**Motivation**

1. Definitions.

I 4.0 or Industry 4.0 is a combination of production methods with state-of-the-art information and communication technology. In the world of Industry 4.0, people, machines, equipment, logistics systems and products communicate and cooperate with each other directly.

AML (Automation Mark-up Language) is a neutral data format based on XML for the storage and exchange of plant engineering information, which is provided as open standard. Goal of AutomationML is to interconnect the heterogeneous tool landscape of modern engineering tools in their different disciplines, e.g. mechanical plant engineering, electrical design, HMI development, PLC, robot control.

OPCUA is an industrial M2M communication protocol for interoperability developed by the OPC Foundation. It is the successor to Open Platform Communications (OPC). Although developed by the same organization, OPC UA differs significantly from its predecessor. The Foundation's goal for this project was to provide a path forward from the original OPC communications model (namely, the Microsoft Windows only process exchange COM/DCOM) to a cross-platform service-oriented architecture (SOA) for process control, while enhancing security and providing an information model. After more than three years of specification work and another year for a prototype implementation, the first version of the Unified Architecture was released in 2006.

1. The problem.

* Globalization forces large companies to go international
* Multinational companies tend to consolidate the standards
* Different industrial standards need to be matched
* Lots of time wasted onto manual object notation transcription

1. The solution.

In short, the goal of our research group is to create a web-based tool that uses RDF(S) vocabularies for integrating instances of such standards as AutomationML and OPCUA into one piece.

Such a universal tool should:

* validate each document against standard schema
* match each entity of the document to a respectful entity of another document if possible according to ontology
* consolidate the knowledge into the new unified standard

1. Schema

