"Semantic Dropbox" for Quality-Controlled Tool Chains
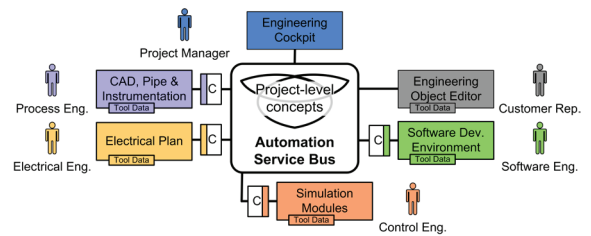
In software and systems engineering projects the effort and user friendliness should be improved for the quality-controlled propagation of changes to engineering plans along tool chains in heterogeneous software data models.

The "Semantic Dropbox" provides traceable and automated synchronization of engineering plan data between heterogeneous software tools using well-defined common concepts to help the project team to achieve this goal.
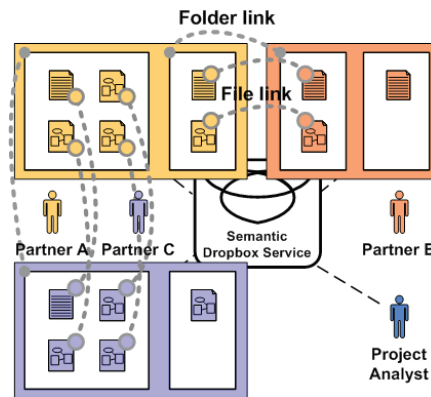
Goal

Changes of engineering plans in the distributed and parallel engineering of industrial plants often have an impact on plans in related disciplines. Isolated and specific software tools and data models do not fit together seamlessly.

The "Semantic Dropbox" enables efficient and user-friendly tool chains between heterogeneous software tools to bridge technical and data representation gaps, which take significant effort and risk to close with makeshift implementations and informally organized data-exchange approaches.

The detection and propagation of changes to engineering plans is to become effective, efficient, and robust, to reduce defects and risks in the overall project planning.

Domain experts shall continue to use their familiar software tools.

Implementation

The "Semantic Dropbox", developed by logi.cals and the CDL-Flex research laboratory at the TU Vienna, enables creating common folders, which contain shared data that get synchronized and transformed bet-

ween the partners as necessary.

The mapping of common concepts of the domain experts in a project to their local data model representations in software tools facilitates the automated detection of changes and conflicts and supports informing the relevant domain experts in the project team.

Benefit for customers

- Domain experts can produce traceable and secure tool chains easily (in a few days instead of weeks).
- Practitioners can propagate changes to engineering objects efficiently, even between heterogeneous software tools (in seconds instead of minutes).
- Quality managers can evaluate activities on engineering objects (e.g., changes to library code blocks) automatically - even across several projects.
- Defects and risks from inconsistent engineering plans in distributed engineering projects get minimized.

From changes in a discipline, the approach can derive the necessary changes in other disciplines and the semi-automated creation of engineering tickets, which can be managed according to the roles in the project.

The change management across software tools has been evaluated with data from real projects with a world-leading steel mill automation specialist.

The first step for an iterative migration towards a traceable tool chain with EPlan and LC3 has been tested in order to demonstrate the efficient integration of heterogeneous software tools even in a complex tool landscape.

Technical Specification:

- Automation Service Bus®
- Versioned storage of Engineering Data
- EPlan, logi.CAD 3
- Semantic integration of common concepts on project level
- Qualified for using the data exchange standard AutomationML

Contact:
Heinrich Steininger
CEO logi.cals Austria
Phone: +43 5 77147
Fax: +43 5 77147-99
info@logicals.com
http://www.logicals.com

Stefan Biffl
Head of CDL-Flex
Stefan.Biffl @tuwien.ac.at
http://cdl.ifs.tuwien.ac.at

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TU WIEN — TECHNISCHE UNIVERSITÄT WIEN — Vienna University of Technology

Christian Doppler Forschungsgesellschaft