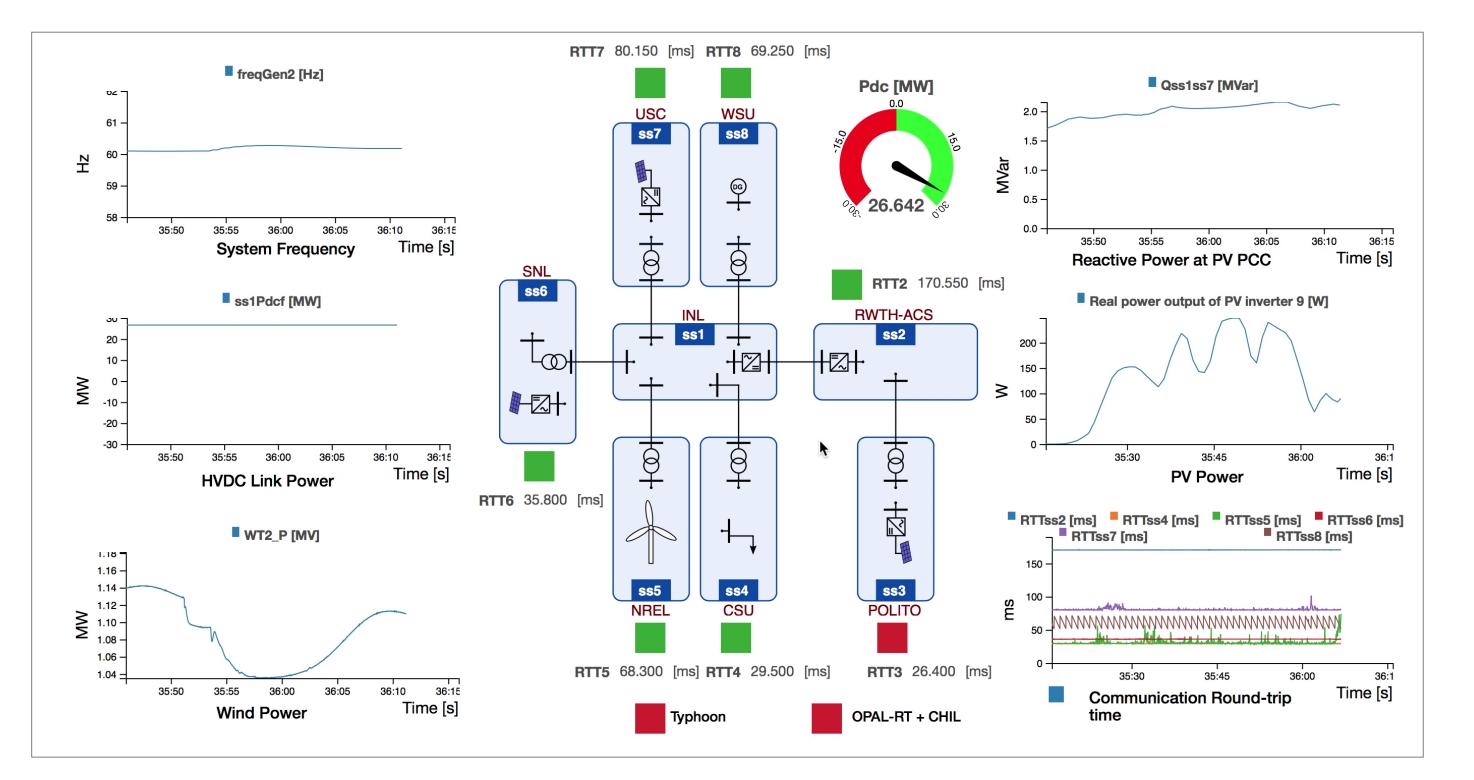
Steffen Vogel, Markus Mirz, Lukas Razik, Antonello Monti Institute for Automation of Complex Power Systems

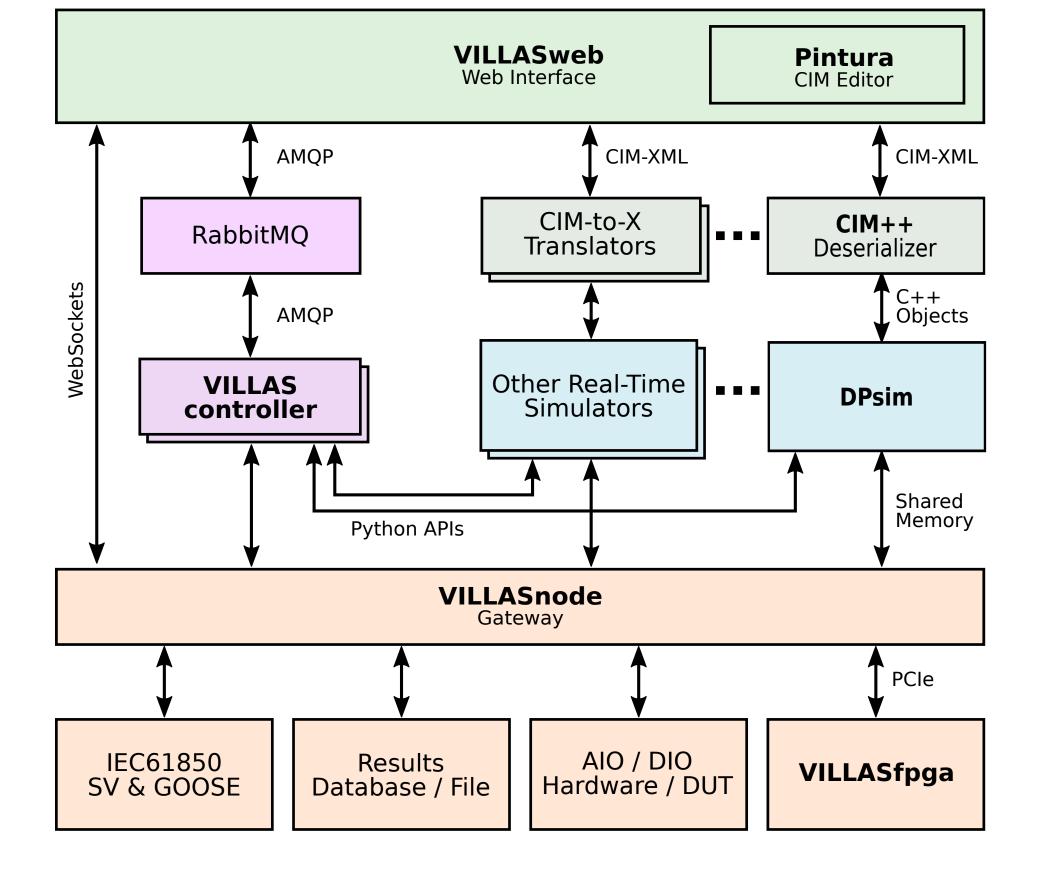


An Open Solution for Next-generation Real-time Power System Simulation

Web based modelling, analysis & interaction

Modern Web Technologies like HTML5, Scalable Vector Graphics (SVG), JavaScript and WebSockets offer new possibilities for building user interfaces for modelling, monitoring and interacting with simulation kernels.

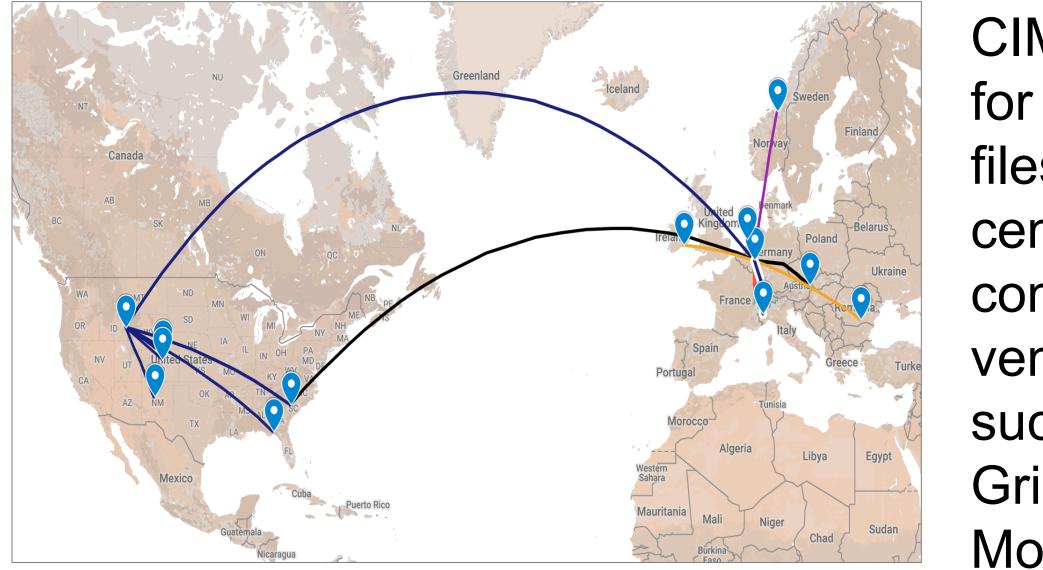




VILLASweb visualization of Global RT-SuperLab demonstration.

CIM: Common Information Model

As an industry standard, CIM is well suited for model exchange and offers a good way to centrally describe distributed simulations consisting of multiple subsystems.

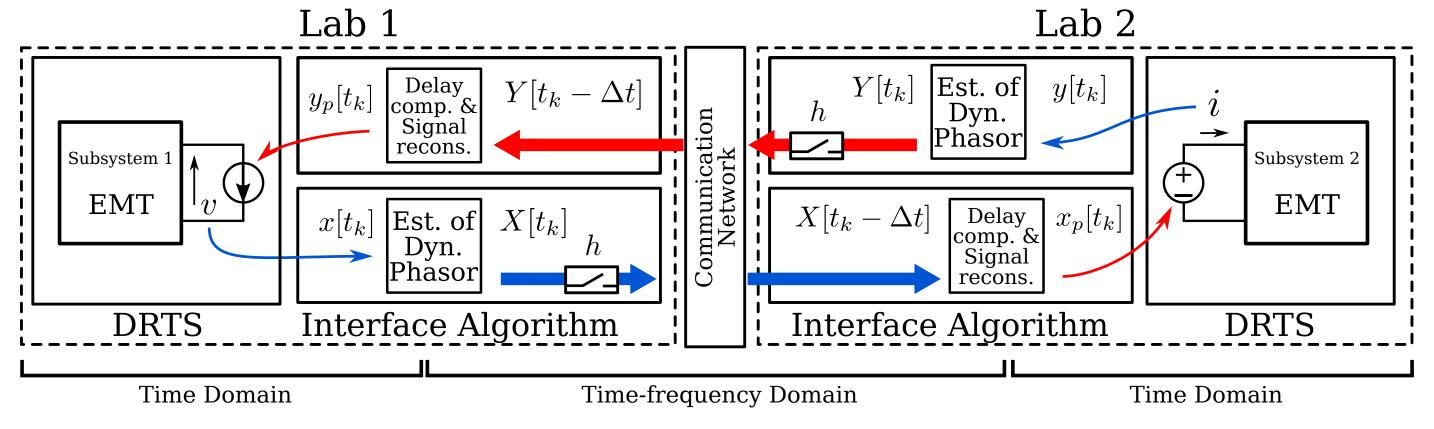


Existing lab interconnections in Europe and US

CIM++ is a C++ library for parsing CIM XML Architecture for large scale real-time simulation based on open source tools

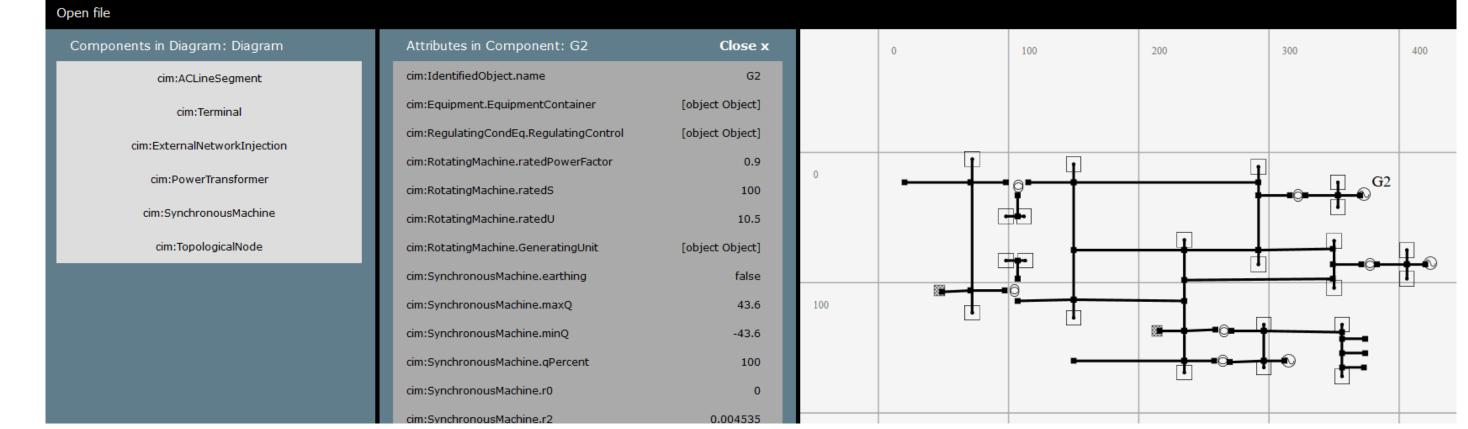
DPsim: A Dynamic Phasor / EMT Simulation kernel

Transient Simulation in the time-frequency domain using Dynamic Phasors provides a more resilient interface with improved robustness against communication latencies.



Interface Algorithm for geographically distributed Real-time Simulation

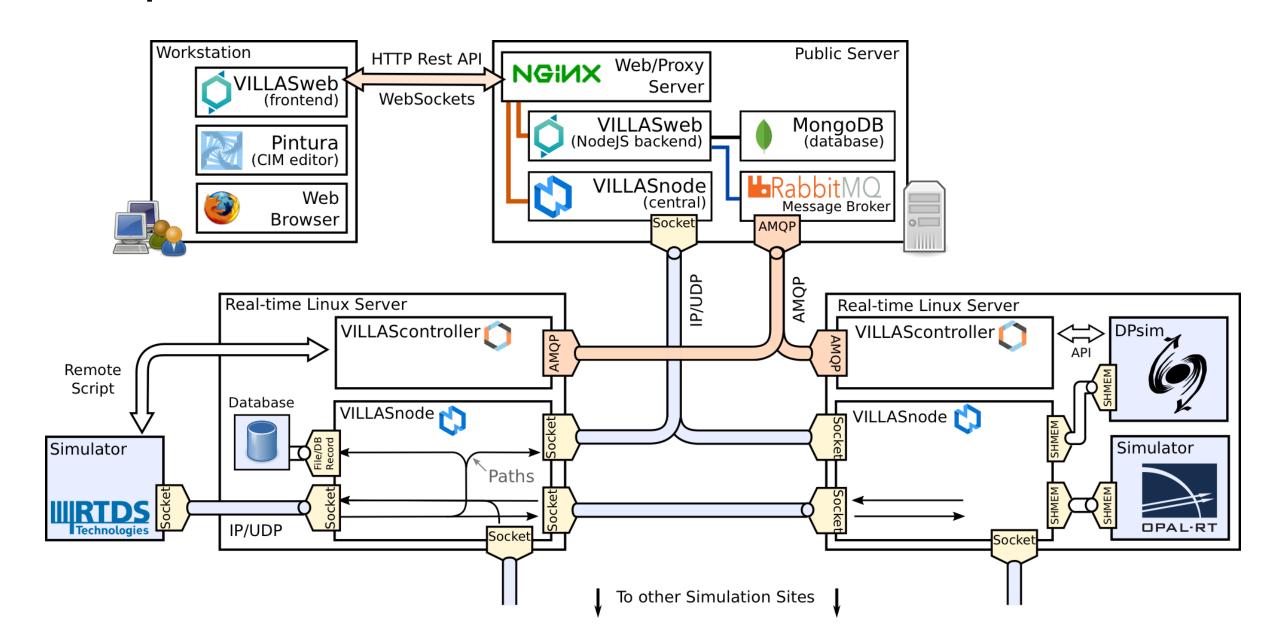
files. It is used as a central part for building compilers from CIM to vendor-specific formats such as used by DPsim GridLab-D and Modellica.



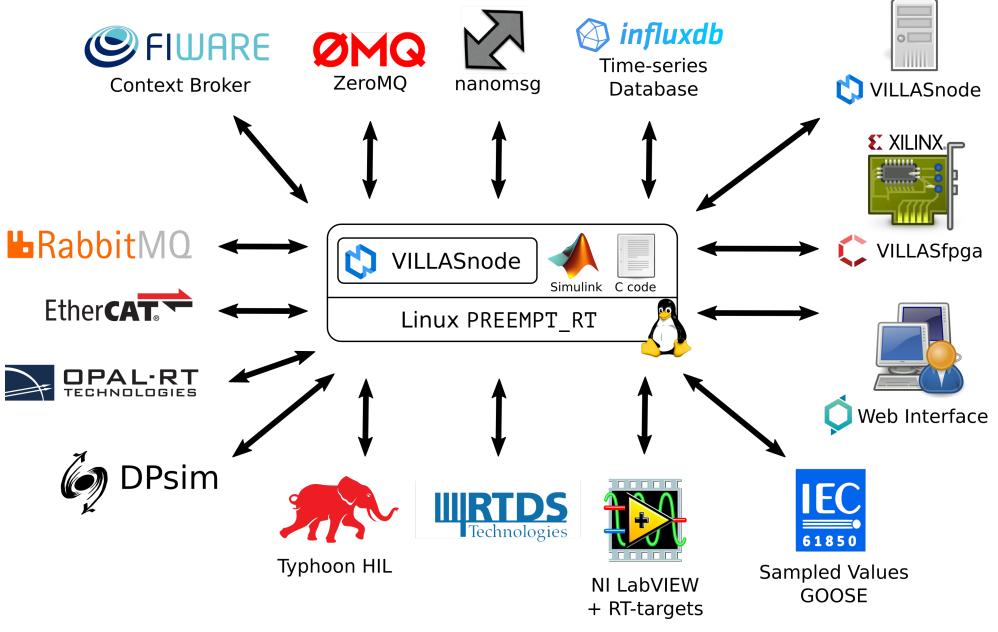
Screenshot of the web-based CIM editor "Pintura"

VILLAS: Real-time simulation gateway and orchestrator

Local and geographically distributed coupling of real-time simulations and HiL testbeds necessitates interface algorithms for compensation of communication latencies.



supported variety 01 from the protocols both system automation power field and cloud computing enable the construction of distributed large-scale simulations with heterogeneous mix of thirdparty tools and vendors.



Existing interfaces of the VILLASnode Gateway

Full topology of VILLASframework components



FEIN is a non-profit association maintaining and distributing open-source software developed by the Institute for Automation of Complex Power Systems



All tools presented on this poster are released as open source software under the GPLv3 license



RWTH Aachen University | E.ON Energy Research Center Institute for Automation of Complex Power Systems

Mathieustraße 10 | 52074 Aachen | Germany www.acs.eonerc.rwth-aachen.de

Steffen Vogel, M. Sc.

Stvogel@eonerc.rwth-aachen.de
★ +49 (0)241 80 49577
★ +49 (0)241 80 49709