

# Enabling Digital Business with an AutomationML Connectivity Hub

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## Motivation

### Challenge



- Further globalization of the market and rising pressure to be innovative – markets are increasingly driven by **dynamics and individuality** → enhancement of engineering **efficiency** as well as **quality**

### Approach



- Introduction of **innovative (Industrie 4.0- / Industrial Internet-) technologies** capable of realizing...
  - ...intelligent and **flexible production lines**
  - ...where **smart products** are produced
  - ...and the **customer is directly integrated** into the process

### Problem



- Producing companies do not meet the requirements** to integrate the necessary technologies into a seamless process integration from product development to service delivery

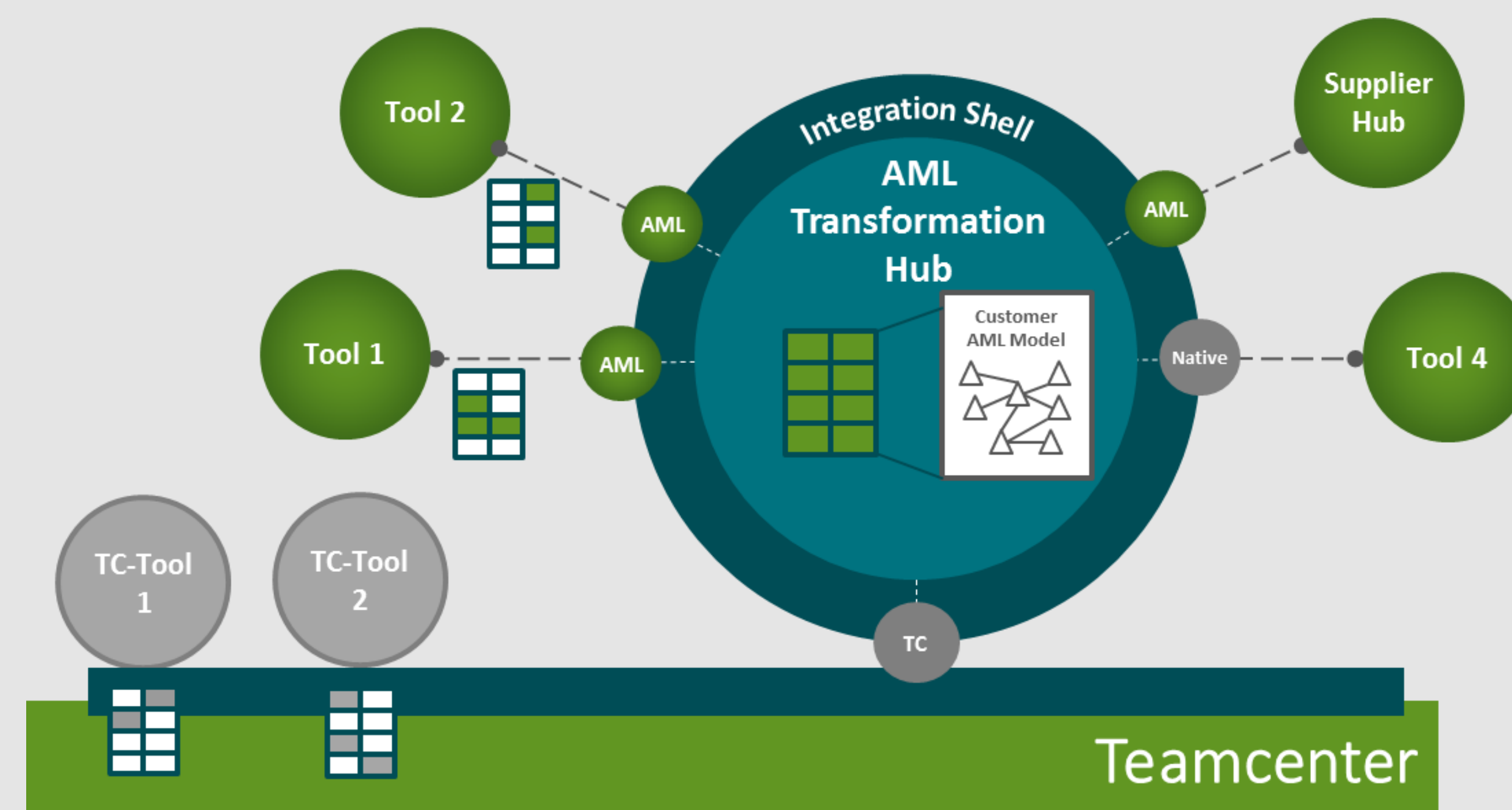
### Solution



- Provide a **flexible integration hub** to easily enable producing companies integrate their processes

## Faster.Easier.Better – The AutomationML Connectivity Hub

- Integration made easy with AutomationML Connectivity Hub – Realize efficient engineering processes due to semantic integration of anything**



### Flexibility –

handle individual customer specific domain models

### Connectivity –

connect various Digital Enterprise Solutions (e.g. Teamcenter)

### Integration –

integrate different semantics from various data formats (e.g. AutomationML, Excel etc.)

### Powerful –

mapping engine to map input data into domain models and export into target models

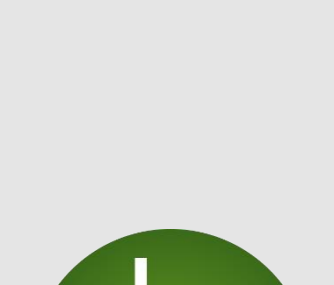
### Scalability –

Operate in isolated customer- as well as in a cloud- environment

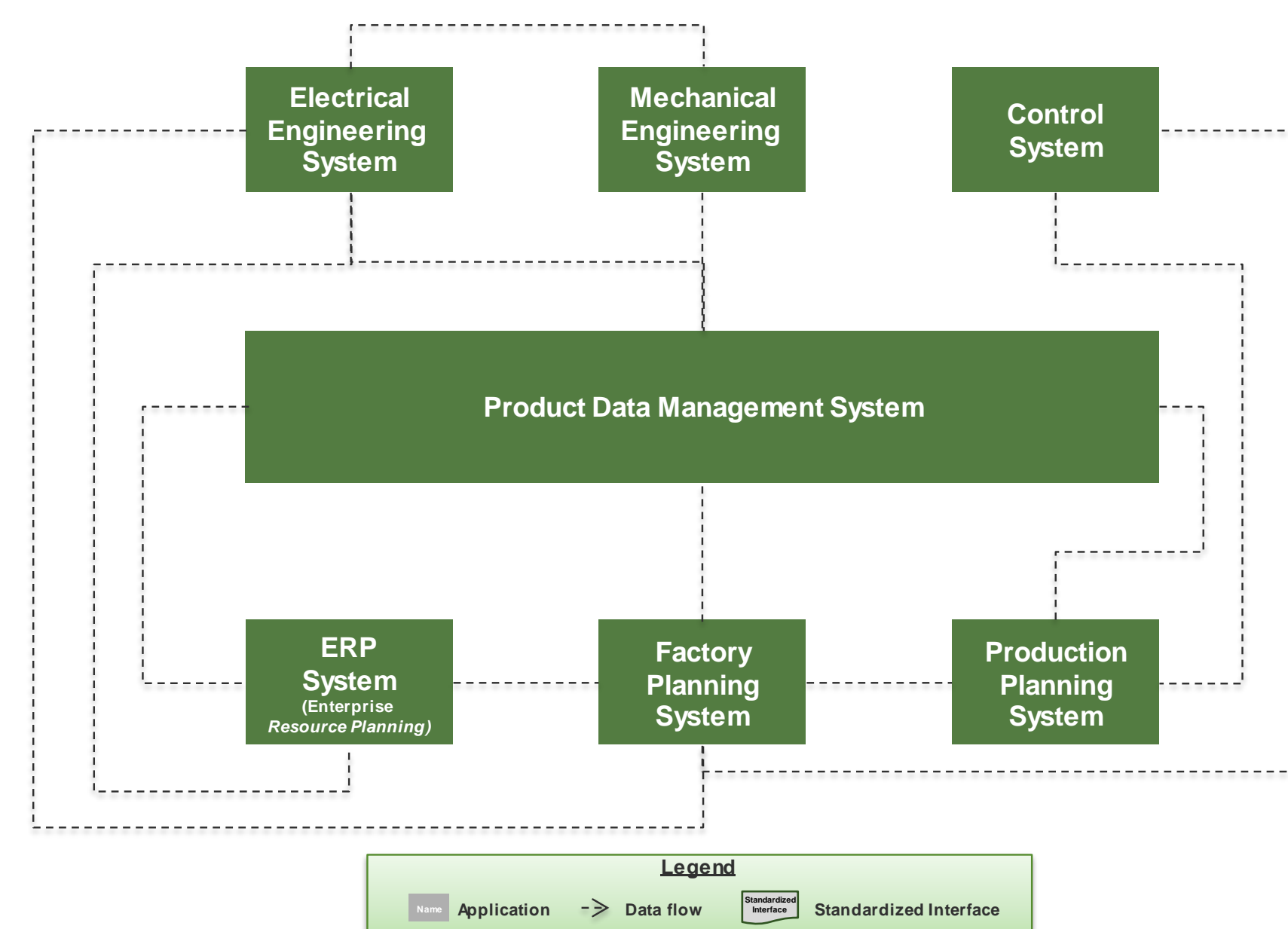
### Variability –

Flexible and customer oriented business models (e.g. pay-per-use)

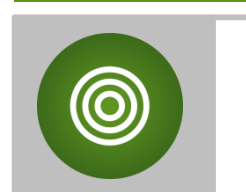
## Current Situation



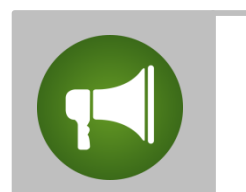
- Heterogeneous system landscape** – high number of different applications
- Limited interoperability** of the applications
- Many **point-to-point data flows** – lots of individual or even **manual interfaces**
- Not documented very well**, e.g. the direction or the contents of the data flows is unknown
- Maintenance effort** for such a landscape is **very high** and **changes are very complex**



## Use Case: Engineering Master Data Integration



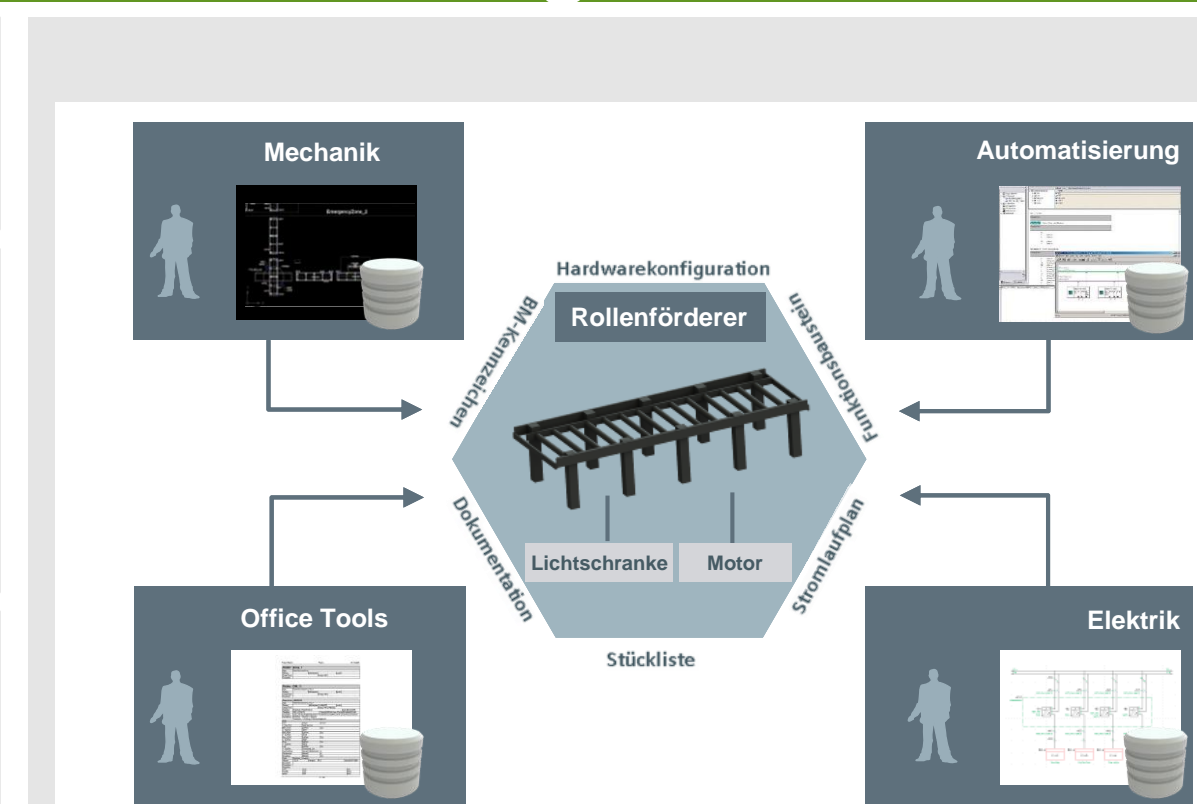
**GOAL:** Exchange of multidisciplinary Master Data with integrated engineering tool landscapes.



**CHALLENGE:** Engineering master data is mostly related to specific engineering tools. For using the full potential of collaboration inside an integrate engineering landscapes with Teamcenter - disciplinary master data has to be linked manually.



**SOLUTION:** AutomationML as an multi-disciplinary data exchange format can capture the links between the disciplines, so it is possible to exchange also those between integrated engineering landscapes.



## Use Case: Virtual Commissioning Modell Exchange based on AML



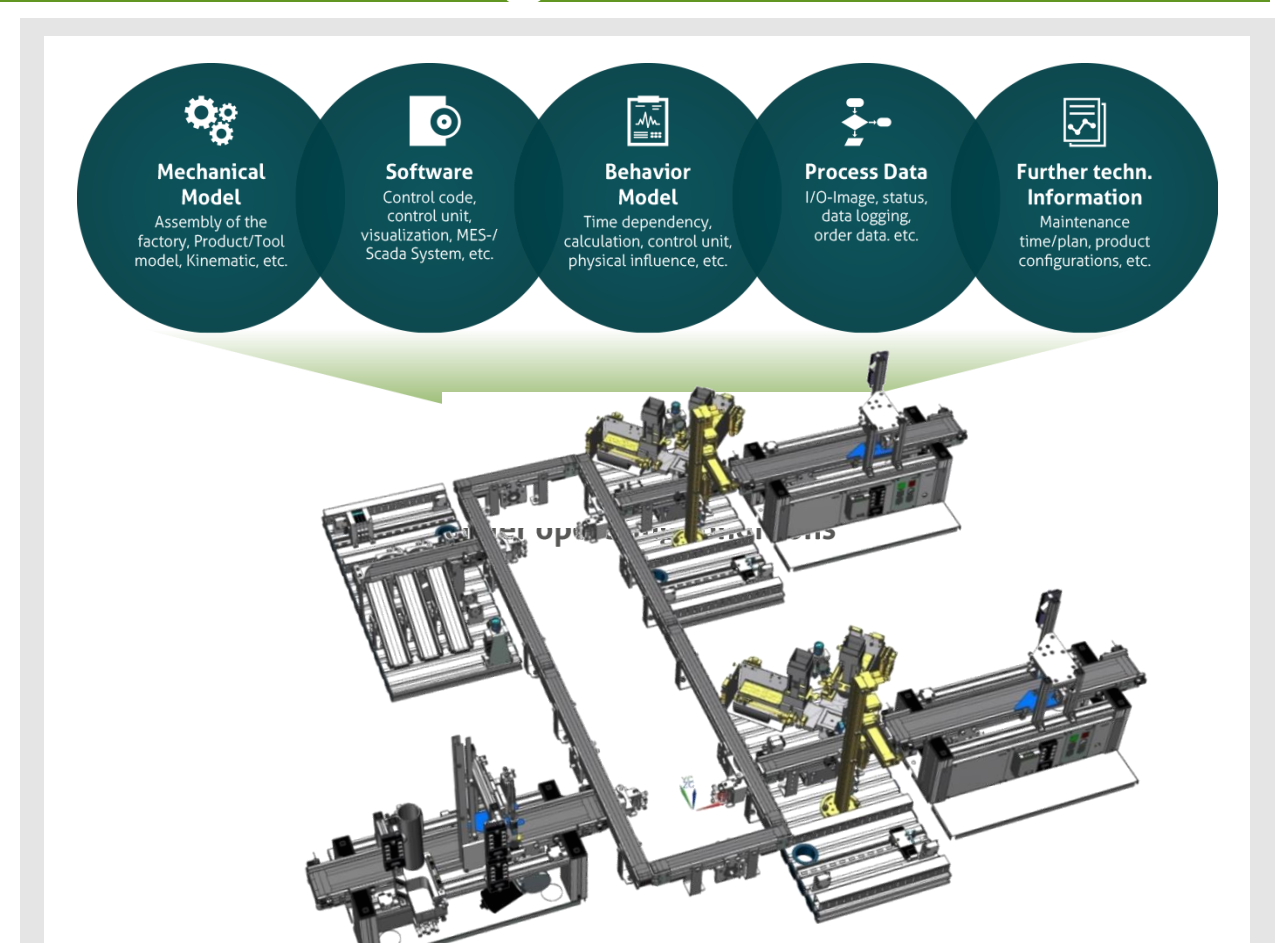
**GOAL:** Support the generation of a simulation model for virtual commissioning.



**CHALLENGE:** The effort to generate a simulation model is a key factor for the efficiency of virtual commissioning. Today several information has to be gathered and prepared to one model by the user (e.g. signal list, 3D-Model, kinematics, behavior).



**SOLUTION:** All necessary information can be gathered via AML and Teamcenter. With AML-Hub multi-disciplinary data can be exchanged between AML and Teamcenter to generate a simulation model e.g. for Process Simulate or via AML for a 3rd parties vendor



## Use Case: Resource structure exchange



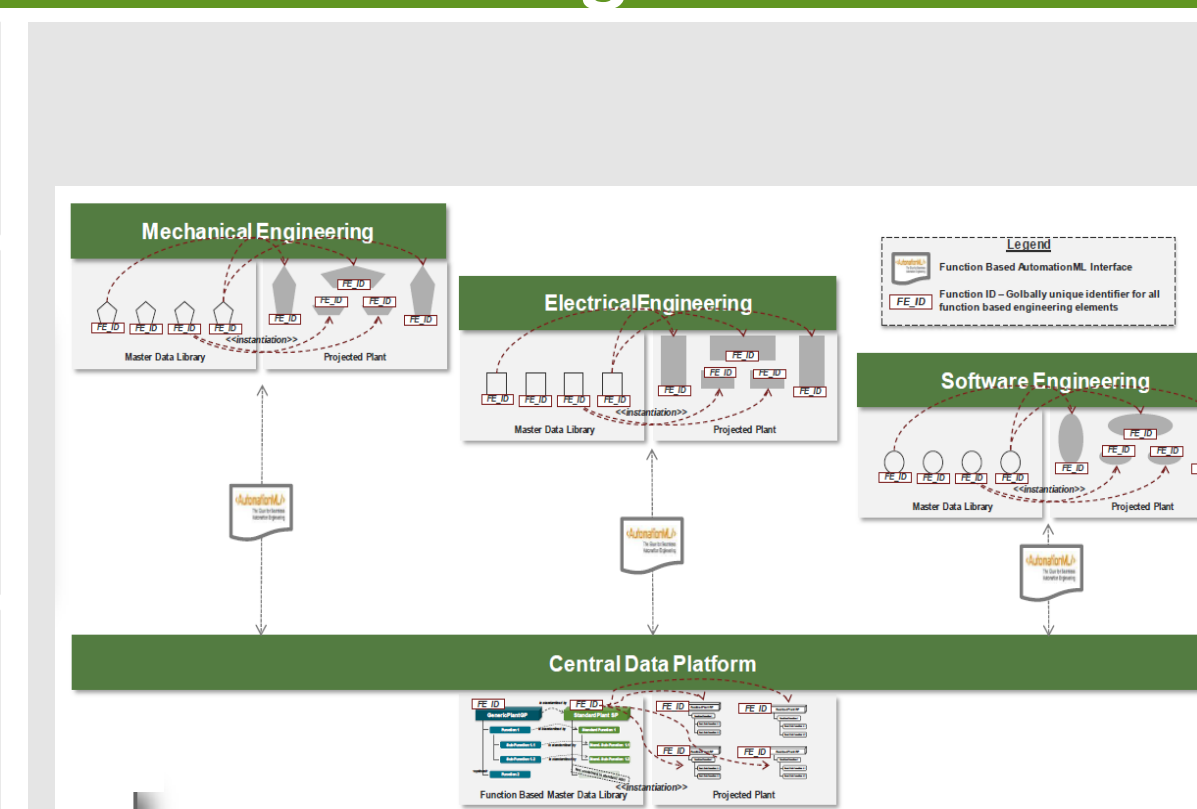
**GOAL:** Exchange of resource structures from integrated engineering environment with external 3rd parties engineering tools via Automation ML.



**CHALLENGE:** Plant and Resource Structures have to be exchanged between different tools during engineering. Inside an integrated engineering this can be managed by Teamcenter but with unmanaged 3rd parties tool this has to be done manually.



**SOLUTION:** AutomationML includes the CAEX standard to exchange structures between several tools. AML Hub offers the exchange of plant and resource structures between Teamcenter and 3rd parties tools via AutomationML.



## Use Case: MindSphere asset model exchange



**GOAL:** Create an asset model with relevant information as a basis for data analytics in cloud application.



**CHALLENGE:** Today the information of a machine or assembly line has to be transferred manual to a cloud (e.g. MindSphere) for data analytics. Updates also have to be synchronized in the plant model in engineering and the cloud asset model.



**SOLUTION:** AML Hub offers the option to exchange data between Teamcenter (or) Automation ML with the RDF Standard. So a data exchange process between an integrated engineering environment and an cloud application can be arranged.

