MOSAICmodeling – A Fully Equation-oriented, Web-based Tool for Modeling, Simulation, and Optimization in Chemical Engineering

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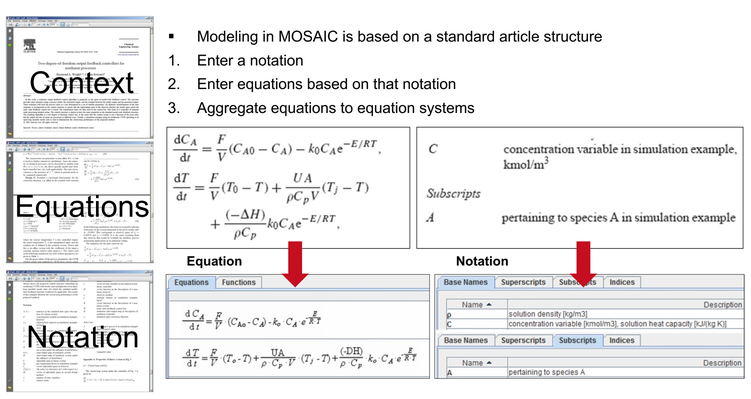
I. Motivation: Modeling at the Documentation Level

Formulate Models as They are Published in Articles

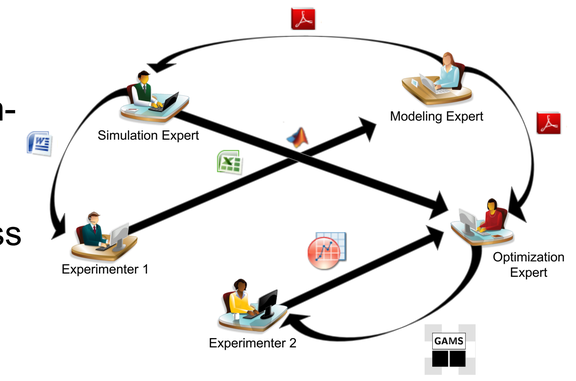
- Let users enter models with descriptions in LaTeX
- Mimic articles as closely as possible
- Allow for universal export of models



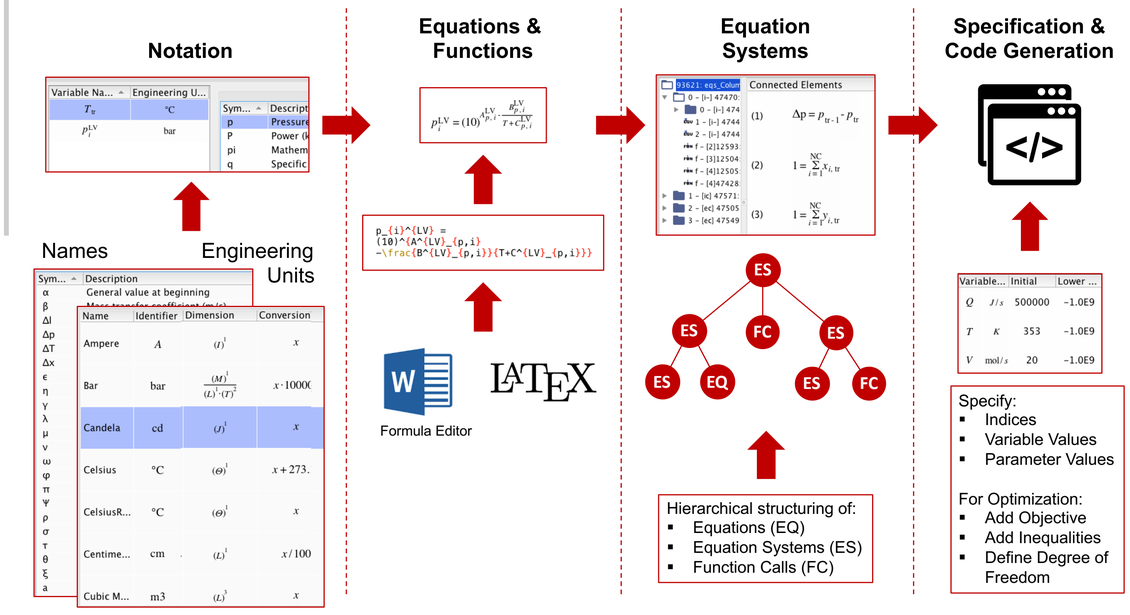
II. Motivation: Collaborative Modeling

Work Together on Model Formulation, Simulation, and Optimization

- Facilitate the exchange of models for simulation and optimization
- Use mathematics as the common denominator
- Allow for simultaneous access



III. User Workflow in MOSAICmodeling



IV. Implementation: Java & MySQL

GUI:

- Fat client implemented in Java with automatic updates and online access required

Backend:

- User data stored on servers spread worldwide using either MySQL or MariaDB

V. Functionality

Universal Code Generation

- Users can define their own code exports of models
- Advanced functionality for model analysis, discretization, decomposition, and documentation

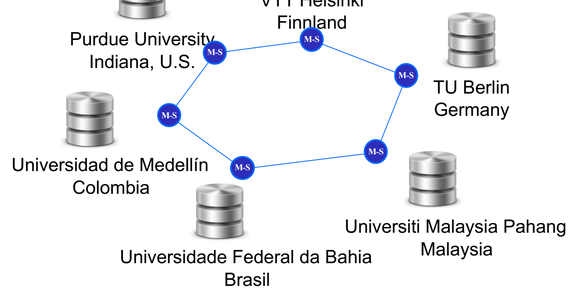
VI. Current and Future Developments

Connection to Chemical Plants via OPC UA

- Complex mapping issues to sensors and actuators
- Introduction of new variable classifications for measurements and controls

Synchronization Between Server Locations

- Expected issues with long connection times



References

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