

COLLABORATIVE ENGINEERING
EVERYWHERE



FRAUNHOFER INSTITUTE FOR
OPEN COMMUNICATION SYSTEMS FOKUS

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We
connect
everything

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MODELICE

CHALLENGE

Along with an increasing complexity of software the modeling effort grows. Modeling is necessary to represent structures and processes of complex software systems and thus for developing software efficiently. In addition, software development projects often are international endeavors with teams from different countries working together. This requires tools for efficient and collaborative modelling.

ModelICE by Fraunhofer FOKUS is a modeling tool for web-based UML modeling. It provides solutions for important challenges in software development like:

- How to handle modeling projects by multiple development teams effectively and consistently?
- How to enable all project partners to have full and fluid access to relevant functions?
- How to migrate a development environment into the cloud?

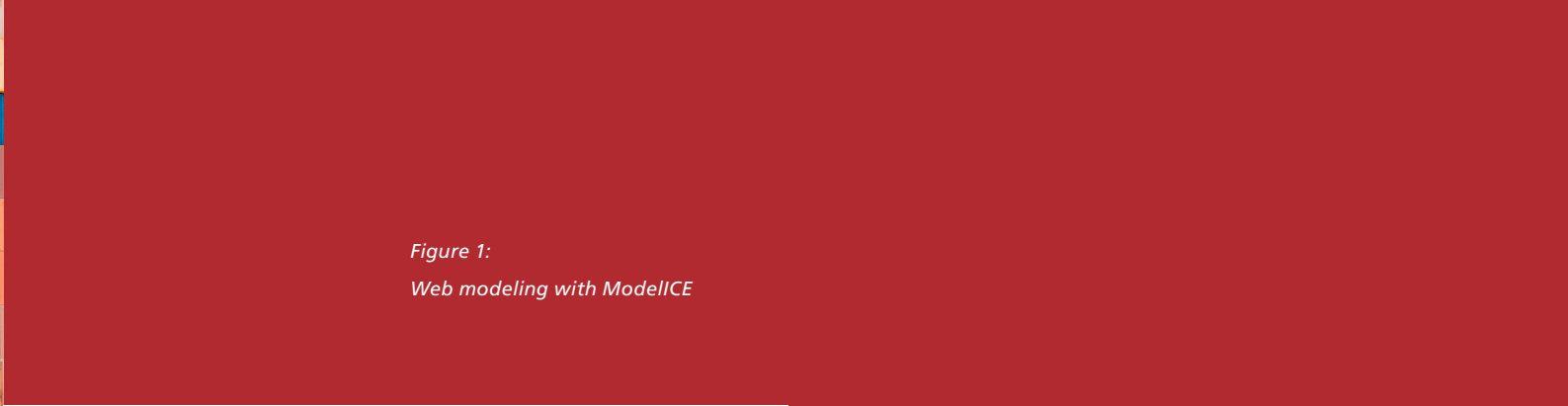


Figure 1:
Web modeling with ModelICE

MODELICE INNOVATIONS

Everywhere – Instant browser based modeling

ModelICE is browser-based and therefore it can be shared with project partners via the Internet. Installations are superfluous hence the administrative effort is reduced. As ModelICE is provided via the Internet, all project partners have access to the latest software version.

Collaborative – Across companies

Using ModelICE, project partners are enabled to work on a project at the same time and beyond company boundaries. The ModelICE tool offers various functions for coordination and communication and thus to improve the efficiency of modeling processes:

- Through automatic synchronization, all users have the current processing status.
- Exclusive access to individual project elements is guaranteed by locking.
- Link sharing and interactive reviewing via chat are features to support connected collaboration.



Scalable – Through Cloud Deployment Capabilities

ModelICE is horizontally scalable and follows the cloud paradigm: Depending on the amount of data, additional computing capacities can be added to a running system regardless of any hardware-related restrictions and thus cost-effectively. This is made possible by the support of virtualization technologies like Docker and the use of server-side caches. From the cloud only those model elements of a project will be retrieved that are displayed and edited by a user. Therefore, ModelICE can be used efficiently for modeling projects with large amounts of data while still causing only a small data load.

Staged Migration – From Legacy Systems

ModelICE acts next to legacy systems for software modeling. The synchronization of information runs in both directions. Accessing the data of the legacy system ensures full modeling functionality in both systems. A gradual transition of the modeling projects into the cloud through parallel operation of both systems and through a systematic change also guarantees a low-risk transition during operation.

Open – With Eclipse Modeling Environment

ModelICE embraces the concept of the Eclipse platform – an extensible platform based on mature open source technologies. The functional extension of ModelICE is possible through extension points, plug-ins and the use of EMF (Eclipse Modeling Framework). Base technologies that are used include:

- Eclipse EMF UML
- Virtualization via Docker
- Configuration and monitoring via Zookeeper and Redis
- Chart technology based on SVG (Scalable Vector Graphics)
- Clustering e.g. via nginx
- User administration e.g. via LDAP

Rich – Through UML support

ModelICE supports a large part of relevant diagram types of UML (Unified Modeling Language), such as Class, Component, Package, Deployment, Activity, Statemachine, UseCase, Sequence.