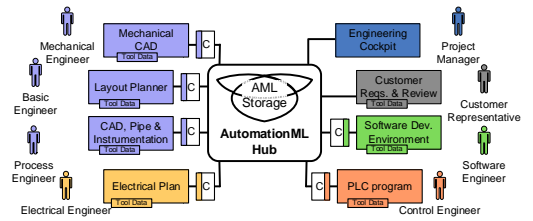


# From the AutomationML Tool Network to the AutomationML Hub

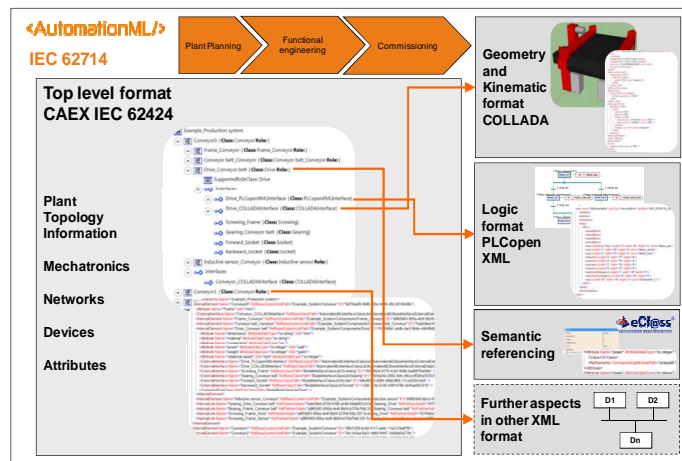


The visibility of and access to exchanged data will become easily available in tool networks using the open interface format, *AutomationML*. The *AutomationML Hub* enables the efficient storing, aggregation, linking, re-versioning, enriching, and analysis of exchanged *AutomationML* data.

## Challenges

Tool networks in the distributed engineering of automated systems exchange data point-to-point, but this kind of data exchange

- does not sufficiently enable consistency management;
- complicates round-trip engineering;



- makes data not easily accessible on the project level, e.g. for risk management or for test automation.

Even when these tool networks use open data formats like *AutomationML*, exchanged data

- may still not be available for querying via a unified interface, and
- cannot easily be linked to support advanced applications.

## Criteria for a good solution

1. Domain experts can continue to use familiar software tools for the propagation of selected data.
2. Data must be easy to link and process across disciplines.

3. Project-level access to exchanged data should be effective and efficient to minimize mistakes and risks.
4. Domain experts should be supported in analyzing the impact of data changes to their work.

## Implementation

The *AutomationML Hub*, developed by *logi.cals* and the *CDL-Flex* research laboratory at *TU Vienna*, enables project participants to define common data to be stored in an AML repository.

The *AutomationML Hub* facilitates the efficient integration and versioned storage of data in tool networks and the automation of engineering processes on the project level.

Project participants can therefore analyze the data and provide them to advanced processes like test automation.

The mapping of common concepts to local representations in exchanged data facilitates the automated detection of changes between data versions and the triggering of engineering processes.

## Results

The approach systematically integrates tool networks that use the *AutomationML* standard and enables the automation of engineering processes.

Project participants can consistently combine engineering data with project information like the process status of objects, and use these data for advanced processes.

In a representative standard example, the storage of *AutomationML* data was evaluated by the cooperation partner *IAF*, at the *Otto-von-Guericke University*

*Magdeburg*. The example shows how data from three disciplines and from run time can be provided as a data structure that can be queried efficiently with a standard query language.

## Improvements

- Domain experts can store revised data from tool networks, which use the *AutomationML* standard.
- Users can consistently and efficiently query data across disciplines.
- Quality managers can automatically evaluate activities on engineering objects.
- The *AutomationML Hub* can process run-time data, e.g. from systems for testing.

## Technologies

The *AutomationML Hub* is based on the *Automation Service Bus*®:

- Versioned storage of exchanged Engineering Data.
- Uniform, freely definable data model(s) for querying common concepts on project level.
- Support for tool networks with the open standard *AutomationML*.

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