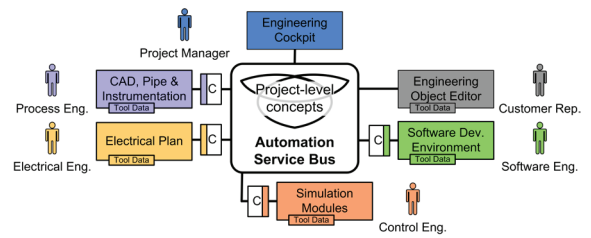


Simulation Integration Framework



Simulations and models of processes can be utilized in all phases of the control system life cycle. They can be used for design, verification, and system control. Simulations and models can be used in a wide range of applications, e.g., for operator training, decision support, estimation of unmeasured variables, fault detection, and job planning. The “Simulation Integration Framework” provides tools and processes for simulation integration using high-level definitions of user tasks.

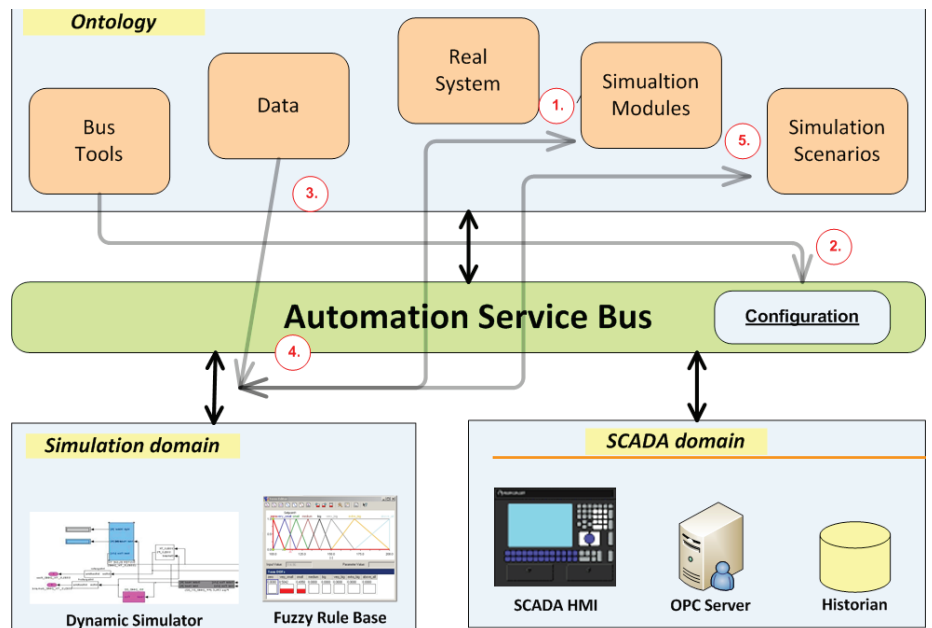
Goal

Simulations and supervisory control systems need not only production data (e.g., online data and historical measured values) but also other data sets like calendar information or tested scenario data. Data management that is independent from data storage variants is needed for trouble-free utilization. Parameterization of all levels must be available – system, model, and initial conditions.

The system should use the native languages for all groups of users, e.g., final users (line operators, dispatchers) and control engineers.

Implementation

The “Simulation Integration Framework”, developed by CertiCon and the CDL-Flex research laboratory at the Vienna University of Technology, allows the easy definition of a wide variety of simulation tasks. The framework can provide connectors to a range of simulators, data sources, and other tools participating in simulation framework workflows. A knowledge base provides formalized information on the real system,



simulations, and the SCADA system (Human-Machine-Interface, available data).

With the “Simulation Integration Framework” the integration of simulation models into the control system architecture and the SCADA system becomes easier.

The framework can be used to support both operator work and system control.

Technical Specification:

- Automation Service Bus®
- Matlab, FuzzyDesigner
- Model-driven configuration
- Semi-automated model design or interface definition (based on Bond graphs)

Benefit for customers

- The “Simulation Integration Framework” simplifies the reconfiguration of simulation tasks.
- Simulations can be utilized by non-experts, the simulation tasks are parameterized in a user-friendly way.
- Traceable simulation workflows due to user and data management
- An abstract user task definition allows the fast creation of different simulation scenarios and reduces task design effort.

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