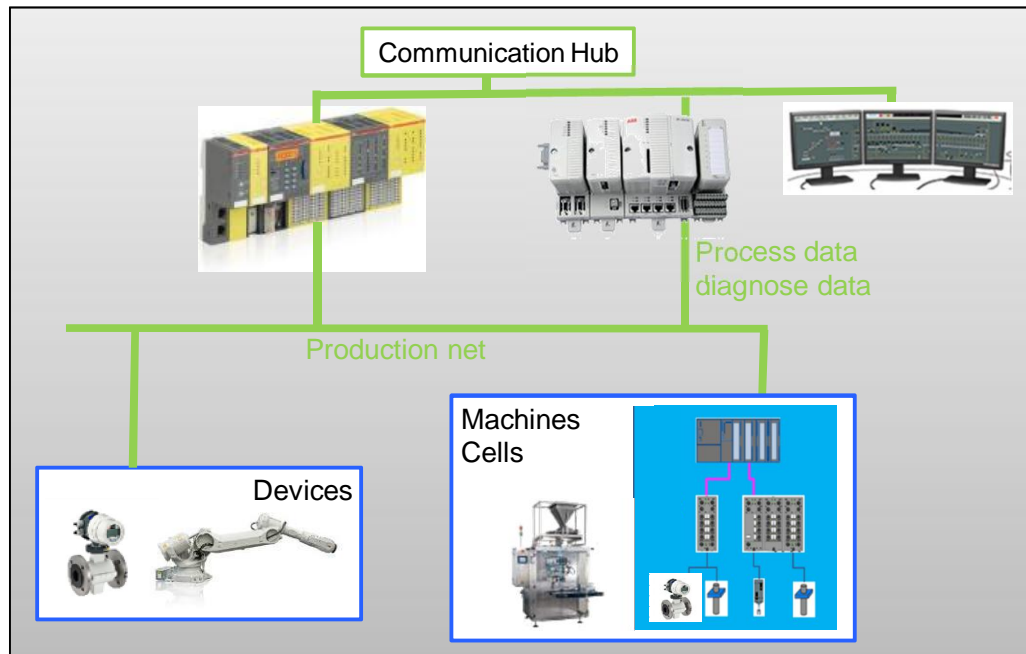


Dr.-Ing. Rainer Drath, ABB Corporate Research Center Ladenburg

# AutomationML

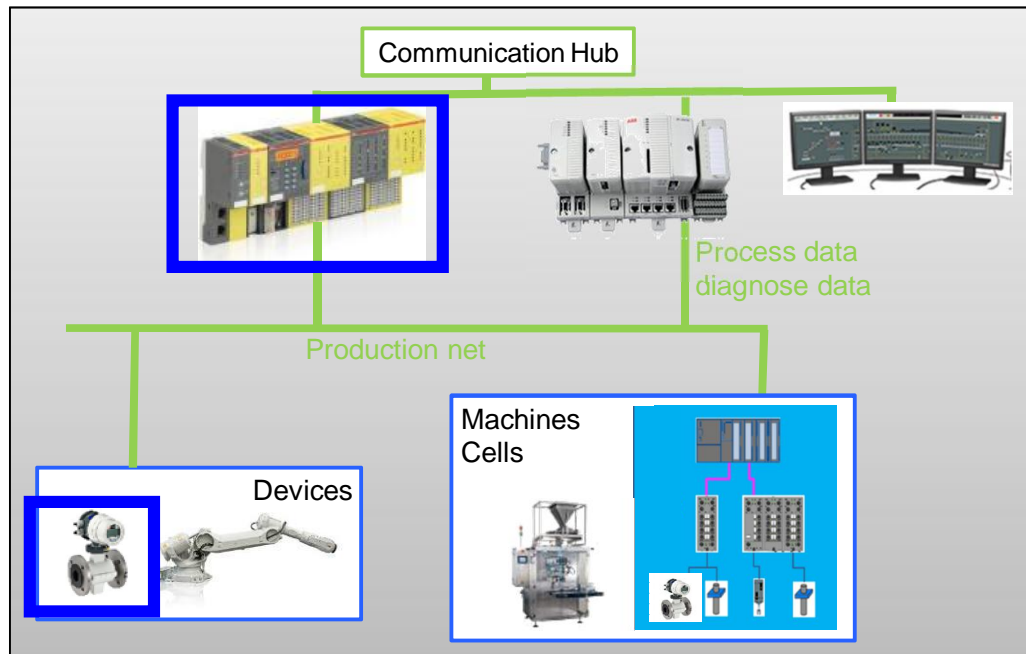
## Introduction to the architecture

# Elements of Plant Topology



**Elements of a plant**

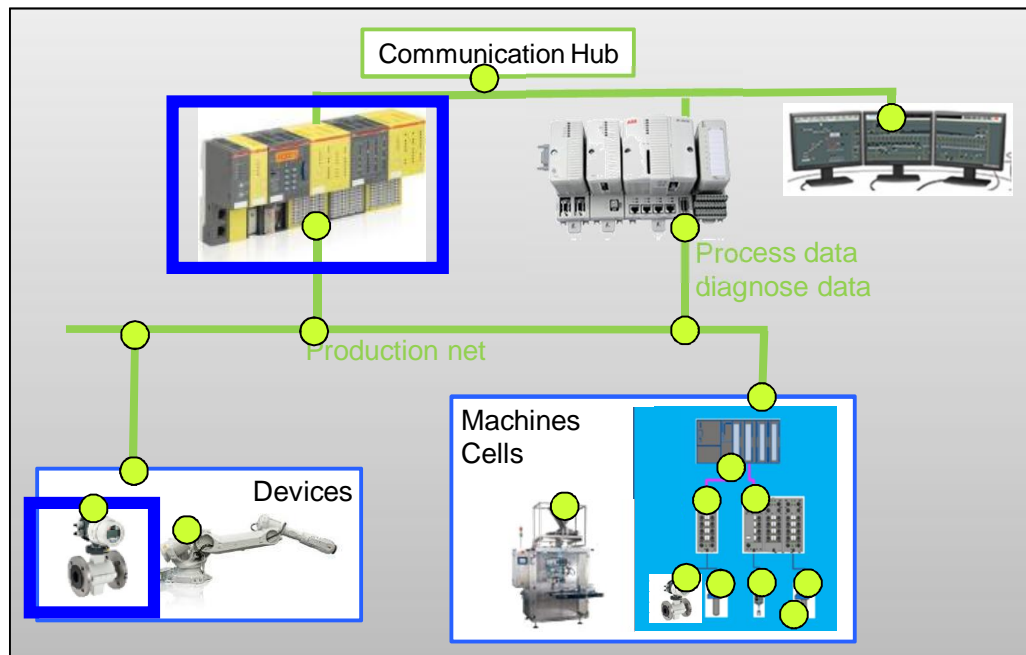
# Elements of Plant Topology



## Elements of a plant

### ① Objects

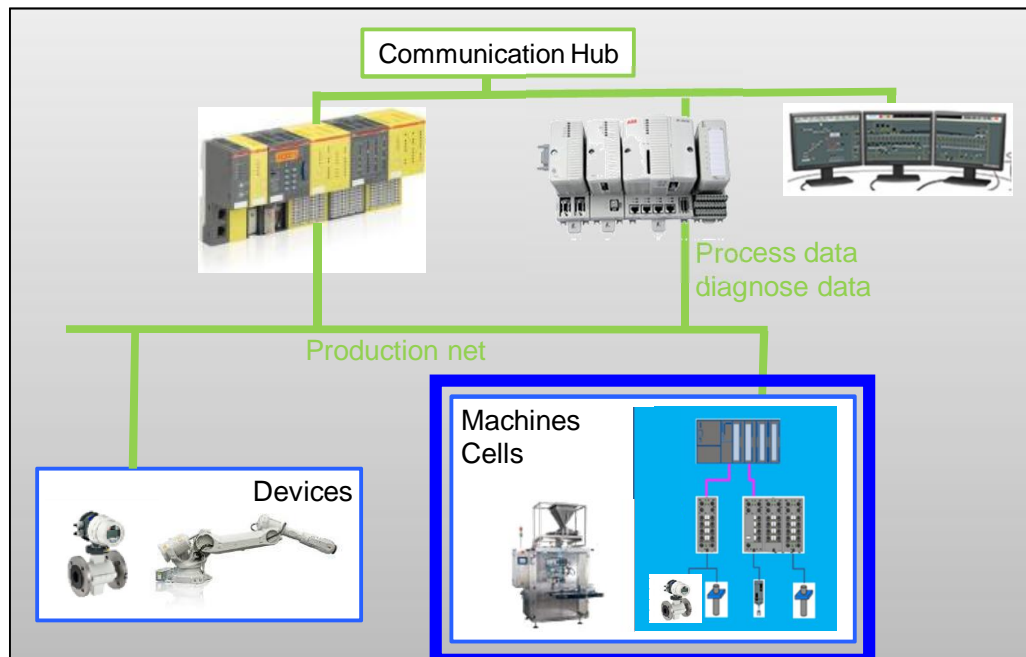
# Elements of Plant Topology



## Elements of a plant

- 1 Objects
- 2 Interfaces

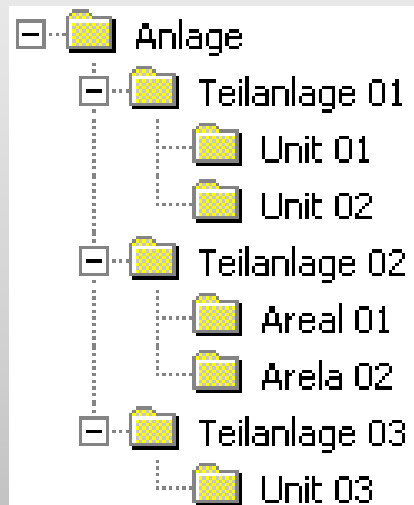
# Elements of Plant Topology



## Elements of a plant

- 1 Objects
- 2 Interfaces
- 3 Compositions

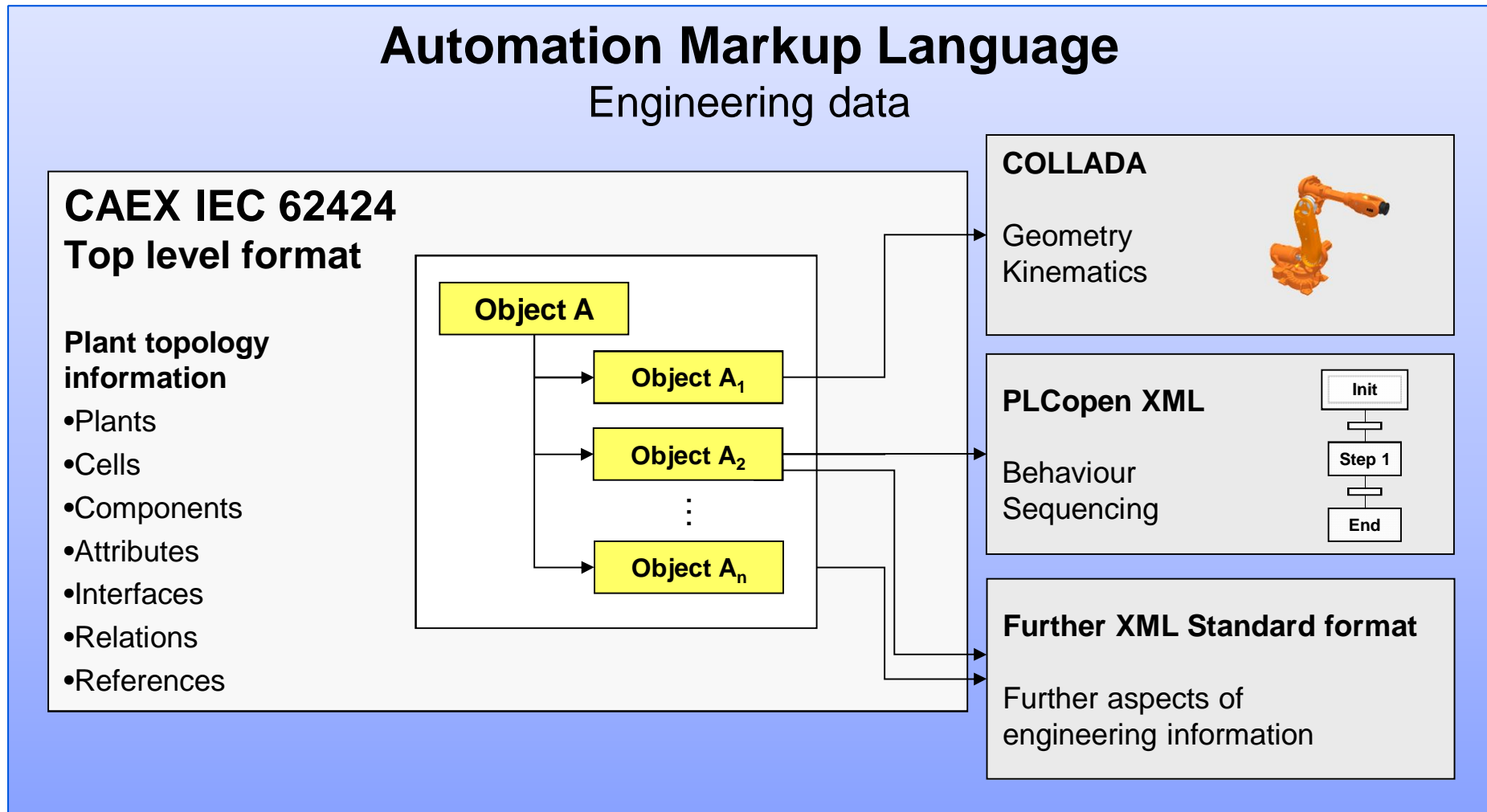
# Elements of Plant Topology



## Elements of a plant

- ① Objects
- ② Interfaces
- ③ Compositions
- ④ Hierarchies

# AutomationML Technical Architecture



# AutomationML Glue

## CAEX Document

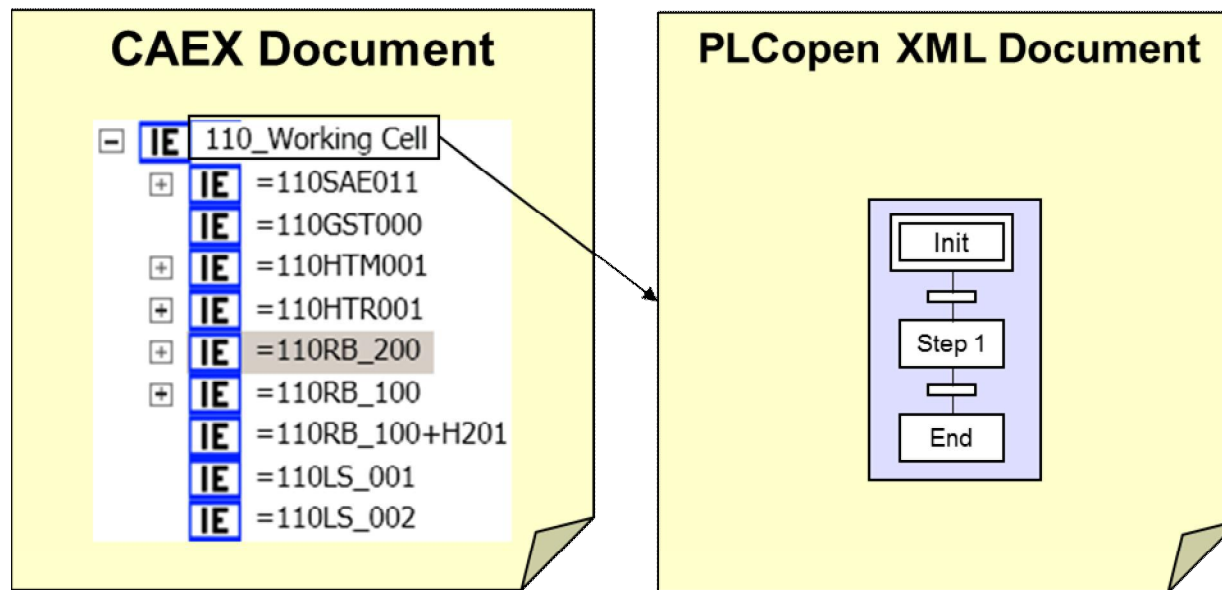
- ☐ **IE** 110\_Working Cell
  - ☐ **IE** =110SAE011
  - ☐ **IE** =110GST000
  - ☐ **IE** =110HTM001
  - ☐ **IE** =110HTR001
  - ☐ **IE** =110RB\_200
  - ☐ **IE** =110RB\_100
  - ☐ **IE** =110RB\_100+H201
  - ☐ **IE** =110LS\_001
  - ☐ **IE** =110LS\_002

## COLLADA Document

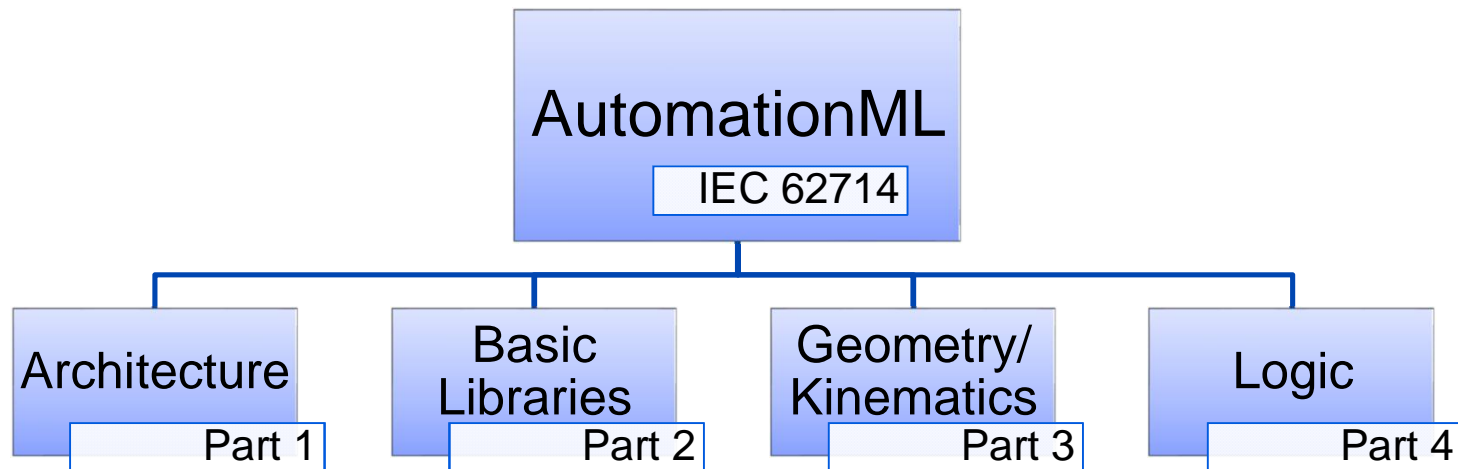




# AutomationML Glue



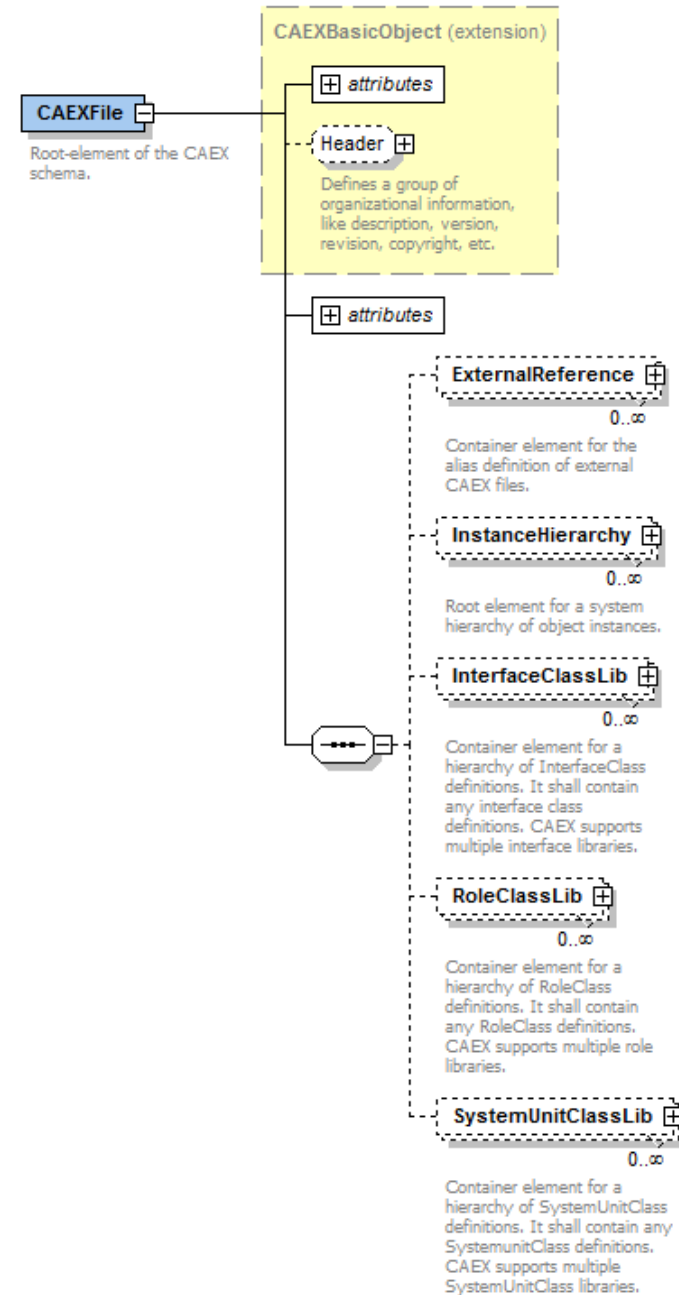
# AutomationML Standard architecture



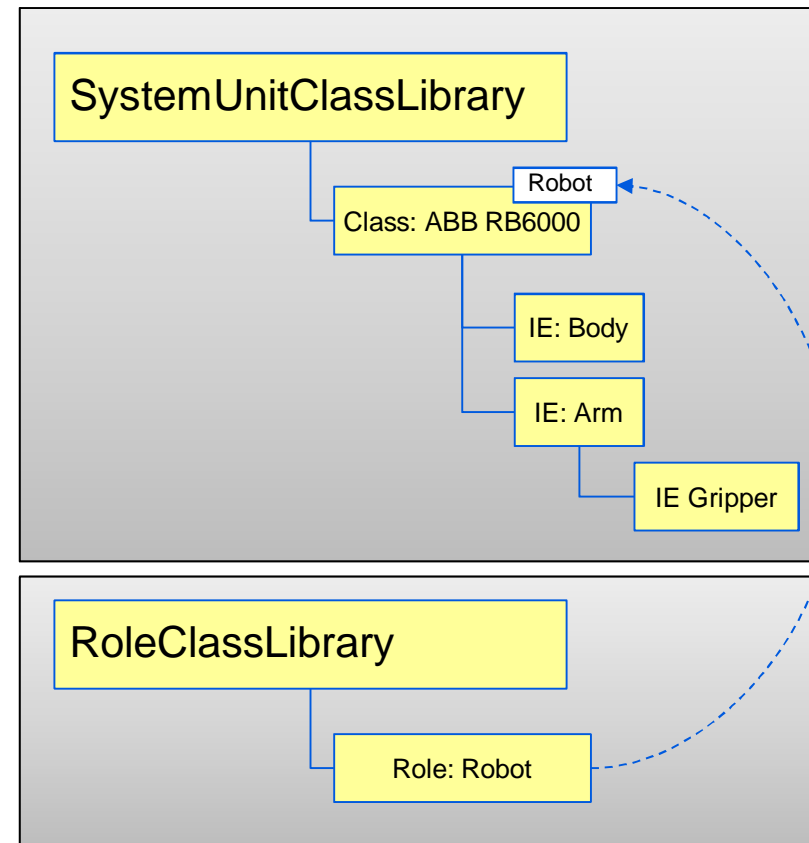
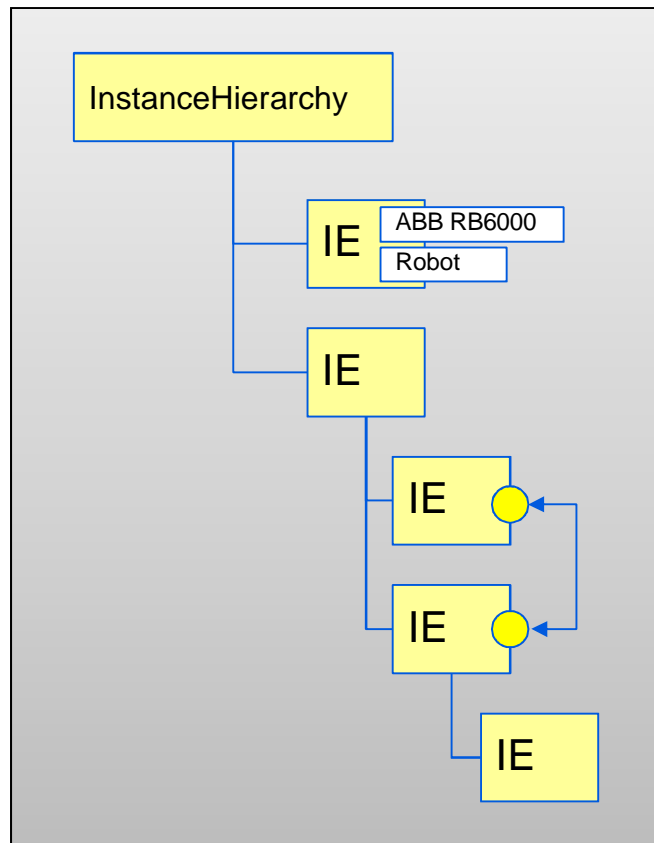
# Technical Architecture

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
  <xs:simpleType name="ChangeMode">
    <xs:restriction base="xs:string">
      <xs:enumeration value="state"/>
      <xs:enumeration value="create"/>
      <xs:enumeration value="delete"/>
      <xs:enumeration value="change"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:group name="Header">
    <xs:annotation>
      <xs:documentation>Defines a group of organizational information, like description, version, revision, copyright, etc.</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="Description" minOccurs="0">
        <xs:annotation>
          <xs:documentation>Textual description for CAEX objects.</xs:documentation>
        </xs:annotation>
        <xs:complexType>
          <xs:simpleContent>
            <xs:extension base="xs:string">
              <xs:attribute name="ChangeMode" type="ChangeMode" use="required"/>
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```

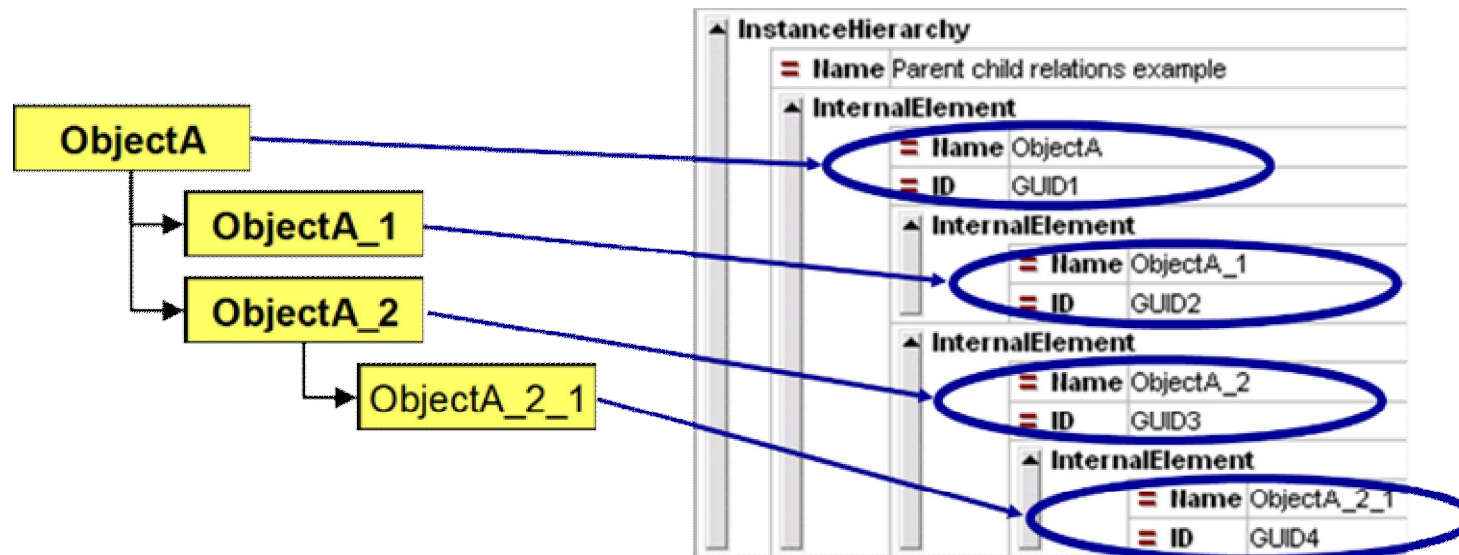


# Basic principles of CAEX modelling



# Examples

## For object topologies

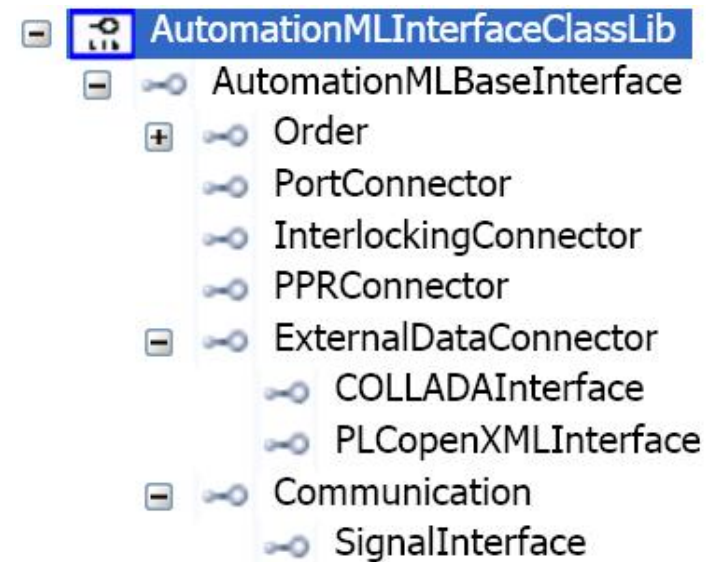
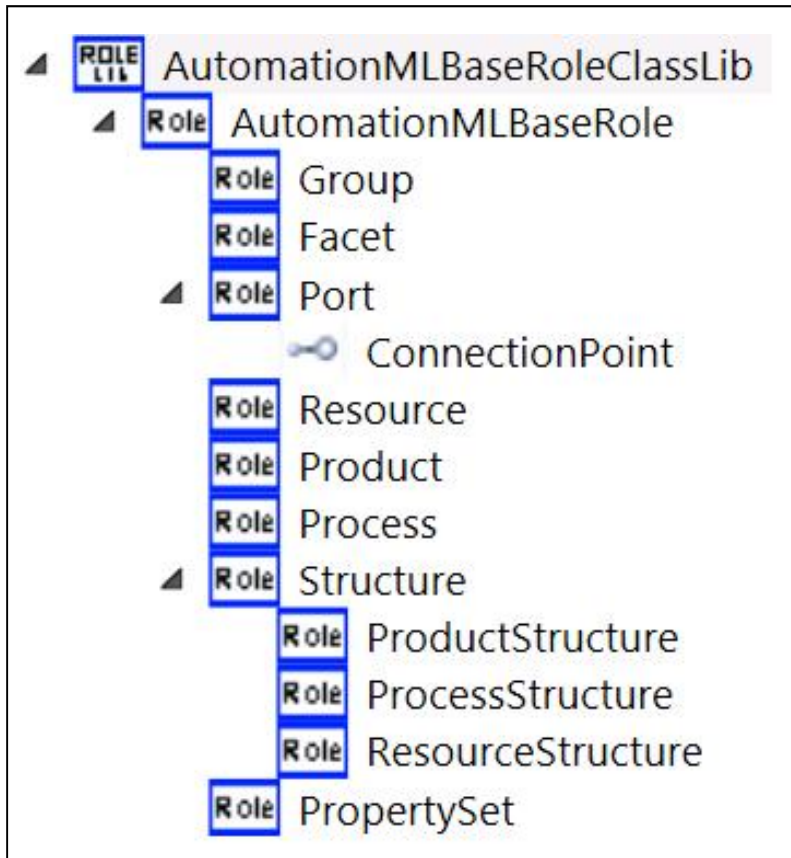


# Examples

## For object topologies



# AML standard libraries



# Feedback from industry

***rösberg***



**AUCOTEC**  
Create Synergy – Connect Processes

**ESplan®**

**ABB**



# Summary



## AutomationML Architecture

1. Re-use of established data formats
2. Separation of syntax and semantics
3. Small and extensible

## Economic success factors

1. Industrial driven
2. Software & Documents
3. Free

Power and productivity  
for a better world™

