



<AutomationML/>

**The Glue for Seamless
Automation Engineering**



Best Practice Recommendations:

CC-Link

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1 Introduction

When modelling engineering data with AutomationML, it is a reoccurring task to model network devices/information or to describe how to access devices and data that is available in the network. Nowadays many different industrial networks and bus systems are existing. Each of them has several specific parameters and requirements. Therefore specific classes (roles/interfaces/attributes) for each network are required, which shall be derived from already existing generic standard classes.

This document describes classes that are needed to describe CC-Link related networks and their devices. The definitions of this document can be combined with other existing modelling concepts.

In the first version the document defines how to integrate a *CSP+* file (Device description file of a CC-Link Family-compatible device) and a *CSP+ for Machine* file (Description file of a machine) by reference.

Additional definitions will be added in the future to fulfil the requirements of other AutomationML documents like e.g. the “Whitepaper AutomationML Communication”, the “Application Recommendations: Automation Project Configuration” or the “Best Practice Recommendations: Data Variable”.

This specification was created by a joint working group of the CC-Link Partner Association and AutomationML e.V..

CC-Link Partner Association (CLPA)

The CC-Link Partner Association is an international organization with the goal of promotion and development of the open CC-Link technologies. CC-Link IE (industrial Ethernet) and CC-Link (fieldbus) are the largest open networks in Asia and are becoming increasingly important in Europe and America as well. 11 regional CLPA offices and 5 conformance test centers worldwide are working with many vendor partners to promote widespread use of CLPA technology. Together, they offer a wide range of services for support of CLPA members in the individual regions, such as promotion and product development. The CLPA has offices in Japan, China, South Korea, Taiwan, Singapore, Thailand, India, Germany, Turkey, the US and Mexico. Several hundred manufacturers now offer thousands of products, with an installed base in the tens of millions globally and experiencing annual double digit growth.

The key network technology offered by CLPA is CC-Link IE, the world's first open gigabit Ethernet for automation. This is seen as being a key technology to address the need of the new “Industry 4.0”, “IIoT” and “e-F@ctory” applications which demand maximum bandwidth for the real time sharing of large amounts of process data between machines, throughout factories and beyond. CC-Link IE has now been joined by CC-Link IE TSN, which also adds Time Sensitive Networking capabilities.

AutomationML e.V.

The AutomationML initiative is an open, in 2006 founded industrial consortium which became a registered association in 2009. It welcomes all interested company and research institute.

Purposes of AutomationML e.V. are promotion and further development of AutomationML to standardise data exchange in the engineering process of production systems. Therefore, AutomationML e.V. develops and maintains an open, neutral, XML based, and free industry data representation standard which enables a domain and company spanning transfer of engineering data. Instead of developing a new data format for that purpose, already existing formats were used, extended, adapted, and merged in a proper way. So far, the representation of plant specific data in general and in special the plant structure, geometry and kinematics, and logic description is possible. Additional representations for networks, mechatronical systems, and others are in progress. Hence, AutomationML is the most comprehensive data format of plant engineering. It is already used in the field and is also available in several products. Within IEC 62714 all parts of AutomationML are going to be standardised internationally.

1.1 Basics

The data exchange format AutomationML is standardised in IEC 62714 as a neutral, free, and XML-based data format. It has been developed in order to support the data exchange between engineering tools in a heterogeneous engineering tool landscape.

Due to the different aspects of AutomationML, the IEC 62714 consists of different parts. In the following the relevant parts for this document are shown:

Table 1 – Overview of AutomationML parts

Part / Document Identifier	Title	Description
Part 1 / WP Arch, V 2.0.0	Architecture and general requirements	This part specifies the general AutomationML architecture, the modelling of the engineering data, classes, instances, relations, references, hierarchies, basic AutomationML libraries and extended AutomationML concepts.
Part 2 / WP Lib V 2.0.0	Role class libraries	This part specifies additional AutomationML libraries.
Whitepaper / WP Comm V 1.0.0	Communication	This Whitepaper describes the modelling of Communication mechanisms in AutomationML.
Whitepaper / WP Compo V 1.1.0	AutomationML Component	This whitepaper specifies methods and model structures that can be used to exchange component information as AutomationML Components in a way that allows the utilisation in complex, multi-disciplinary tool chains without tool specific post engineering efforts.
Best Practice Recommendation / BPR EDRef V 1.0.0	External Data Reference	This Best Practice Recommendation describes how to integrate external data into an AutomationML model by reference.

1.2 References

The following documents are referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Extensible Markup Language (XML) 1.0:2004, W3C Recommendation (available at <http://www.w3.org/TR/2004/REC-xml-20040204/>)

IEC 62424:2008, Representation of process control engineering - Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools

Whitepaper AutomationML Part 1 – AutomationML Architecture, October 2014

Whitepaper AutomationML Part 2 –AutomationML Role Libraries, October 2014

Whitepaper AutomationML Part6 – AutomationML Component, October 2020

Best Practice Recommendation ExternalDataReference, July2016

Control & Communication System Profile Specification

Control & Communication System Profile Specification (for Machine)

2 CC-Link related Networks and their Devices in AutomationML

In the following chapters modelling concepts for integrating CC-Link related networks and their devices into AutomationML are introduced.

Chapter 2.1 (References to CC-Link Device Description Files) defines how to integrate *CSP+* and *CSP+ for Machine* files into an AutomationML model by reference.

In the future additional chapters will be added to define how CC-Link related networks and their device can be integrated into AutomationML models, like e.g. the “Whitepaper AutomationML Communication”.

2.1 References to CC-Link Device Description Files

CLPA defines the following device description files:

- *CSP+*
- *CSP+ for machine*

Control and Communication System Profile *CSP+* is a specification which describes the data necessary for the setup, operation and maintenance of CC-Link Family-compatible devices. *CSP+ for machine* expands the *CSP+* device profile technology to apply it to whole machines and production line ups to edge processing devices. Both formats are XML-based.

The integration of device description files like *CSP+* and *CSP+ for machine* by reference to an AutomationML model allows a complete description of engineering data and components.

For example a *CSP+ for machine* file which is created in the engineering phase and which describes how to access certain data of a machine can be integrated into an AutomationML model. The AutomationML model can be read by e.g. a KPI-Dashboard, which automatically establishes access to the machine data.

In the first version the device description file itself is referenced. The possibility to reference on certain values inside the file is under consideration.

2.1.1 Implementation

The classes which are introduced in the following are derived from the basic abstract classes *AutomationMLComponentBaseRCL/AdditionalDeviceDescription* (role class) and *AutomationMLComponentBaseICL/DeviceDescriptionReference* (interface class) which are defined in the *WP Compo* document.

To reference to a *CSP+* respectively a *CSP+ for machine* device description file, the following two new role classes are defined:

- *CCLinkRCL/CSP+*
- *CCLinkRCL/CSP+ForMachine*

Both roles classes are derived from *AutomationMLComponentBaseRCL/AdditionalDeviceDescription*. The new role classes inherit the following attributes from the base class:

- *SpecVersion* (*CSP+/CSP+forMachine* specification version)
- *DocLang* (Language of the referenced description file according to RFC5646:2009)

In addition the following new interface classes are defined:

- *CCLinkICL/CSP+Reference*
- *CCLinkICL/CSP+ForMachineReference*

Both interface classes are derived from *AutomationMLComponentBaseICL/DeviceDescriptionReference*. The new interface classes inherit the following attributes from the base class:

- refURI (URI of the corresponding device description file)
- MIMETYPE (MIMETYPE of the file according to RFC2046:1996. Because *CSP+* and *CSP+ for machine* are XML-based formats, it is recommended to set it to *application/xml*. In contrast to BPR EDRef V 1.0.0, the MIMETYPE is optional.)
- Version (Version of the actual device description file)

The following rules which are defined for Additional Device Description in the *WP Compo* document are applied:

- A reference to a *CSP+/CSP+ for machine* device description file shall be attached to an InternalElement or SystemUnitClass (e.g. Automation Component) as an InternalElement referencing the role class *CCLinkRCL/CSP+* respectively *CCLinkRCL/CSP+ForMachine*.
- An InternalElement or SystemUnitClass (e.g. Automation Component) can have several references (InternalElements) to a *CSP+/CSP+ for machine* device description file.
- Each InternalElement representing a *CSP+/CSP+ for machine* device description file shall have exactly one ExternalInterface of the interface class *CCLinkICL/CSP+Reference* respectively *CCLinkICL/CSP+ForMachineReference*.
- If the parent InternalElement is of the role class *CSP+*, the interface class type *CSP+Reference* shall be used. If the parent InternalElement is of the role class *CSP+ForMachine*, the interface class type *CSP+ForMachineReference* shall be used.
- The role classes *CCLinkRCL/CSP+* and *CCLinkRCL/CSP+ForMachine* as well as the interface classes *CCLinkICL/CSP+Reference* and *CCLinkICL/CSP+ForMachineReference* can be used outside the context of an Automation Component.

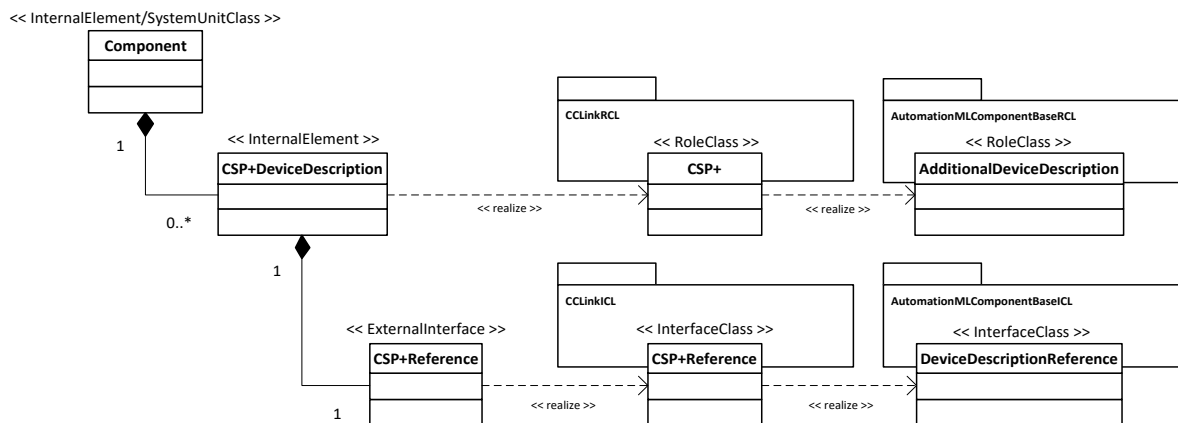


Figure 1 – Inheritance structure of AutomationML CSP+ role and interface class

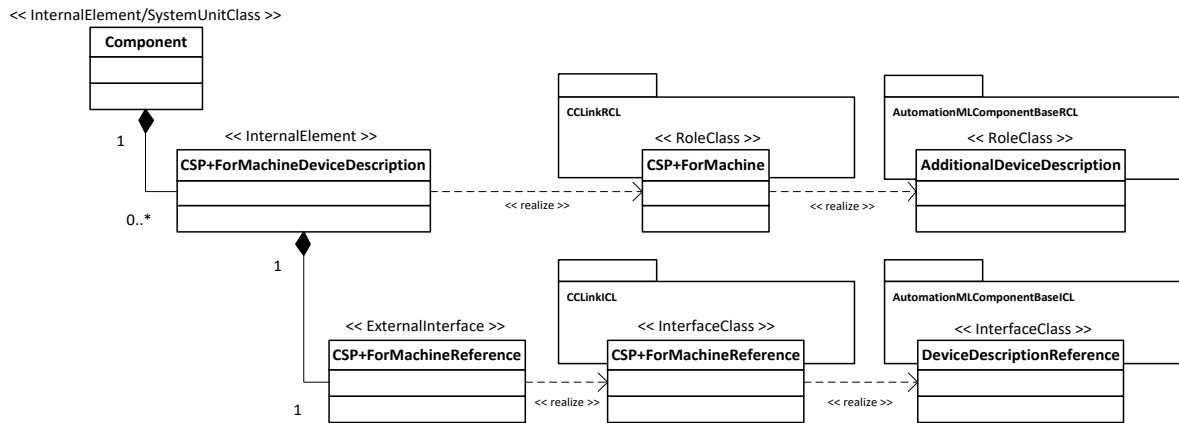


Figure 2 – Inheritance structure of AutomationML CSP+ForMachine role and interface class

Figure 3 shows an example how the new roles *CSP+* and *CSP+ForMachine* can be used in an AutomationML model. A machine, which is modelled as AutomationComponent can be extended with a reference to a *CSP+ for machine* file to give further detailed information about the machine, so that for example a SCADA software can make use of the definitions in that description file, i.e. to better display machine data. The machine consists of other components like a PLC and a CC-Link IE Field unit, which are modelled as AutomationComponent as well. The CC-Link IE Field unit can be extended with additional detailed information by a reference to a *CSP+* file.

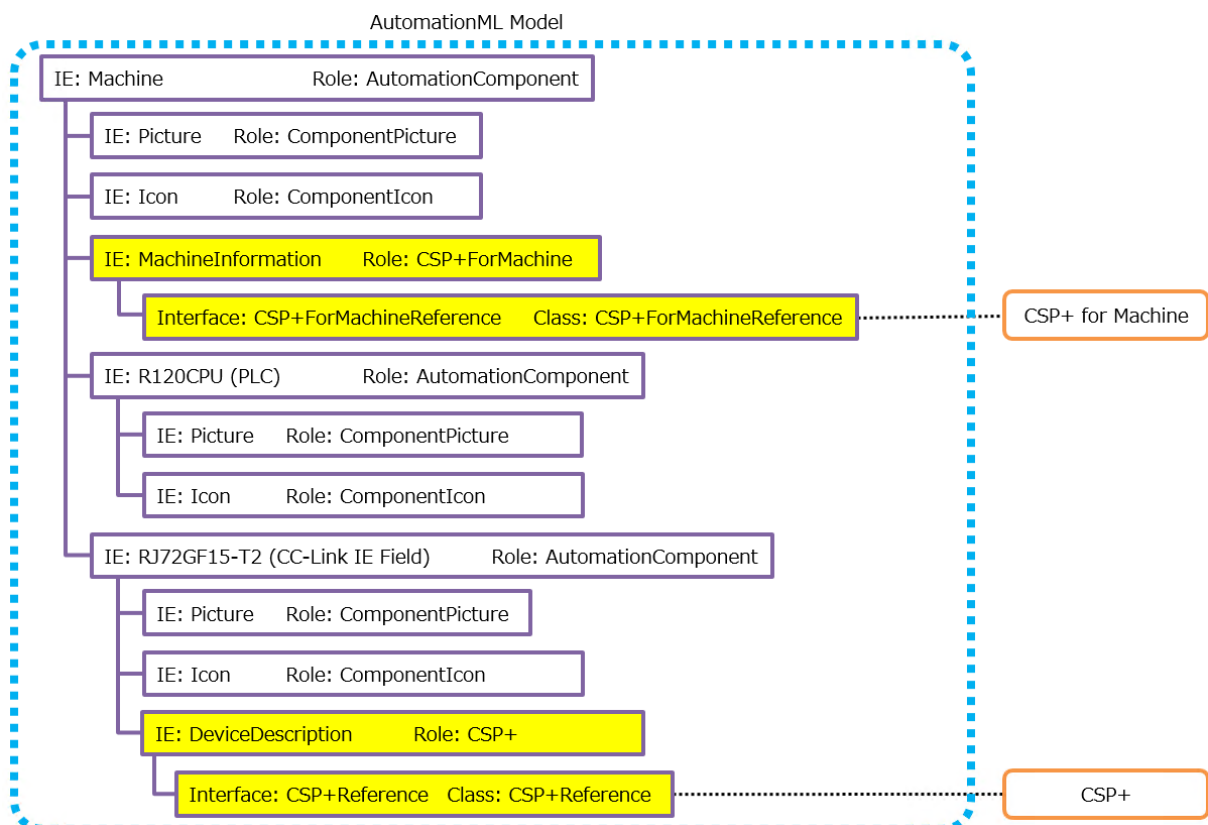


Figure 3 – Use case of CSP+ and CSP+ForMachine

The introduced concept of referencing to *CSP+*- and *CSP+ for Machine* device description files can be combined with any other AutomationML modelling concepts.

3 Extension of AutomationML libraries

With this document the RoleClassLibrary *CCLinkRCL* and the InterfaceClassLibrary *CCLinkICL* are introduced.

Chapter 5 (Annex A – XML representation of extension of AutomationML libraries) depicts the XML representation of the RoleClassLibrary *CCLinkRCL* and the InterfaceClassLibrary *CCLinkICL*.

The libraries can be extended in the future with additional CC-Link related roles to fulfil the requirements of additional use cases like e.g. the “Application Recommendation: Automation Project Configuration”.

3.1 RoleClassLibrary CCLinkRCL

Figure 4 presents the *CCLinkRCL* (version 1.0.0) as object tree.

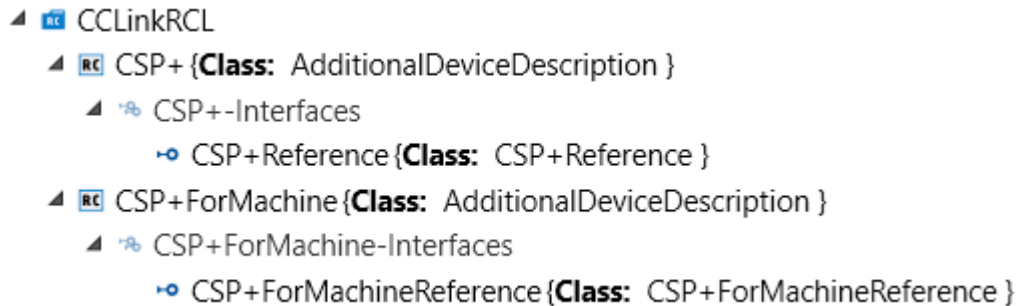


Figure 4 – *CCLinkRCL* as object tree in AutomationML editor

3.1.1 RoleClass CSP+

Table 2 – RoleClass CSP+

Class name	CSP+	
Description	The role class “CSP+” is used to describe a CSP+ device description file in AutomationML.	
Parent Class	AutomationMLComponentBaseRCL/AdditionalDeviceDescription	
Path for element reference	CCLinkRCL/CSP+	
Attributes	“SpecVersion” (xs:string) (by inheritance from parent class)	The version of the Specification or Schema of the device description file.
	“DocLang” (xs:string) (by inheritance from parent class)	Language of the referenced description file according to [RFC5646:2009].
Interfaces	“CSP+Reference” (CCLinkICL/CSP+Reference)	The interface class “CSP+Reference” shall be used in order to reference CSP+ device description files in AutomationML.

3.1.2 RoleClass CSP+ForMachine

Table 3 – RoleClass CSP+ForMachine

Class name	CSP+ForMachine	
Description	The role class “CSP+ForMachine” is used to describe a CSP+ for Machine device description file in AutomationML.	
Parent Class	AutomationMLComponentBaseRCL/AdditionalDeviceDescription	
Path for element reference	CCLinkRCL/CSP+ForMachine	
Attributes	“SpecVersion” (xs:string) (by inheritance from parent class)	The version of the Specification or Schema of the device description file.
	“DocLang” (xs:string) (by inheritance from parent class)	Language of the referenced description file according to [RFC5646:2009].
Interfaces	“CSP+ForMachineReference” (CCLinkICL/CSP+ForMachineReference)	The interface class “CSP+ForMachineReference” shall be used in order to reference CSP+ for Machine device description files in AutomationML.

3.2 InterfaceClassLibrary CCLinkICL

Figure 5 presents the CCLinkICL (version 1.0.0) as object tree.

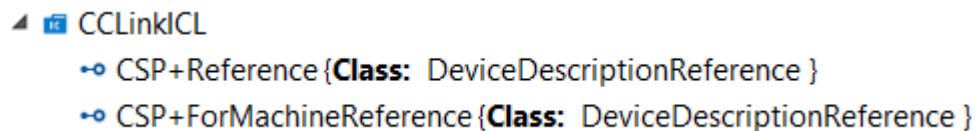


Figure 5 – CCLinkICL as object tree in AutomationML editor

3.2.1 InterfaceClass CSP+Reference

Table 4 – InterfaceClass CSP+Reference

Class name	CSP+Reference	
Description	The interface class “CSP+Reference” shall be used in order to reference CSP+ device description files in AutomationML.	
Parent Class	AutomationMLComponentBaseICL/DeviceDescriptionReference	
Path for element reference	CCLinkICL/CSP+Reference	
Attributes	“refURI” (xs:anyURI) (by inheritance from parent class)	URI of the corresponding device description file.
	“MIMEType” (xs:string) (by inheritance from parent class)	MIMEType of the file according to [RFC2046:1996].
	“Version” (xs:string) (by inheritance from parent class)	The version of the actual device description file that is referenced here.

3.2.2 InterfaceClass CSP+ForMachineReference

Table 5 – InterfaceClass CSP+ForMachineReference

Class name	CSP+ForMachineReference	
Description	The interface class “CSP+ForMachineReference” shall be used in order to reference <i>CSP+for Machine</i> device description files in AutomationML.	
Parent Class	AutomationMLComponentBaseICL/DeviceDescriptionReference	
Path for Element reference	CCLinkICL/CSP+ForMachineReference	
Attributes	“refURI” (xs:anyURI) (by inheritance from parent class)	URI of the corresponding device description file.
	“MIMEType” (xs:string) (by inheritance from parent class)	MIMEType of the file according to [RFC2046:1996].
	“Version” (xs:string) (by inheritance from parent class)	The version of the actual device description file that is referenced here.

4 Examples

In the following chapters examples are shown, which illustrate how to use the previously introduced modelling concepts in an easy way.

The examples are not intended to be exhaustive.

4.1 AutomationComponent including references to CSP+ Device Description Files

Within this example the servo amplifier MR-J4-10GF from the company Mitsubishi Electric is modelled as a `SystemUnitClass` with the assigned `RoleClass` `AutomationMLComponentStandardRCL/AutomationComponent`, which is defined in the *WP Compo* document. The servo amplifier has a CC-Link IE Field interface and can be used as a slave device within a CC-Link IE Field network.

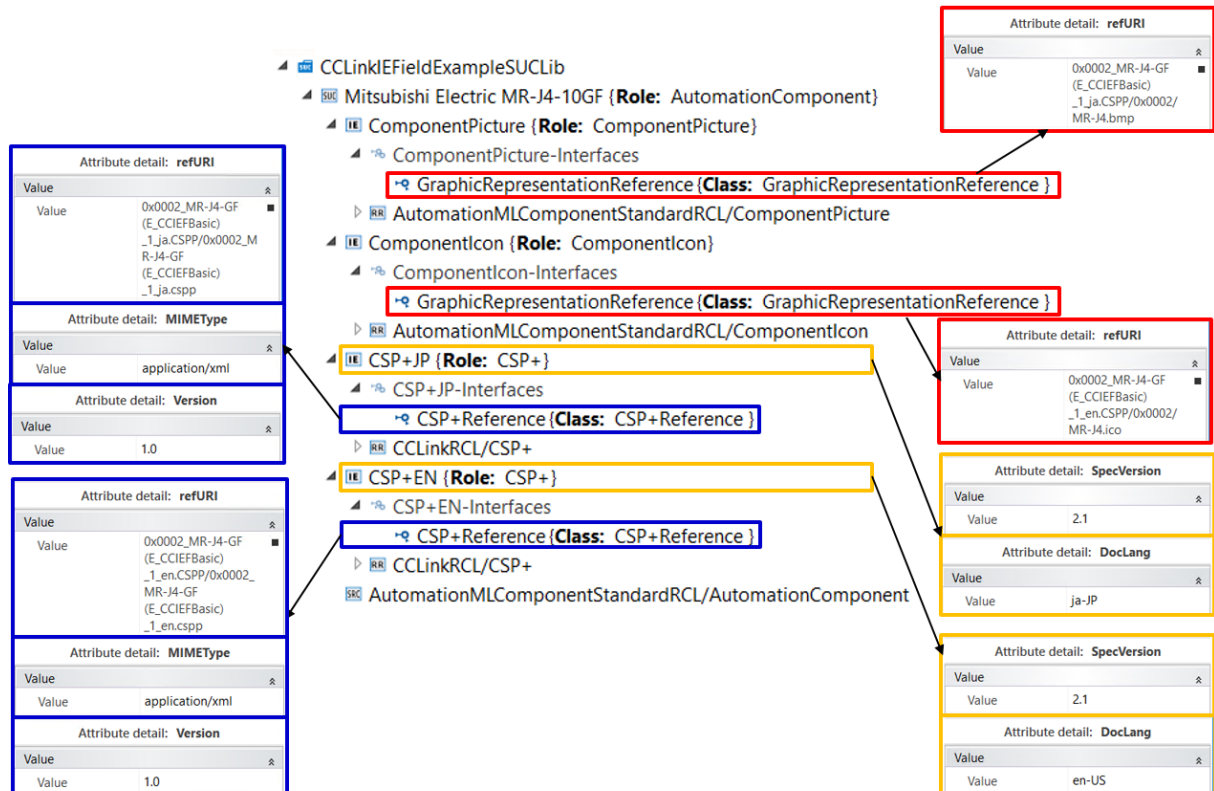


Figure 6 – Example “AutomationComponent including references to CSP+ Device Description” within the AutomationML Editor

Each of the InternalElements `ComponentPicture` and `ComponentIcon` with the assigned RoleClass `AutomationMLComponentStandardRCL/ComponentPicture` respectively `AutomationMLComponentStandardRCL/ComponentIcon` contain the ExternalInterface `GraphicRepresentationReference`. Both `GraphicRepresentationReference` interfaces have the InterfaceClass `AutomationMLComponentBaseICL/GraphicRepresentationReference` assigned and references the picture respectively icon of the servo amplifier by using the `refURI` attribute.

The `CSP+` device description files of the servo amplifier are modelled by the InternalElements `CSP+JP` and `CSP+EN`. Both InternalElements have the RoleClass `CCLinkRCL/CSP+` assigned. The InternalElement `CSP+JP` represents the `CSP+` file in Japanese language and the attribute “DocLang” is set to “ja-JP”. The InternalElement `CSP+EN` represents the `CSP+` file in English language and the attribute “DocLang” is set to “en-US”. Both device description files are designed according to “Control & Communication System Profile Specification” Version 2.1 and the attribute “SpecVersion” of each InternalElement is set to “2.1”.

Both InternalElements *CSP+JP* and *CSP+EN* contain of the ExternalInterface *CSP+Reference*, which both have the InterfaceClass *CCLinkICL/CSP+Reference* assigned. The “refURI” attribute of each ExternalInterface refers to the corresponding *CSP+* file. Both files have the file version 1.0 and the attribute “Version” is set accordingly to “1.0”. The “MIMEType” attribute of both interfaces is set to “application/xml”.

Chapter 6.1 (XML representation - AutomationComponent including references to *CSP+* Device Description Files) depicts the XML representation of the example.

4.2 AutomationML Model including references to *CSP+* and *CSP+* for Machine Device Description Files

Within this example a machine is modelled as a SystemUnitClass with the assigned RoleClass *AutomationMLComponentStandardRCL/AutomationComponent*, which is defined in the *WP Compo* document. The machine is composite of a PLC and a CC-Link IE Field network unit, which have both the RoleClass *AutomationMLComponentStandardRCL/AutomationComponent* assigned.



Figure 7 – Example “AutomationML Model including references to *CSP+* and *CSP+* for Machine” within the AutomationML Editor

The machine contains an InternalElement *MachineInformation* representing a *CSP+* for Machine device description file. The InternalElement *MachineInformation* has the role class *CSP+ForMachine* assigned and contains the attribute “SpecVersion”, which is set to “1.1”, because the referenced document is designed according to “Control & Communication System Profile Specification for Machine” Version 1.1 and the attribute “DocLang”, which is set to “ja-JP” (Japanese). The InternalElement contains of the

ExternalInterface *CSP+ForMachineReference*, which has the InterfaceClass *CCLinkICL/CSP+ForMachineReference* assigned. The "refURI" attribute of the ExternalInterface refers to the corresponding *CSP+ForMachine* file. The *CSP+ for machine* file has the file version 1.0 and the attribute "Version" is set accordingly to "1.0". The "MIMEType" attribute is set to "application/xml".

The InternalElement RJ72GF15-T2 represents a CC-Link IE Field network device. Additional information about the network device is given by a device description file, which is modelled by the InternalElement *DeviceDescription*. *DeviceDescription* has the RoleClass *CCLinkRCL/CSP+* assigned and contains of the attribute "SpecVersion", which is set to "2.0", because it is designed according to "Control & Communication System Profile Specification" Version 2.0 and the attribute "DocLang" is set to "en-US" (English). The InternalElement contains of the ExternalInterface *CSP+Reference*, which has the InterfaceClass *CCLinkICL/CSP+Reference* assigned. The "refURI" attribute of the ExternalInterface refers to the corresponding *CSP+* file. The *CSP+* file has the file version 1.0 and the attribute "Version" is set accordingly to "1.0". The "MIMEType" attribute is set to "application/xml".

Chapter 6.2 (XML representation - AutomationML Model including references to CSP+- and CSP+ for Machine Device Description Files) depicts the XML representation of the example.

5 Annex A – XML representation of extension of AutomationML libraries

```

<InterfaceClassLib Name="CCLinkICL">
  <Description>AutomationML BPR CC-Link Interface Class Library</Description>
  <Version>1.0.0</Version>
  <InterfaceClass Name="CSP+Reference"
  RefBaseClassPath="AutomationMLComponentBaseICL/DeviceDescriptionReference">
    <Description>The interface class "CSP+Reference" shall be used in order to reference CSP+ device
    description files in AutomationML.</Description>
  </InterfaceClass>
  <InterfaceClass Name="CSP+ForMachineReference"
  RefBaseClassPath="AutomationMLComponentBaseICL/DeviceDescriptionReference">
    <Description>The interface class "CSP+ForMachineReference" shall be used in order to reference
    CSP+ for Machine device description files in AutomationML.</Description>
  </InterfaceClass>
</InterfaceClassLib>

<RoleClassLib Name="CCLinkRCL">
  <Description>AutomationML BPR CC-Link Role Class Library</Description>
  <Version>1.0.0</Version>
  <RoleClass Name="CSP+" RefBaseClassPath="AutomationMLComponentBaseRCL/AdditionalDeviceDescription">
    <Description>The role class "CSP+" is used to describe a CSP+ device description file in
    AutomationML.</Description>
    <ExternalInterface Name="CSP+Reference" ID="08b14ab7-2f6a-4614-9863-532d6d7244b8"
    RefBaseClassPath="CCLinkICL/CSP+Reference">
      <Description>The interface class "CSP+Reference" shall be used in order to reference CSP+
      device description files in AutomationML.</Description>
      <Attribute Name="refURI" AttributeDataType="xs:anyURI">
        <Description>URI of the corresponding device description file.</Description>
      </Attribute>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
        <Description>MIMETYPE of the file according to RFC2046.</Description>
        <DefaultValue>application/xml</DefaultValue>
      </Attribute>
      <Attribute Name="Version" AttributeDataType="xs:string">
        <Description>The version of the actual device description file that is referenced
        here.</Description>
      </Attribute>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="CSP+ForMachine"
  RefBaseClassPath="AutomationMLComponentBaseRCL/AdditionalDeviceDescription">
    <Description>The role class "CSP+ForMachine" is used to describe a CSP+ for Machine device
    description file in AutomationML.</Description>
    <ExternalInterface Name="CSP+ForMachineReference" ID="9a008fb7-edb2-49ff-b883-534ddb0b851d"
    RefBaseClassPath="CCLinkICL/CSP+ForMachineReference">
      <Description>The interface class "CSP+ForMachineReference" shall be used in order to
      reference CSP+ for Machine device description files in AutomationML.</Description>
      <Attribute Name="refURI" AttributeDataType="xs:anyURI">
        <Description>URI of the corresponding device description file.</Description>
      </Attribute>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
        <Description>MIMETYPE of the file according to RFC2046.</Description>
        <DefaultValue>application/xml</DefaultValue>
      </Attribute>
      <Attribute Name="Version" AttributeDataType="xs:string">
        <Description>The version of the actual device description file that is referenced
        here.</Description>
      </Attribute>
    </ExternalInterface>
  </RoleClass>
</RoleClassLib>

```

6 Annex B – XML representation of examples

6.1 XML representation - AutomationComponent including references to CSP+ Device Description Files

```
<?xml version="1.0" encoding="utf-8"?>
<CAEXFile SchemaVersion="2.15" FileName="BPR_CC-Link_Example_Component_V1.0.1.aml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="CAEX_ClassModel_V2.15.xsd">
  <AdditionalInformation AutomationMLVersion="2.0"/>
  <AdditionalInformation>
    <WriterHeader>
      <WriterName>AutomationML Editor</WriterName>
      <WriterID>916578CA-FE0D-474E-A4FC-9E1719892369</WriterID>
      <WriterVendor>AutomationML e.V.</WriterVendor>
      <WriterVendorURL>www.AutomationML.org</WriterVendorURL>
      <WriterVersion>5.1.2.0</WriterVersion>
      <WriterRelease>5.1.2.0</WriterRelease>
      <LastWritingDateTime>2020-12-02T18:28:28.4891742</LastWritingDateTime>
      <WriterProjectTitle/>
      <WriterProjectID/>
    </WriterHeader>
  </AdditionalInformation>
  <InterfaceClassLib Name="CCLinkICL">
    <Description>AutomationML BPR CC-Link Interface Class Library</Description>
    <Version>1.0.0</Version>
    <InterfaceClass Name="CSP+Reference"
RefBaseClassPath="AutomationMLComponentBaseICL/DeviceDescriptionReference">
      <Description>The interface class "CSP+Reference" shall be used in order to reference CSP+
device description files in AutomationML.</Description>
    </InterfaceClass>
    <InterfaceClass Name="CSP+ForMachineReference"
RefBaseClassPath="AutomationMLComponentBaseICL/DeviceDescriptionReference">
      <Description>The interface class "CSP+ForMachineReference" shall be used in order to
reference CSP+ for Machine device description files in AutomationML.</Description>
    </InterfaceClass>
  </InterfaceClassLib>
  <InterfaceClassLib Name="AutomationMLComponentBaseICL">
    <Description>The InterfaceClassLib AutomationMLComponentBaseICL is defined in the Whitepaper
"Description of AutomationML Components". The document can be downloaded at
https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1.0 State
October 2020 and has the Document Identifier WP Compo.</Description>
    <Version>1.1.0</Version>
    <InterfaceClass Name="SkillInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
      <Description>The interface "SkillInterface" shall be required for linking a component skill
information.</Description>
    </InterfaceClass>
    <InterfaceClass Name="2DReference"
RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
      <Description>A 2DReference shall be used to reference a 2D representation of the AutomationML
Component.</Description>
    </InterfaceClass>
    <InterfaceClass Name="GraphicRepresentationReference"
RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
      <Description>The interface class "GraphicRepresentationReference" is shall be used to
reference a graphhic representation of the AutomationML Component or Composite Component.
</Description>
    </InterfaceClass>
    <InterfaceClass Name="JTReference"
RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
      <Description>The interface class "JTReference" is shall be used to reference a JT model
representation of the AutomationML Component or Composite Component.</Description>
    </InterfaceClass>
    <InterfaceClass Name="DeviceDescriptionReference"
RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
      <Description>The interface class "DeviceDescriptionReference" is an abstract basic interface
class and the base class for standard or user defined interface classes referencing a technology based
device description file.</Description>
      <Attribute Name="Version" AttributeDataType="xs:string"/>
    </InterfaceClass>
  </InterfaceClassLib>
</CAEXFile>
```

```

<InterfaceClass Name="MechanicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
  <Description>A "MechanicInterface" represents a hardware provision to mechanically fasten or
join two or more objects together.</Description>
</InterfaceClass>
<InterfaceClass Name="ElectricInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
  <Description>An ElectricInterface describes an electro-mechanical provision used to join
electrical terminations and to create electrical circuits.</Description>
</InterfaceClass>
<InterfaceClass Name="LiquidicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
  <Description>A "LiquidicInterface" is an interface to describe a liquidic connection between
to automation components. </Description>
</InterfaceClass>
<InterfaceClass Name="PneumaticInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
  <Description>??</Description>
</InterfaceClass>
<InterfaceClass Name="PneumaticConnector"
RefBaseClassPath="AutomationMLComponentBaseICL/PneumaticInterface">
  <Description>A "PneumaticConnector" is a PneumaticInterface that represents a pneumatic
connector standardized by [ISO 18582-2].</Description>
  <Attribute Name="pneumaticPort" AttributeDataType="xs:string"/>
  <Attribute Name="connectorType" AttributeDataType="xs:string"/>
</InterfaceClass>
<InterfaceClass Name="CondensateDrainConnector"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
  <Description>A "CondensateDrainConnector" is an interface to describe a connector for the
condensate drain connection of pneumatic automation component. It is standardized by [ISO18582-
2].</Description>
</InterfaceClass>
<InterfaceClass Name="HydraulicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
  <Description>A "HydraulicInterface" is an interface to describe a hydraulic connection point
of an automation component. It can be used to join hydraulic components and create hydraulic
circuits.</Description>
</InterfaceClass>
<InterfaceClass Name="SensorInterface"
RefBaseClassPath="AutomationMLComponentBaseICL/MechanicInterface">
  <Description>A "SensorInterface" is an process interface connect the component to physical
properties of interest. It will be specified in detail in version 2 of the document.</Description>
</InterfaceClass>
<InterfaceClass Name="JointInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
  <Description>A "JointInterface" is an interface that connects a joint of an
COLLADAKinematicJoint with other interfaces that have an influence, dependency or relevance to the
joint.</Description>
</InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLFMIInterfaceClassLib">
  <Description>The InterfaceClassLib AutomationMLFMIInterfaceClassLib is defined in the Whitepaper
"Description of AutomationML Components". The document can be downloaded at
https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1.0 State
October 2020 and has the Document Identifier WP Compo.</Description>
  <Version>1.1.0</Version>
  <InterfaceClass Name="FMIReference"
RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference"/>
  <InterfaceClass Name="FMIVariableInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector">
    <Attribute Name="Name" AttributeDataType="xs:string"/>
    <Attribute Name="Causality" AttributeDataType="xs:string"/>
  </InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLLogicInterfaceClassLib">
  <Description>AutomationMLLogicInterfaceClassLib specifies all logic related interface classes
for
referencing AML logic XML documents.</Description>
  <Version>1.0.0</Version>
  <InterfaceClass Name="LogicModelInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector"/>

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    <InterfaceClass Name="SequencingLogicModelInterface"
RefBaseClassPath="AutomationMLLogicInterfaceClassLib/LogicModelInterface"/>
    <InterfaceClass Name="BehaviourLogicModelInterface"
RefBaseClassPath="AutomationMLLogicInterfaceClassLib/LogicModelInterface"/>
    <InterfaceClass Name="InterlockingLogicModelInterface"
RefBaseClassPath="AutomationMLLogicInterfaceClassLib/LogicModelInterface"/>
    <InterfaceClass Name="LogicModelElementInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector"/>
    <InterfaceClass Name="VariableInterface"
RefBaseClassPath="AutomationMLLogicInterfaceClassLib/LogicModelElementInterface">
        <Attribute Name="Direction" AttributeDataType="xs:string"/>
    </InterfaceClass>
    <InterfaceClass Name="InterlockingVariableInterface"
RefBaseClassPath="AutomationMLLogicInterfaceClassLib/VariableInterface">
        <Attribute Name="SafeConditionEquals" AttributeDataType="xs:boolean"/>
    </InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLPLCopenXMLInterfaceClassLib">
    <Description>AutomationMLPLCopenXMLInterfaceClassLib specifies the logic related interface class
for
referencing IEC 61131-10 documents</Description>
    <Version>1.0.0</Version>
    <InterfaceClass Name="VariableInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface"/>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLInterfaceClassLib">
    <Description>Standard Automation Markup Language Interface Class Library - Part 1 Content
extended with Part 3 and Part 4 Content</Description>
    <Version>2.2.2</Version>
    <InterfaceClass Name="AutomationMLBaseInterface">
        <InterfaceClass Name="Order" RefBaseClassPath="AutomationMLBaseInterface">
            <Attribute Name="Direction" AttributeDataType="xs:string"/>
        </InterfaceClass>
        <InterfaceClass Name="PortConnector" RefBaseClassPath="AutomationMLBaseInterface"/>
        <InterfaceClass Name="InterlockingConnector" RefBaseClassPath="AutomationMLBaseInterface"/>
        <InterfaceClass Name="PPRConnector" RefBaseClassPath="AutomationMLBaseInterface"/>
        <InterfaceClass Name="ExternalDataConnector" RefBaseClassPath="AutomationMLBaseInterface">
            <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
            <InterfaceClass Name="COLLADAInterface" RefBaseClassPath="ExternalDataConnector">
                <Attribute Name="refType" AttributeDataType="xs:string"/>
                <Attribute Name="target" AttributeDataType="xs:token"/>
            </InterfaceClass>
            <InterfaceClass Name="PLCopenXMLInterface" RefBaseClassPath="ExternalDataConnector">
                <InterfaceClass Name="LogicInterface" RefBaseClassPath="PLCopenXMLInterface">
                    <InterfaceClass Name="SequencingLogicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface"/>
                    <InterfaceClass Name="BehaviourLogicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface"/>
                    <InterfaceClass Name="SequencingBehaviourLogicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface"/>
                    <InterfaceClass Name="InterlockingLogicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface"/>
                </InterfaceClass>
                <InterfaceClass Name="LogicElementInterface" RefBaseClassPath="PLCopenXMLInterface"/>
                <InterfaceClass Name="VariableInterface" RefBaseClassPath="PLCopenXMLInterface">
                    <InterfaceClass Name="InterlockingVariableInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/VariableInterface">
                        <Attribute Name="SafeConditionEquals" AttributeDataType="xs:boolean">
                            <DefaultValue>true</DefaultValue>
                        </Attribute>
                    </InterfaceClass>
                </InterfaceClass>
            </InterfaceClass>
            <InterfaceClass Name="Communication" RefBaseClassPath="AutomationMLBaseInterface">
                <InterfaceClass Name="SignalInterface" RefBaseClassPath="Communication"/>
            </InterfaceClass>
        </InterfaceClass>
    </InterfaceClassLib>

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    </InterfaceClass>
    <InterfaceClass Name="AttachmentInterface" RefBaseClassPath="AutomationMLBaseInterface"/>
  </InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLBPRInterfaceClassLib">
  <Description/>
  <Version>1.0.1</Version>
  <InterfaceClass Name="ExternalDataReference"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector"
ID="{320f7f3a-6df8-4ccd-af35-a4367b37eb7a}">
    <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
  </InterfaceClass>
</InterfaceClassLib>
<RoleClassLib Name="CCLinkRCL">
  <Description>AutomationML BPR CC-Link Role Class Library</Description>
  <Version>1.0.0</Version>
  <RoleClass Name="CSP+"
RefBaseClassPath="AutomationMLComponentBaseRCL/AdditionalDeviceDescription">
    <Description>The role class "CSP+" is used to describe a CSP+ device description file in
AutomationML.</Description>
    <ExternalInterface Name="CSP+Reference" ID="08b14ab7-2f6a-4614-9863-532d6d7244b8"
RefBaseClassPath="CCLinkICL/CSP+Reference">
      <Description>The interface class "CSP+Reference" shall be used in order to reference CSP+
device description files in AutomationML.</Description>
      <Attribute Name="refURI" AttributeDataType="xs:anyURI">
        <Description>URI of the corresponding device description file.</Description>
      </Attribute>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
        <Description>MIMETYPE of the file according to RFC2046.</Description>
        <DefaultValue>application/xml</DefaultValue>
      </Attribute>
      <Attribute Name="Version" AttributeDataType="xs:string">
        <Description>The version of the actual device description file that is referenced
here.</Description>
      </Attribute>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="CSP+ForMachine"
RefBaseClassPath="AutomationMLComponentBaseRCL/AdditionalDeviceDescription">
    <Description>The role class "CSP+ForMachine" is used to describe a CSP+ for Machine device
description file in AutomationML.</Description>
    <ExternalInterface Name="CSP+ForMachineReference" ID="9a008fb7-edb2-49ff-b883-534ddb0b851d"
RefBaseClassPath="CCLinkICL/CSP+ForMachineReference">
      <Description>The interface class "CSP+ForMachineReference" shall be used in order to
reference CSP+ for Machine device description files in AutomationML.</Description>
      <Attribute Name="refURI" AttributeDataType="xs:anyURI">
        <Description>URI of the corresponding device description file.</Description>
      </Attribute>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
        <Description>MIMETYPE of the file according to RFC2046.</Description>
        <DefaultValue>application/xml</DefaultValue>
      </Attribute>
      <Attribute Name="Version" AttributeDataType="xs:string">
        <Description>The version of the actual device description file that is referenced
here.</Description>
      </Attribute>
    </ExternalInterface>
  </RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLFMILogicRoleClassLib">
  <Description>The RoleClassLib AutomationMLFMILogicRoleClassLib is defined in the Whitepaper
"Description of AutomationML Components". The document can be downloaded at
https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1 State
October 2020 and has the Document Identifier WP Compo.</Description>
  <Version>1.1.0</Version>
  <RoleClass Name="FMILogicObject"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole"/>
</RoleClassLib>
<RoleClassLib Name="AutomationMLBPRRoleClassLib">
  <Version>1.0.0</Version>

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    <RoleClass Name="ExternalData"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <RoleClass Name="UserManual" RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData"/>
    <RoleClass Name="BillOfMaterial"
RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData"/>
    <RoleClass Name="Construction" RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData"/>
    <RoleClass Name="ProductDocumentation"
RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData"/>
    </RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLBaseRoleClassLib">
    <Description>Automation Markup Language Base Role Class Library - Part 1 Content extended with
Part 3 and Part 4 Content</Description>
    <Version>2.2.2</Version>
    <RoleClass Name="AutomationMLBaseRole">
        <RoleClass Name="Group" RefBaseClassPath="AutomationMLBaseRole">
            <Attribute Name="AssociatedFacet" AttributeDataType="xs:string"/>
            <RoleClass Name="InterlockingSourceGroup" RefBaseClassPath="Group"/>
            <RoleClass Name="InterlockingTargetGroup" RefBaseClassPath="Group"/>
        </RoleClass>
        <RoleClass Name="Facet" RefBaseClassPath="AutomationMLBaseRole"/>
        <RoleClass Name="Port" RefBaseClassPath="AutomationMLBaseRole">
            <Attribute Name="Direction" AttributeDataType="xs:string"/>
            <Attribute Name="Cardinality">
                <Attribute Name="MinOccur" AttributeDataType="xs:unsignedInt"/>
                <Attribute Name="MaxOccur" AttributeDataType="xs:unsignedInt"/>
            </Attribute>
            <Attribute Name="Category" AttributeDataType="xs:string"/>
            <ExternalInterface Name="ConnectionPoint" ID="9942bd9c-c19d-44e4-a197-11b9edf264e7"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/PortConnector"/>
        </RoleClass>
        <RoleClass Name="Resource" RefBaseClassPath="AutomationMLBaseRole"/>
        <RoleClass Name="Product" RefBaseClassPath="AutomationMLBaseRole"/>
        <RoleClass Name="Process" RefBaseClassPath="AutomationMLBaseRole"/>
        <RoleClass Name="Structure" RefBaseClassPath="AutomationMLBaseRole">
            <RoleClass Name="ProductStructure" RefBaseClassPath="Structure"/>
            <RoleClass Name="ProcessStructure" RefBaseClassPath="Structure"/>
            <RoleClass Name="ResourceStructure" RefBaseClassPath="Structure"/>
        </RoleClass>
        <RoleClass Name="PropertySet" RefBaseClassPath="AutomationMLBaseRole"/>
        <RoleClass Name="Frame" RefBaseClassPath="AutomationMLBaseRole"/>
        <RoleClass Name="LogicObject" RefBaseClassPath="AutomationMLBaseRole"/>
    </RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLComponentBaseRCL">
    <Description>The RoleClassLib AutomationMLComponentBaseRCL is defined in the Whitepaper
"Description of AutomationML Components". The document can be downloaded at
https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1 State
October 2020 and has the Document Identifier WP Compo.</Description>
    <Version>1.1.0</Version>
    <RoleClass Name="AdditionalDeviceDescription"
RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData">
        <Description>This is the base class for standard or user defined role classes referencing
technology based device descriptions.</Description>
        <Attribute Name="SpecVersion" AttributeDataType="xs:string">
            <Description>The version of the Specification or Schema of the device description
file.</Description>
        </Attribute>
        <Attribute Name="DocLang" AttributeDataType="xs:string">
            <Description>Language of the referenced description file.</Description>
        </Attribute>
        <ExternalInterface Name="DeviceDescriptionReference" ID="77a3d04b-702e-4852-8094-
cd37cd155fcd" RefBaseClassPath="AutomationMLComponentBaseICL/DeviceDescriptionReference">
            <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
            <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
            <Attribute Name="Version" AttributeDataType="xs:string"/>
        </ExternalInterface>
    </RoleClass>
    <RoleClass Name="Connector"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
        <Description>The role class "Connector" is an abstract basic role class and the base class
for standard or user defined role classes describing connectors of components.</Description>

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</RoleClass>
<RoleClass Name="Documentation" RefBaseClassPath="AutomationMLBPRRoleClassLib/ExternalData">
  <Description>The role class "Documentation" shall be used to specify all AutomationML objects
referencing documentation related information of a component.</Description>
  <ExternalInterface Name="ExternalDataReference" ID="7b24341d-fd33-4fc3-9ae9-3fb9673d11ea"
RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
    <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
    <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
  </ExternalInterface>
</RoleClass>
<RoleClass Name="GeometryModel" RefBaseClassPath="AutomationMLComponentBaseRCL/Model">
  <Description>The role class "GeometryModel" is a basic abstract role class and the base class
for standard or user defined role classes referencing component geometry models.</Description>
</RoleClass>
<RoleClass Name="GraphicRepresentation"
RefBaseClassPath="AutomationMLBPRRoleClassLib/ExternalData">
  <Description>The role class "GraphicRepresentation" is a basic role class and the base class
for standard or user defined role classes referencing graphic representation of
components.</Description>
  <ExternalInterface Name="GraphicRepresentationReference" ID="fd49bd-0266-4f31-a0b2-
cf365f16fbeb" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
    <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
    <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
  </ExternalInterface>
</RoleClass>
<RoleClass Name="Icon" RefBaseClassPath="AutomationMLComponentBaseRCL/GraphicRepresentation">
  <Description>The role class "Icon" is a basic role class and the base class for standard or
user defined role classes referencing icons of components.</Description>
</RoleClass>
<RoleClass Name="LogicModel" RefBaseClassPath="AutomationMLComponentBaseRCL/Model">
  <Description>The role class "LogicModel" is a basic abstract role class and the base class
for standard or user defined role classes referencing component logic models.</Description>
  <RoleClass Name="PLCopenXMLLogic"
RefBaseClassPath="AutomationMLLogicRoleClassLib/LogicModelObject">
    <Description>The role class "PLCopenXMLLogic" shall be used for referencing a
PLCopenXMLLogic model.</Description>
    <ExternalInterface Name="VariableInterface" ID="7306f95b-7e2e-4f3a-af1d-12f4e1d1e941"
RefBaseClassPath="AutomationMLPLCopenXMLInterfaceClassLib/VariableInterface"/>
    <ExternalInterface Name="LogicInterface" ID="ca8c37da-96d9-44a8-9c8c-68c5f6b8b420"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="AMLLogic" RefBaseClassPath="AutomationMLLogicRoleClassLib/LogicModelObject">
    <Description>The role class "AMLLogic" shall be used for referencing an AMLLogic
model.</Description>
  </RoleClass>
  <RoleClass Name="FMILogic"
RefBaseClassPath="AutomationMLFMILogicRoleClassLib/FMILogicObject">
    <Description>This RoleClass "FMILogic" describes an instance of a co-simulation Functional
Mockup Unit according to the FMI standard, which is an open standard and is adopted by a variety of
simulation tools.</Description>
    <Attribute Name="Name" AttributeDataType="xs:string"/>
    <Attribute Name="Description" AttributeDataType="xs:string"/>
    <Attribute Name="FMIVersion" AttributeDataType="xs:string"/>
    <ExternalInterface Name="FMIReference" ID="fb47e6a7-2e9f-4e2e-bfa3-0288da9973c7"
RefBaseClassPath="AutomationMLFMIInterfaceClassLib/FMIReference">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
    </ExternalInterface>
    <ExternalInterface Name="FMIVariableInterface" ID="41d8e7a0-4cfc-4b4f-baab-ef32e2d4072b"
RefBaseClassPath="AutomationMLFMIInterfaceClassLib/FMIVariableInterface">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="Name" AttributeDataType="xs:string"/>
      <Attribute Name="Causality" AttributeDataType="xs:string"/>
    </ExternalInterface>
  </RoleClass>
</RoleClass>
<RoleClass Name="KinematicModel" RefBaseClassPath="AutomationMLComponentBaseRCL/Model">
  <Description>The basic abstract role class "KinematicModel" shall be used as base class for
standard or user defined role classes referencing component models.</Description>

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</RoleClass>
<RoleClass Name="MaintenanceDescription"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
  <Description>The role class "MaintenanceDescription" is a abstract basic role class and the
base class for standard or user defined role classes defining maintenance description.</Description>
</RoleClass>
<RoleClass Name="Model" RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
  <Description>The basic abstract role class "Function" shall be used as base class for
standard or user defined role classes defining and referencing component models.</Description>
</RoleClass>
<RoleClass Name="Symbol" RefBaseClassPath="AutomationMLComponentBaseRCL/GraphicRepresentation">
  <Description>The role class "Symbol" shall be used for referencing a symbol of the Automation
Component.</Description>
</RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLComponentStandardRCL">
  <Description>The RoleClassLib AutomationMLComponentStandardRCL is defined in the Whitepaper
"Description of AutomationML Components". The document can be downloaded at
https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1 State
October 2020 and has the Document Identifier WP Compo.</Description>
<Version>1.1.0</Version>
<RoleClass Name="AutomationComponent"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
  <Description>This role class defines a set of attributes to identify, classify and describe
an automation component as an industrial product which serves specific functions, i.e. for industrial
process or factory automation.</Description>
  <Attribute Name="IdentificationData">
    <Description>Identification data of the automation component type or instance
model.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACC011#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABC269#005"/>
    <Attribute Name="Manufacturer" AttributeDataType="xs:string">
      <Description>Name of the Manufacturer (person, company or organisation)</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE102#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA565#006"/>
    </Attribute>
    <Attribute Name="ManufacturerURI" AttributeDataType="xs:string">
      <Description>Address of the product manufacturer on the world wide web (URL)
</Description>
    </Attribute>
    <Attribute Name="DeviceClass" AttributeDataType="xs:string">
      <Description>Product family name of the manufacturer, characterization may be based on
its usage, operation principle, and its fabricated form</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE104#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA566#005"/>
    </Attribute>
    <Attribute Name="Model" AttributeDataType="xs:string">
      <Description>Product name or model code of the manufacturer</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE105#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA567#006"/>
    </Attribute>
    <Attribute Name="ProductCode" AttributeDataType="xs:string">
      <Description>Unique product identifier given by the manufacturer</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE103#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA300#005"/>
    </Attribute>
    <Attribute Name="OrderCode" AttributeDataType="xs:string">
      <Description>Unique combination of numbers and letters used to order the
device</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAH549#002"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA950#006"/>
    </Attribute>
    <Attribute Name="HardwareRevision" AttributeDataType="xs:string">
      <Description>Version of the hardware supplied with the component</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA926#005"/>
    </Attribute>
    <Attribute Name="SoftwareRevision" AttributeDataType="xs:string">
      <Description>Version of the firmware supplied with the component</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA302#004"/>
    </Attribute>
    <Attribute Name="SerialNumber" AttributeDataType="xs:string">

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    <Description>Unique combination of numbers and letters to identify a manufactured
component sample</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA951#006"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#ADA029#001"/>
  </Attribute>
  <Attribute Name="FabricationNumber" AttributeDataType="xs:string">
    <Description>Alphanumeric character sequence to trace the date, time and circumstances
of fabrication</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABB062#005"/>
  </Attribute>
  <Attribute Name="ProductInstanceURI" AttributeDataType="xs:string">
    <Description>Unique global identification of the product type or sample (assetID)
using an universal resource identifier, such as an online URL to the product data.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABN591#001"/>
  </Attribute>
</Attribute>
<Attribute Name="GeneralTechnicalData">
  <Description>Classification data of the component.</Description>
  <Attribute Name="AmbientTemperature" AttributeDataType="xs:string">
    <Description>Operating temperature limits of the air surrounding the complete
component.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE440#001"/>
    <Attribute Name="TemperatureMin" AttributeDataType="xs:int">
      <Description>Lowest ambient temperature for which the component operates within its
specified limits.</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAH008#002"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA621#007"/>
    </Attribute>
    <Attribute Name="TemperatureMax" AttributeDataType="xs:int">
      <Description>Highest ambient temperature for which the component operates within
its specified limits.</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAH007#002"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA623#007"/>
      <RefSemantic CorrespondingAttributePath="IRDI:"/>
    </Attribute>
  </Attribute>
  <Attribute Name="IPCode" AttributeDataType="xs:string">
    <Description>Degree of protection (IP code) of the component provided by enclosure,
numerical classification in accordance with IEC 60529 preceded by the symbol IP.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAH011#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE248#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA558#006"/>
  </Attribute>
  <Attribute Name="Material" AttributeDataType="xs:string">
    <Description>Basic material of the housing of the component.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAE351#006"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE260#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA158#004"/>
  </Attribute>
  <Attribute Name="Weight" AttributeDataType="xs:float">
    <Description>Net weight: Value of the mass of the component with all fixed parts
without packaging and accessories.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#ACB032#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE808#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA553#006"/>
  </Attribute>
  <Attribute Name="Height" AttributeDataType="xs:integer" Unit="mm">
    <Description>Height of the body, vertical distance between the top and bottom of the
component when standing in its normal position of use, including connectors and terminals, without
accessory and cable.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAE020#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE801#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA574#006"/>
  </Attribute>
  <Attribute Name="Width" AttributeDataType="xs:integer">
    <Description>Width or breadth of the body, horizontal distance between the left-hand
and right-hand extremes of the component when standing in its normal position of use, including
connectors and terminals, without accessory and cable.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAE021#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE802#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA573#006"/>
  </Attribute>

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<Attribute Name="Length" AttributeDataType="xs:integer">
  <Description>Length of the body, horizontal distance between the front and back of the
component when standing in its normal position of use, including connectors and terminals, without
accessory and cable.</Description>
  <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAE019#002"/>
  <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE803#001"/>
  <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA640#006"/>
</Attribute>
</Attribute>
<Attribute Name="CommercialData" AttributeDataType="">
  <Description>Commercial data related to the component.</Description>
  <Attribute Name="PackagingAndTransportation">
    <Description>Properties characterizing the packing and transportation (shipping) of a
product.</Description>
    <Attribute Name="GTIN" AttributeDataType="xs:string">
      <Description>Global Trade Item Number (GTIN). International unique and universal
item number for products and services used by trade and industry (formerly EAN)</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE101#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA587#005"/>
    </Attribute>
    <Attribute Name="CustomsTariffNumber" AttributeDataType="xs:integer">
      <Description>Classification of a product according to trade regulations. Number
assigned to each type of product sold internationally.</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE109#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABI442#001"/>
    </Attribute>
    <Attribute Name="CountryOfOrigin" AttributeDataType="xs:string" Unit="code">
      <Description>Alphabetic 2-character code for the identification of the country in
which the good has been produced or manufactured according to criteria laid down for the application of
custom tariff or quantitative restrictions, or any measure related to trade. The provided value list
for the alphabetic 2-character code is based on ISO 3166-1, which is updated under
https://www.iso.org/iso-3166-country-codes.html</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#ADA034#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABJ603#001"/>
    </Attribute>
  </Attribute>
  <Attribute Name="ProductDetails" AttributeDataType="xs:string">
    <Attribute Name="DescriptionShort" AttributeDataType="xs:string"/>
    <Attribute Name="DescriptionLong" AttributeDataType="xs:string"/>
    <Attribute Name="InternationalPID" AttributeDataType="xs:string"/>
    <Attribute Name="ManufacturerPID" AttributeDataType="xs:string"/>
    <Attribute Name="SpecialTreatmentClass" AttributeDataType="xs:string">
      <RefSemantic CorrespondingAttributePath="ListType"/>
    </Attribute>
    <Attribute Name="Keyword" AttributeDataType="xs:string">
      <RefSemantic CorrespondingAttributePath="ListType"/>
    </Attribute>
    <Attribute Name="Remarks" AttributeDataType="xs:string"/>
  </Attribute>
  <Attribute Name="ProductOrderDetails">
    <Attribute Name="OrderUnit" AttributeDataType="xs:string"/>
    <Attribute Name="ContentUnit" AttributeDataType="xs:string"/>
    <Attribute Name="PriceQuantity" AttributeDataType="xs:string"/>
    <Attribute Name="QuantityMin" AttributeDataType="xs:float"/>
    <Attribute Name="QuantityInterval" AttributeDataType="xs:float"/>
    <Attribute Name="QuantityMax" AttributeDataType="xs:string"/>
    <Attribute Name="PackingUnits" AttributeDataType="xs:string"/>
    <Attribute Name="PackingSize" AttributeDataType="xs:string"/>
  </Attribute>
  <Attribute Name="ProductPriceDetails">
    <RefSemantic CorrespondingAttributePath="ListType"/>
    <Attribute Name="ValidStartDate" AttributeDataType="xs:date"/>
    <Attribute Name="ValidEndDate" AttributeDataType="xs:date"/>
    <Attribute Name="ProductPrice" AttributeDataType="xs:string">
      <Attribute Name="PriceAmount" AttributeDataType="xs:string"/>
      <Attribute Name="PriceCurrency" AttributeDataType="xs:string"/>
      <Attribute Name="Tax" AttributeDataType="xs:string"/>
      <Attribute Name="PriceFactor" AttributeDataType="xs:string"/>
      <Attribute Name="LowerBound" AttributeDataType="xs:string"/>
      <Attribute Name="Territory" AttributeDataType="xs:string">
        <RefSemantic CorrespondingAttributePath="ListType"/>
      </Attribute>
    </Attribute>
  </Attribute>

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        </Attribute>
    </Attribute>
    <Attribute Name="ManufacturerDetails">
        <Attribute Name="Name" AttributeDataType="xs:string"/>
        <Attribute Name="Address1" AttributeDataType="xs:string"/>
        <Attribute Name="Address2" AttributeDataType="xs:string"/>
        <Attribute Name="ZipCode" AttributeDataType="xs:string"/>
        <Attribute Name="City" AttributeDataType="xs:string"/>
        <Attribute Name="Country" AttributeDataType="xs:string"/>
        <Attribute Name="ContactMail" AttributeDataType="xs:string"/>
        <Attribute Name="ContactPhone" AttributeDataType="xs:string"/>
        <Attribute Name="Website" AttributeDataType="xs:string"/>
    </Attribute>
</Attribute>
<Attribute Name="ParameterData" AttributeDataType="xs:string">
    <Description>Parameter data (configurable and read-only) of the component.</Description>
</Attribute>
</RoleClass>
<RoleClass Name="AutomationComponentSemanticSystem"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <Description>The role class "AutomationComponentSemanticSystem" shall be used to define the
semantic systems that are supported by the AutomationML Component.</Description>
    <Attribute Name="ClassificationSystem" AttributeDataType="xs:string">
        <Attribute Name="Name" AttributeDataType="xs:string"/>
        <Attribute Name="Version" AttributeDataType="xs:string"/>
        <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string"/>
        <Attribute Name="URL" AttributeDataType="xs:string"/>
    </Attribute>
    <Attribute Name="IEC 61987 " AttributeDataType="xs:string">
        <Attribute Name="Version" AttributeDataType="xs:string">
            <Value>V2.0014.0016</Value>
        </Attribute>
        <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string">
            <Value>IRDI:0112/2///62683#</Value>
        </Attribute>
        <Attribute Name="URL" AttributeDataType="xs:string">
            <Value>https://cdd.iec.ch/cdd/iec61987/iec61987.nsf/TreeFrameset?OpenFrameSet&ongletactif=1</Value>
        </Attribute>
    </Attribute>
    <Attribute Name="IEC 61360-4" AttributeDataType="xs:string">
        <Attribute Name="Version" AttributeDataType="xs:string">
            <Value>V2.0014.0016</Value>
        </Attribute>
        <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string">
            <Value>IRDI:0112/2///61360_4#</Value>
        </Attribute>
        <Attribute Name="URL" AttributeDataType="xs:string">
            <Value>https://cdd.iec.ch/cdd/iec61360/iec61360.nsf/TreeFrameset?OpenFrameSet&ongletactif=1</Value>
        </Attribute>
    </Attribute>
    <Attribute Name="IEC 62683" AttributeDataType="xs:string">
        <Attribute Name="Version" AttributeDataType="xs:string">
            <Value>V2.0014.0016</Value>
        </Attribute>
        <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string">
            <Value>IRDI:0112/2///62683#</Value>
        </Attribute>
        <Attribute Name="URL" AttributeDataType="xs:string">
            <Value>https://cdd.iec.ch/cdd/iec62683/iec62683.nsf/TreeFrameset?OpenFrameSet&ongletactif=1</Value>
        </Attribute>
    </Attribute>
    <Attribute Name="eClass" AttributeDataType="xs:string">
        <Attribute Name="Version" AttributeDataType="xs:string">
            <Value>11.0</Value>
        </Attribute>
        <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string">

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    <Value>IRDI:0173</Value>
  </Attribute>
  <Attribute Name="URL" AttributeDataType="xs:string">
    <Value>https://www.eclasscontent.com</Value>
  </Attribute>
</Attribute>
</RoleClass>
<RoleClass Name="BehaviourModel" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel">
  <Description>The role class "BehaviourModel" shall be used in order to specify a logic model
integration as behaviour model of AutomationML Component.</Description>
</RoleClass>
<RoleClass Name="Function" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel">
  <Description>The role class "Function" shall be used in order to specify a logic model
integration as function of AutomationML Component.</Description>
</RoleClass>
<RoleClass Name="SimulationModel" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel">
  <Description>The role class "SimulationModel" shall be used in order to specify a logic model
integration as simulation model of AutomationML Component.</Description>
</RoleClass>
<RoleClass Name="SequencingModel" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel">
  <Description>The role class "SequencingModel" shall be used in order to specify all the
interface related information of an sequence model of an AutomationML Component or Composite
Component.</Description>
</RoleClass>
<RoleClass Name="Sequence" RefBaseClassPath="AutomationMLComponentStandardRCL/SequencingModel">
  <Description>The role class "Sequence" shall be used in order to specify all the interface
related information of a PLCopen XML sequence model.</Description>
</RoleClass>
<RoleClass Name="SequenceElement"
RefBaseClassPath="AutomationMLComponentStandardRCL/SequencingModel">
  <Description>The role class "SequenceElement" shall be used in order to specify all the
interface related information of a sequence element.</Description>
</RoleClass>
<RoleClass Name="SkillModel" RefBaseClassPath="AutomationMLComponentBaseRCL/Model"
ChangeMode="create">
  <Description>The role class "SkillModel" shall be used to define or reference skill models of
an automation Component.</Description>
</RoleClass>
<RoleClass Name="SkillLogicModel" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel"
ChangeMode="change">
  <Description>The role class "SkillLogicModel" shall be used in order to specify a logic model
integration as behaviour model of AutomationML Component.</Description>
</RoleClass>
<RoleClass Name="SkillConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
  <Description>SkillConnector is used as an engineering interface for skill-based systems
engineering. SkillConnector provides interfaces necessary to connect the components logically in an
automation system and also to connect with products and process in a manufacturing plant </Description>
</RoleClass>
<RoleClass Name="COLLADAKinematicModel"
RefBaseClassPath="AutomationMLComponentBaseRCL/KinematicModel">
  <Description>The role class "COLLADAKinematicModel" shall be used in order to specify all the
interface related information of a COLLADA kinematic model of an AutomationML Component or Composite
Component.</Description>
  <ExternalInterface Name="COLLADAInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/COLLADA
Interface" ID="4515b789-fc7b-410d-8756-2ffe16255139">
    <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
    <Attribute Name="refType" AttributeDataType="xs:string"/>
    <Attribute Name="target" AttributeDataType="xs:token"/>
  </ExternalInterface>
</RoleClass>
<RoleClass Name="COLLADAKinematicJoint"
RefBaseClassPath="AutomationMLComponentStandardRCL/COLLADAKinematicModel">
  <Description>The role class "COLLADAKinematicJoint" shall be used in order to specify all
joint information of a COLLADA kinematic model of the AutomationML Component.</Description>
  <ExternalInterface Name="JointInterface" ID="d62522cb-76b9-49f2-9f1d-38aa7afa30ff"
RefBaseClassPath="AutomationMLComponentBaseICL/JointInterface"/>
</RoleClass>
<RoleClass Name="COLLADAKinematicAttachment"
RefBaseClassPath="AutomationMLComponentStandardRCL/COLLADAKinematicModel">
  <Description>The role class "COLLADAKinematicAttachment" shall be used in order to specify
all attachment information of a COLLADA kinematic model of the AutomationML Component.</Description>

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    <ExternalInterface Name="AttachmentInterface" ID="5a7555a1-1b49-4abe-9f64-23f33c81d41f"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/AttachmentInterface"/>
  </RoleClass>
  <RoleClass Name="COLLADAGeometryModel"
RefBaseClassPath="AutomationMLComponentBaseRCL/GeometryModel">
    <Description>The role class "COLLADAGeometryModel" shall be used in order to specify all the
interface related information of a COLLADA geometry model.</Description>
    <ExternalInterface Name="COLLADAInterface" ID="d7d00603-9b83-4e1c-821f-ee2fb28a4aa1"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/COLLADA
Interface">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="refType" AttributeDataType="xs:string"/>
      <Attribute Name="target" AttributeDataType="xs:token"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="COLLADAGeometryAttachment"
RefBaseClassPath="AutomationMLComponentStandardRCL/COLLADAGeometryModel">
    <Description>The role class "COLLADAGeometryAttachment" shall be used in order to specify all
attachment information of a COLLADA geometry model of the AutomationML Component.</Description>
    <ExternalInterface Name="AttachmentInterface" ID="1913fd44-cb01-4c0d-9f8f-6fbfdea2755f"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/AttachmentInterface"/>
  </RoleClass>
  <RoleClass Name="JTGeometryModel" RefBaseClassPath="AutomationMLComponentBaseRCL/GeometryModel">
    <Description>The role class "JTGeometryModel" shall be used in order to specify all the
interface related information of a JT geometry model.</Description>
    <ExternalInterface Name="JTReference" ID="aedac47c-741d-4e2e-b8d7-4443ef055535"
RefBaseClassPath="AutomationMLComponentBaseICL/JTReference">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="MIMEType" AttributeDataType="xs:string"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="2DGeometryModel" RefBaseClassPath="AutomationMLComponentBaseRCL/GeometryModel">
    <Description>The role class "2DGeometryModel" shall be used in order to specify all the
interface related information of a 2D geometry model.</Description>
    <ExternalInterface Name="2DReference" ID="8b7f8789-f132-4692-9871-1a10cf1df20f"
RefBaseClassPath="AutomationMLComponentBaseICL/2DReference">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="MIMEType" AttributeDataType="xs:string"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="ComponentPicture"
RefBaseClassPath="AutomationMLComponentBaseRCL/GraphicRepresentation">
    <Description>The role class "ComponentPicture" shall be used for referencing a picture of the
Automation component.</Description>
  </RoleClass>
  <RoleClass Name="ElectricSymbol" RefBaseClassPath="AutomationMLComponentBaseRCL/Symbol">
    <Description>The role class "ElectricSymbol" shall be used for referencing a electric symbol
of the Automation component.</Description>
  </RoleClass>
  <RoleClass Name="HydraulicSymbol" RefBaseClassPath="AutomationMLComponentBaseRCL/Symbol">
    <Description>The role class "HydraulicSymbol" shall be used for referencing a hydraulic
symbol of the automation component.</Description>
  </RoleClass>
  <RoleClass Name="PneumaticSymbol" RefBaseClassPath="AutomationMLComponentBaseRCL/Symbol">
    <Description>The role class "PneumaticSymbol" shall be used for referencing a pneumatic
symbol of the automation component.</Description>
  </RoleClass>
  <RoleClass Name="ComponentIcon" RefBaseClassPath="AutomationMLComponentBaseRCL/Icon">
    <Description>The role class "ComponentIcon" shall be used for referencing a icon of the
automation component.</Description>
  </RoleClass>
  <RoleClass Name="ManufacturerIcon" RefBaseClassPath="AutomationMLComponentBaseRCL/Icon">
    <Description>The role class "ComponentPicture" shall be used for referencing a picture of the
Automation component.</Description>
  </RoleClass>
  <RoleClass Name="Certificate" RefBaseClassPath="AutomationMLComponentBaseRCL/Documentation">
    <Description>The role class "Certificate" shall be used for referencing a certification
document of the automation component.</Description>
  </RoleClass>
  <RoleClass Name="MechanicConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">

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<Description>The role class "MechanicConnector" shall be used to define the representation of
a mechanical fastening interface of an automation component within its AutomationML Component
representation.</Description>
<ExternalInterface Name="MechanicInterface" ID="f161edf3-c422-4cf7-9bf6-e4cba061b15c"
RefBaseClassPath="AutomationMLComponentBaseICL/MechanicInterface"/>
</RoleClass>
<RoleClass Name="MultiConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector"/>
<RoleClass Name="LogicConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
<Description>The role class "LogicConnector" shall be used in order to specify all the
related information of an logic connector of an automation component within its AutomationML Component
representation.</Description>
<ExternalInterface Name="SignalInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/Communication/SignalInterface
" ID="17bd2a73-0f1a-4d4b-9451-c9621f1047bf"/>
</RoleClass>
<RoleClass Name="ElectricConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
<Description>The role class "ElectricConnector" shall be used in order to specify all the
related information of an electric connector of an automation component within its AutomationML
Component representation.</Description>
<ExternalInterface Name="ElectricInterface" ID="6d752fce-f141-4d8a-a8b5-0064ad19f707"
RefBaseClassPath="AutomationMLComponentBaseICL/ElectricInterface"/>
</RoleClass>
<RoleClass Name="FluidicConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
<Description>The role class "FluidicConnector" is an abstract role class and the base class
for standard or user defined role classes referencing fluidic connectors.</Description>
</RoleClass>
<RoleClass Name="LiquidicConnector"
RefBaseClassPath="AutomationMLComponentStandardRCL/FluidicConnector">
<Description>The role class "LiquidicConnector" shall be used in order to specify all the
related information of a liquidic connector of an automation component within its AutomationML
Component representation.</Description>
<ExternalInterface Name="LiquidicInterface" ID="5f170a3d-7d61-47e6-8a45-63e8b7448609"
RefBaseClassPath="AutomationMLComponentBaseICL/LiquidicInterface"/>
</RoleClass>
<RoleClass Name="PneumaticConnector"
RefBaseClassPath="AutomationMLComponentStandardRCL/FluidicConnector">
<Description>The role class "PneumaticConnector" shall be used in order to specify all the
related information of a pneumatic connector of an automation component within its AutomationML
Component representation.</Description>
<ExternalInterface Name="PneumaticInterface" ID="0f7d6ec8-7078-49bc-918b-33773609c977"
RefBaseClassPath="AutomationMLComponentBaseICL/PneumaticInterface"/>
</RoleClass>
<RoleClass Name="HydraulicConnector"
RefBaseClassPath="AutomationMLComponentStandardRCL/FluidicConnector">
<Description>The role class "HydraulicConnector" shall be used in order to specify all the
related information of a hydraulic connector of an automation component within its AutomationML
Component representation.</Description>
<ExternalInterface Name="HydraulicInterface" ID="56f6607e-fa42-4d34-89e9-82c196a4adba"
RefBaseClassPath="AutomationMLComponentBaseICL/HydraulicInterface"/>
</RoleClass>
<RoleClass Name="SensorConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
<Description>SensorConnector is the process interface to physically sense the properties of
interest (i.e. a mechanical movement or object presence within a spatial detection area or mediums
states like temperature or pressure). It is used for both mechanical construction and simulation
environments.</Description>
<ExternalInterface Name="SensorInterface" ID="46fae3e7-fa14-4d27-a650-d135811affac"
RefBaseClassPath="AutomationMLComponentBaseICL/SensorInterface"/>
</RoleClass>
<RoleClass Name="MaintenanceDescriptionGroup"
RefBaseClassPath="AutomationMLComponentBaseRCL/MaintenanceDescription">
<Description>??</Description>
<Attribute Name="TopicName" AttributeDataType="xs:string"/>
</RoleClass>
<RoleClass Name="MaintenanceDescriptionItem"
RefBaseClassPath="AutomationMLComponentBaseRCL/MaintenanceDescription">
<Description>The role class "MaintenanceDescriptionItem" shall be used to define a single
maintenance task.</Description>
<Attribute Name="Index" AttributeDataType="xs:PositiveInteger"/>
<Attribute Name="SubTopic" AttributeDataType="xs:string"/>
<Attribute Name="WorkDescription" AttributeDataType="xs:string"/>
<Attribute Name="Cycle" AttributeDataType="xs:duration"/>
<Attribute Name="PlannedTimePerWorker" AttributeDataType="xs:duration"/>

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    <Attribute Name="ActivityKey" AttributeDataType="xs:string"/>
    <Attribute Name="ExecutionKey" AttributeDataType="xs:string"/>
    <Attribute Name="FunctionKey" AttributeDataType="xs:string"/>
    <Attribute Name="PersonnelKey" AttributeDataType="xs:string"/>
    <Attribute Name="LastExecution" AttributeDataType="xs:string"/>
  </RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLLogicRoleClassLib">
  <Description>AutomationMLLogicRoleClassLib specifies all logic related role
classes.</Description>
  <Version>1.0.0</Version>
  <RoleClass Name="InterlockingTargetGroup"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole/Group">
    <ExternalInterface Name="ConnectionInterlockingSourceGroup" ID="70e6b544-9120-4fc9-b059-
8d97c59f75f2"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/InterlockingConnector"/>
    <ExternalInterface Name="ReferenceInterlockingLogicModel" ID="b1a85f25-1ecf-4048-bdd3-
84085d81b06a" RefBaseClassPath="AutomationMLLogicInterfaceClassLib/InterlockingLogicModelInterface"/>
  </RoleClass>
  <RoleClass Name="InterlockingSourceGroup"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole/Group">
    <ExternalInterface Name="ConnectionInterlockingTargetGroup" ID="adf94976-a6d0-4960-b5af-
55719a3e2130"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/InterlockingConnector"/>
    <ExternalInterface Name="ReferenceInterlockingLogicModel" ID="617c8706-8ee7-4e7b-8b94-
900afe19f4f7" RefBaseClassPath="AutomationMLLogicInterfaceClassLib/InterlockingLogicModelInterface"/>
    <ExternalInterface Name="ReferenceInterlockingVariable" ID="3472f585-cf80-4b83-a355-
db401cf18af9" RefBaseClassPath="AutomationMLLogicInterfaceClassLib/InterlockingVariableInterface">
      <Attribute Name="Direction" AttributeDataType="xs:string"/>
      <Attribute Name="SafeConditionEquals" AttributeDataType="xs:boolean"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="LogicModelObject"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <ExternalInterface Name="ReferenceSequence" ID="0370baf8-4ba1-420a-9cc4-4810b84c1fd7"
RefBaseClassPath="AutomationMLLogicInterfaceClassLib/SequencingLogicModelInterface"/>
    <ExternalInterface Name="ReferenceBehaviour" ID="26f13ad6-479c-4121-a327-1114af968155"
RefBaseClassPath="AutomationMLLogicInterfaceClassLib/BehaviourLogicModelInterface"/>
  </RoleClass>
</RoleClassLib>
<SystemUnitClassLib Name="CCLinkIEFieldExampleSUCLib">
  <Version>1.0.1</Version>
  <SystemUnitClass Name="Mitsubishi Electric MR-J4-10GF" ID="06c76321-1537-4c15-b37a-
8e12f2b40c27">
    <InternalElement Name="ComponentPicture" ID="7f6c2b53-285c-4e4e-8803-19bc5ae18489">
      <ExternalInterface Name="GraphicRepresentationReference" ID="2d53a2b0-2948-4bc7-b0f8-
bfc905241629" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
          <Value>/0x0002_MR-J4-GF(E_CCIEFBasic)_1_ja.CSPP/0x0002/MR-J4.bmp</Value>
        </Attribute>
      </ExternalInterface>
    </InternalElement>
    <RoleRequirements
RefBaseRoleClassPath="AutomationMLComponentStandardRCL/ComponentPicture">
      <ExternalInterface Name="GraphicRepresentationReference" ID="9037d125-37b3-4efa-8f64-
d6bc74ed6c71">
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
          <Value/>
        </Attribute>
      </ExternalInterface>
    </RoleRequirements>
  </SystemUnitClass>
  <InternalElement Name="ComponentIcon" ID="7928d77b-0b1e-439c-921c-476a5c3f6670">
    <ExternalInterface Name="GraphicRepresentationReference" ID="35ffd353-b325-4f55-a611-
2d59f0b9fd09" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI">
        <Value>/0x0002_MR-J4-GF(E_CCIEFBasic)_1_ja.CSPP/0x0002/MR-J4.ico</Value>
      </Attribute>
    </ExternalInterface>
    <RoleRequirements RefBaseRoleClassPath="AutomationMLComponentStandardRCL/ComponentIcon">
      <ExternalInterface Name="GraphicRepresentationReference" ID="3688da9d-9113-4a7b-9d96-
43719fa90220">
        <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      </ExternalInterface>
    </RoleRequirements>
  </InternalElement>

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        </ExternalInterface>
    </RoleRequirements>
</InternalElement>
<InternalElement Name="CSP+JP" ID="6a7c5cce-c34b-44f6-89e8-a0f53183716d">
    <Attribute Name="SpecVersion" AttributeDataType="xs:string">
        <Value>2.1</Value>
    </Attribute>
    <Attribute Name="DocLang" AttributeDataType="xs:string">
        <Value>ja-JP</Value>
    </Attribute>
    <ExternalInterface Name="CSP+Reference" ID="8e3e39aa-fd7f-4cb8-b64f-ab4f7ff23084"
RefBaseClassPath="CCLinkICL/CSP+Reference">
        <Description>The interface class "CSP+Reference" shall be used in order to reference
CSP+ device description files in AutomationML.</Description>
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
            <Description>URI of the corresponding device description file.</Description>
            <Value>/0x0002_MR-J4-GF(E_CCIEFBasic)_1_ja.CSPP/0x0002_MR-J4-
GF(E_CCIEFBasic)_1_ja.cspp</Value>
        </Attribute>
        <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
            <Description>MIMETYPE of the file according to RFC2046.</Description>
            <DefaultValue>application/xml</DefaultValue>
            <Value>application/xml</Value>
        </Attribute>
        <Attribute Name="Version" AttributeDataType="xs:string">
            <Description>The version of the actual device description file that is referenced
here.</Description>
            <Value>1.0</Value>
        </Attribute>
    </ExternalInterface>
    <RoleRequirements RefBaseRoleClassPath="CCLinkRCL/CSP+ ">
        <Description>The role class "CSP+" is used to describe a CSP+ device description file
in AutomationML.</Description>
        <Attribute Name="SpecVersion" AttributeDataType="xs:string"/>
        <Attribute Name="DocLang" AttributeDataType="xs:string"/>
        <ExternalInterface Name="CSP+Reference" ID="9d5ba8ef-ef2a-4ed3-b369-9443b6f79af5"
RefBaseClassPath="CCLinkICL/CSP+Reference">
            <Description>The interface class "CSP+Reference" shall be used in order to
reference CSP+ device description files in AutomationML.</Description>
            <Attribute Name="refURI" AttributeDataType="xs:anyURI">
                <Description>URI of the corresponding device description file.</Description>
            </Attribute>
            <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
                <Description>MIMETYPE of the file according to RFC2046.</Description>
                <DefaultValue>application/xml</DefaultValue>
                <Value/>
            </Attribute>
            <Attribute Name="Version" AttributeDataType="xs:string">
                <Description>The version of the actual device description file that is
referenced here.</Description>
            </Attribute>
        </ExternalInterface>
    </RoleRequirements>
</InternalElement>
<InternalElement Name="CSP+EN" ID="9b5c9f81-906d-4788-88c0-210aa09d471b">
    <Attribute Name="SpecVersion" AttributeDataType="xs:string">
        <Value>2.1</Value>
    </Attribute>
    <Attribute Name="DocLang" AttributeDataType="xs:string">
        <Value>en-US</Value>
    </Attribute>
    <ExternalInterface Name="CSP+Reference" ID="8ca2e7b0-f558-4340-9062-272226215081"
RefBaseClassPath="CCLinkICL/CSP+Reference">
        <Description>The interface class "CSP+Reference" shall be used in order to reference
CSP+ device description files in AutomationML.</Description>
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
            <Description>URI of the corresponding device description file.</Description>
            <Value>/0x0002_MR-J4-GF(E_CCIEFBasic)_1_en.CSPP/0x0002_MR-J4-
GF(E_CCIEFBasic)_1_en.cspp</Value>
        </Attribute>
        <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
            <Description>MIMETYPE of the file according to RFC2046.</Description>

```

```

        <DefaultValue>application/xml</DefaultValue>
        <Value>application/xml</Value>
    </Attribute>
    <Attribute Name="Version" AttributeDataType="xs:string">
        <Description>The version of the actual device description file that is referenced
here.</Description>
        <Value>1.0</Value>
    </Attribute>
</ExternalInterface>
<RoleRequirements RefBaseRoleClassPath="CCLinkRCL/CSP+">
    <Description>The role class "CSP+" is used to describe a CSP+ device description file
in AutomationML.</Description>
    <Attribute Name="SpecVersion" AttributeDataType="xs:string"/>
    <Attribute Name="DocLang" AttributeDataType="xs:string"/>
    <ExternalInterface Name="CSP+Reference" ID="4e8ef556-dfaa-4362-998a-da21a6e08d36"
RefBaseClassPath="CCLinkICL/CSP+Reference">
        <Description>The interface class "CSP+Reference" shall be used in order to
reference CSP+ device description files in AutomationML.</Description>
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
            <Description>URI of the corresponding device description file.</Description>
        </Attribute>
        <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
            <Description>MIMETYPE of the file according to RFC2046.</Description>
            <DefaultValue>application/xml</DefaultValue>
            <Value/>
        </Attribute>
        <Attribute Name="Version" AttributeDataType="xs:string">
            <Description>The version of the actual device description file that is
referenced here.</Description>
        </Attribute>
    </ExternalInterface>
</RoleRequirements>
</InternalElement>
<SupportedRoleClass RefRoleClassPath="AutomationMLComponentStandardRCL/AutomationComponent"/>
</SystemUnitClass>
</SystemUnitClassLib>
</CAEXFile>

```

6.2 XML representation - AutomationML Model including references to CSP+- and CSP+ for Machine Device Description Files

```

<?xml version="1.0" encoding="utf-8"?>
<CAEXFile SchemaVersion="2.15" FileName="BPR_CC-Link_Example_CompositeComponent_V1.0.1.aml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="CAEX_ClassModel_V2.15.xsd">
    <AdditionalInformation AutomationMLVersion="2.0"/>
    <AdditionalInformation>
        <WriterHeader>
            <WriterName>AutomationML Editor</WriterName>
            <WriterID>916578CA-FE0D-474E-A4FC-9E1719892369</WriterID>
            <WriterVendor>AutomationML e.V.</WriterVendor>
            <WriterVendorURL>www.AutomationML.org</WriterVendorURL>
            <WriterVersion>5.1.2.0</WriterVersion>
            <WriterRelease>5.1.2.0</WriterRelease>
            <LastWritingDateTime>2020-12-02T18:56:24.8663036</LastWritingDateTime>
            <WriterProjectTitle/>
            <WriterProjectID/>
        </WriterHeader>
    </AdditionalInformation>
    <InterfaceClassLib Name="CCLinkICL">
        <Description>AutomationML BPR CC-Link Interface Class Library</Description>
        <Version>1.0.0</Version>
        <InterfaceClass Name="CSP+Reference"
RefBaseClassPath="AutomationMLComponentBaseICL/DeviceDescriptionReference">
            <Description>The interface class "CSP+Reference" shall be used in order to reference CSP+
device description files in AutomationML.</Description>
        </InterfaceClass>
        <InterfaceClass Name="CSP+ForMachineReference"
RefBaseClassPath="AutomationMLComponentBaseICL/DeviceDescriptionReference">

```

```

<Description>The interface class "CSP+ForMachineReference" shall be used in order to
reference CSP+ for Machine device description files in AutomationML.</Description>
</InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLComponentBaseICL">
  <Description>The InterfaceClassLib AutomationMLComponentBaseICL is defined in the Whitepaper
  "Description of AutomationML Components". The document can be downloaded at
  https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1.0 State
  October 2020 and has the Document Identifier WP Compo.</Description>
  <Version>1.1.0</Version>
  <InterfaceClass Name="SkillInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
    <Description>The interface "SkillInterface" shall be required for linking a component skill
    information. </Description>
  </InterfaceClass>
  <InterfaceClass Name="2DReference"
  RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
    <Description>A 2DReference shall be used to reference a 2D representation of the AutomationML
    Component.</Description>
  </InterfaceClass>
  <InterfaceClass Name="GraphicRepresentationReference"
  RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
    <Description>The interface class "GraphicRepresentationReference" is shall be used to
    reference a graphihic representation of the AutomationML Component or Composite Component.
  </Description>
  </InterfaceClass>
  <InterfaceClass Name="JTReference"
  RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
    <Description>The interface class "JTReference" is shall be used to reference a JT model
    representation of the AutomationML Component or Composite Component.</Description>
  </InterfaceClass>
  <InterfaceClass Name="DeviceDescriptionReference"
  RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
    <Description>The interface class "DeviceDescriptionReference" is an abstract basic interface
    class and the base class for standard or user defined interface classes referencing a technology based
    device description file.</Description>
    <Attribute Name="Version" AttributeDataType="xs:string"/>
  </InterfaceClass>
  <InterfaceClass Name="MechanicInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
    <Description>A "MechanicInterface" represents a hardware provision to mechanically fasten or
    join two or more objects together.</Description>
  </InterfaceClass>
  <InterfaceClass Name="ElectricInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
    <Description>An ElectricInterface describes an electro-mechanical provision used to join
    electrical terminations and to create electrical circuits.</Description>
  </InterfaceClass>
  <InterfaceClass Name="LiquidicInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
    <Description>A "LiquidicInterface" is an interface to describe a liquidic connection between
    to automation components. </Description>
  </InterfaceClass>
  <InterfaceClass Name="PneumaticInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
    <Description>??</Description>
  </InterfaceClass>
  <InterfaceClass Name="PneumaticConnector"
  RefBaseClassPath="AutomationMLComponentBaseICL/PneumaticInterface">
    <Description>A "PneumaticConnector" is a PneumaticInterface that represents a pneumatic
    connector standardized by [ISO 18582-2].</Description>
    <Attribute Name="pneumaticPort" AttributeDataType="xs:string"/>
    <Attribute Name="connectorType" AttributeDataType="xs:string"/>
  </InterfaceClass>
  <InterfaceClass Name="CondensateDrainConnector"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
    <Description>A "CondendateDrainConnector" is an interface to desccribe a connector for the
    condensate drain connection of pneumatic automation component. It is standardized by [ISO18582-
    2].</Description>
  </InterfaceClass>
  <InterfaceClass Name="HydraulicInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">

```

```

    <Description>A "HydraulicInterface" is an interface to describe a hydraulic connection point
    of an automation component. It can be used to join hydraulic components and create hydraulic
    circuits.</Description>
  </InterfaceClass>
  <InterfaceClass Name="SensorInterface"
  RefBaseClassPath="AutomationMLComponentBaseICL/MechanicInterface">
    <Description>A "SensorInterface" is an process interface connect the component to physical
    properties of interest. It will be specified in detail in version 2 of the document.</Description>
  </InterfaceClass>
  <InterfaceClass Name="JointInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface">
    <Description>A "JointInterface" is an interface that connects a joint of an
    COLLADAKinematicJoint with other interfaces that have an influence, dependency or relevance to the
    joint.</Description>
  </InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLFMIInterfaceClassLib">
  <Description>The InterfaceClassLib AutomationMLFMIInterfaceClassLib is defined in the Whitepaper
  "Description of AutomationML Components". The document can be downloaded at
  https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1.0 State
  October 2020 and has the Document Identifier WP Compo.</Description>
  <Version>1.1.0</Version>
  <InterfaceClass Name="FMIReference"
  RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference"/>
  <InterfaceClass Name="FMIVariableInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector">
    <Attribute Name="Name" AttributeDataType="xs:string"/>
    <Attribute Name="Causality" AttributeDataType="xs:string"/>
  </InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLLogicInterfaceClassLib">
  <Description>AutomationMLLogicInterfaceClassLib specifies all logic related interface classes
  for
  referencing AML logic XML documents.</Description>
  <Version>1.0.0</Version>
  <InterfaceClass Name="LogicModelInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector"/>
  <InterfaceClass Name="SequencingLogicModelInterface"
  RefBaseClassPath="AutomationMLLogicInterfaceClassLib/LogicModelInterface"/>
  <InterfaceClass Name="BehaviourLogicModelInterface"
  RefBaseClassPath="AutomationMLLogicInterfaceClassLib/LogicModelInterface"/>
  <InterfaceClass Name="InterlockingLogicModelInterface"
  RefBaseClassPath="AutomationMLLogicInterfaceClassLib/LogicModelInterface"/>
  <InterfaceClass Name="LogicModelElementInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector"/>
  <InterfaceClass Name="VariableInterface"
  RefBaseClassPath="AutomationMLLogicInterfaceClassLib/LogicModelElementInterface">
    <Attribute Name="Direction" AttributeDataType="xs:string"/>
  </InterfaceClass>
  <InterfaceClass Name="InterlockingVariableInterface"
  RefBaseClassPath="AutomationMLLogicInterfaceClassLib/VariableInterface">
    <Attribute Name="SafeConditionEquals" AttributeDataType="xs:boolean"/>
  </InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLPLCopenXMLInterfaceClassLib">
  <Description>AutomationMLPLCopenXMLInterfaceClassLib specifies the logic related interface class
  for
  referencing IEC 61131-10 documents</Description>
  <Version>1.0.0</Version>
  <InterfaceClass Name="VariableInterface"
  RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
  XMLInterface"/>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLInterfaceClassLib">
  <Description>Standard Automation Markup Language Interface Class Library - Part 1 Content
  extended with Part 3 and Part 4 Content</Description>
  <Version>2.2.2</Version>
  <InterfaceClass Name="AutomationMLBaseInterface">
    <InterfaceClass Name="Order" RefBaseClassPath="AutomationMLBaseInterface">
      <Attribute Name="Direction" AttributeDataType="xs:string"/>
    </InterfaceClass>
    <InterfaceClass Name="PortConnector" RefBaseClassPath="AutomationMLBaseInterface"/>
  </InterfaceClass>

```

```

<InterfaceClass Name="InterlockingConnector" RefBaseClassPath="AutomationMLBaseInterface"/>
<InterfaceClass Name="PPRConnector" RefBaseClassPath="AutomationMLBaseInterface"/>
<InterfaceClass Name="ExternalDataConnector" RefBaseClassPath="AutomationMLBaseInterface">
  <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
  <InterfaceClass Name="COLLADAIInterface" RefBaseClassPath="ExternalDataConnector">
    <Attribute Name="refType" AttributeDataType="xs:string"/>
    <Attribute Name="target" AttributeDataType="xs:token"/>
  </InterfaceClass>
  <InterfaceClass Name="PLCopenXMLInterface" RefBaseClassPath="ExternalDataConnector">
    <InterfaceClass Name="LogicInterface" RefBaseClassPath="PLCopenXMLInterface">
      <InterfaceClass Name="SequencingLogicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface"/>
        <InterfaceClass Name="BehaviourLogicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface"/>
          <InterfaceClass Name="SequencingBehaviourLogicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface"/>
            <InterfaceClass Name="InterlockingLogicInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface"/>
          </InterfaceClass>
        <InterfaceClass Name="LogicElementInterface" RefBaseClassPath="PLCopenXMLInterface"/>
        <InterfaceClass Name="VariableInterface" RefBaseClassPath="PLCopenXMLInterface">
          <InterfaceClass Name="InterlockingVariableInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/VariableInterface">
            <Attribute Name="SafeConditionEquals" AttributeDataType="xs:boolean">
              <DefaultValue>true</DefaultValue>
            </Attribute>
          </InterfaceClass>
        </InterfaceClass>
      </InterfaceClass>
    </InterfaceClass>
  </InterfaceClass>
  <InterfaceClass Name="Communication" RefBaseClassPath="AutomationMLBaseInterface">
    <InterfaceClass Name="SignalInterface" RefBaseClassPath="Communication"/>
  </InterfaceClass>
  <InterfaceClass Name="AttachmentInterface" RefBaseClassPath="AutomationMLBaseInterface"/>
</InterfaceClass>
</InterfaceClassLib>
<InterfaceClassLib Name="AutomationMLBPRInterfaceClassLib">
  <Description/>
  <Version>1.0.1</Version>
  <InterfaceClass Name="ExternalDataReference"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector"
ID="{320f7f3a-6df8-4ccd-af35-a4367b37eb7a}">
    <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
  </InterfaceClass>
</InterfaceClassLib>
<RoleClassLib Name="CCLinkRCL">
  <Description>AutomationML BPR CC-Link Role Class Library</Description>
  <Version>1.0.0</Version>
  <RoleClass Name="CSP+"
RefBaseClassPath="AutomationMLComponentBaseRCL/AdditionalDeviceDescription">
    <Description>The role class "CSP+" is used to describe a CSP+ device description file in
AutomationML.</Description>
    <ExternalInterface Name="CSP+Reference" ID="08b14ab7-2f6a-4614-9863-532d6d7244b8"
RefBaseClassPath="CCLinkICL/CSP+Reference">
      <Description>The interface class "CSP+Reference" shall be used in order to reference CSP+
device description files in AutomationML.</Description>
      <Attribute Name="refURI" AttributeDataType="xs:anyURI">
        <Description>URI of the corresponding device description file.</Description>
      </Attribute>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
        <Description>MIMETYPE of the file according to RFC2046.</Description>
        <DefaultValue>application/xml</DefaultValue>
      </Attribute>
      <Attribute Name="Version" AttributeDataType="xs:string">
        <Description>The version of the actual device description file that is referenced
here.</Description>

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    </Attribute>
  </ExternalInterface>
</RoleClass>
<RoleClass Name="CSP+ForMachine"
RefBaseClassPath="AutomationMLComponentBaseRCL/AdditionalDeviceDescription">
  <Description>The role class "CSP+ForMachine" is used to describe a CSP+ for Machine device
description file in AutomationML.</Description>
  <ExternalInterface Name="CSP+ForMachineReference" ID="9a008fb7-edb2-49ff-b883-534ddb0b851d"
RefBaseClassPath="CCLinkICL/CSP+ForMachineReference">
    <Description>The interface class "CSP+ForMachineReference" shall be used in order to
reference CSP+ for Machine device description files in AutomationML.</Description>
    <Attribute Name="refURI" AttributeDataType="xs:anyURI">
      <Description>URI of the corresponding device description file.</Description>
    </Attribute>
    <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
      <Description>MIMETYPE of the file according to RFC2046.</Description>
      <DefaultValue>application/xml</DefaultValue>
    </Attribute>
    <Attribute Name="Version" AttributeDataType="xs:string">
      <Description>The version of the actual device description file that is referenced
here.</Description>
    </Attribute>
  </ExternalInterface>
</RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLFMILogicRoleClassLib">
  <Description>The RoleClassLib AutomationMLFMILogicRoleClassLib is defined in the Whitepaper
"Description of AutomationML Components". The document can be downloaded at
https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1 State
October 2020 and has the Document Identifier WP Compo.</Description>
  <Version>1.1.0</Version>
  <RoleClass Name="FMILogicObject"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole"/>
</RoleClassLib>
<RoleClassLib Name="AutomationMLBPRRRoleClassLib">
  <Version>1.0.0</Version>
  <RoleClass Name="ExternalData"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <RoleClass Name="UserManual" RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData"/>
    <RoleClass Name="BillofMaterial"
RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData"/>
    <RoleClass Name="Construction" RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData"/>
    <RoleClass Name="ProductDocumentation"
RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData"/>
  </RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLBaseRoleClassLib">
  <Description>Automation Markup Language Base Role Class Library - Part 1 Content extended with
Part 3 and Part 4 Content</Description>
  <Version>2.2.2</Version>
  <RoleClass Name="AutomationMLBaseRole">
    <RoleClass Name="Group" RefBaseClassPath="AutomationMLBaseRole">
      <Attribute Name="AssociatedFacet" AttributeDataType="xs:string"/>
      <RoleClass Name="InterlockingSourceGroup" RefBaseClassPath="Group"/>
      <RoleClass Name="InterlockingTargetGroup" RefBaseClassPath="Group"/>
    </RoleClass>
    <RoleClass Name="Facet" RefBaseClassPath="AutomationMLBaseRole"/>
    <RoleClass Name="Port" RefBaseClassPath="AutomationMLBaseRole">
      <Attribute Name="Direction" AttributeDataType="xs:string"/>
      <Attribute Name="Cardinality">
        <Attribute Name="MinOccur" AttributeDataType="xs:unsignedInt"/>
        <Attribute Name="MaxOccur" AttributeDataType="xs:unsignedInt"/>
      </Attribute>
      <Attribute Name="Category" AttributeDataType="xs:string"/>
      <ExternalInterface Name="ConnectionPoint" ID="9942bd9c-c19d-44e4-a197-11b9edf264e7"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/PortConnector"/>
    </RoleClass>
    <RoleClass Name="Resource" RefBaseClassPath="AutomationMLBaseRole"/>
    <RoleClass Name="Product" RefBaseClassPath="AutomationMLBaseRole"/>
    <RoleClass Name="Process" RefBaseClassPath="AutomationMLBaseRole"/>
    <RoleClass Name="Structure" RefBaseClassPath="AutomationMLBaseRole">
      <RoleClass Name="ProductStructure" RefBaseClassPath="Structure"/>
    </RoleClass>
  </RoleClass>
</RoleClassLib>

```



```

    <RoleClass Name="ProcessStructure" RefBaseClassPath="Structure"/>
    <RoleClass Name="ResourceStructure" RefBaseClassPath="Structure"/>
  </RoleClass>
  <RoleClass Name="PropertySet" RefBaseClassPath="AutomationMLBaseRole"/>
  <RoleClass Name="Frame" RefBaseClassPath="AutomationMLBaseRole"/>
  <RoleClass Name="LogicObject" RefBaseClassPath="AutomationMLBaseRole"/>
</RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLComponentBaseRCL">
  <Description>The RoleClassLib AutomationMLComponentBaseRCL is defined in the Whitepaper
  "Description of AutomationML Components". The document can be downloaded at
  https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1 State
  October 2020 and has the Document Identifier WP Compo.</Description>
  <Version>1.1.0</Version>
  <RoleClass Name="AdditionalDeviceDescription"
  RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData">
    <Description>This is the base class for standard or user defined role classes referencing
    technology based device descriptions.</Description>
    <Attribute Name="SpecVersion" AttributeDataType="xs:string">
      <Description>The version of the Specification or Schema of the device description
      file.</Description>
    </Attribute>
    <Attribute Name="DocLang" AttributeDataType="xs:string">
      <Description>Language of the referenced description file.</Description>
    </Attribute>
    <ExternalInterface Name="DeviceDescriptionReference" ID="77a3d04b-702e-4852-8094-
    cd37cd155fcd" RefBaseClassPath="AutomationMLComponentBaseICL/DeviceDescriptionReference">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
      <Attribute Name="Version" AttributeDataType="xs:string"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="Connector"
  RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <Description>The role class "Connector" is an abstract basic role class and the base class
    for standard or user defined role classes describing connectors of components.</Description>
  </RoleClass>
  <RoleClass Name="Documentation" RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData">
    <Description>The role class "Documentation" shall be used to specify all AutomationML objects
    referencing documentation related information of a component.</Description>
    <ExternalInterface Name="ExternalDataReference" ID="7b24341d-fd33-4fc3-9ae9-3fb9673d11ea"
    RefBaseClassPath="AutomationMLBPRInterfaceClassLib/ExternalDataReference">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="GeometryModel" RefBaseClassPath="AutomationMLComponentBaseRCL/Model">
    <Description>The role class "GeometryModel" is a basic abstract role class and the base class
    for standard or user defined role classes referencing component geometry models.</Description>
  </RoleClass>
  <RoleClass Name="GraphicRepresentation"
  RefBaseClassPath="AutomationMLBPRRRoleClassLib/ExternalData">
    <Description>The role class "GraphicRepresentation" is a basic role class and the base class
    for standard or user defined role classes referencing graphic representation of
    components.</Description>
    <ExternalInterface Name="GraphicRepresentationReference" ID="fdcf49bd-0266-4f31-a0b2-
    cf365f16fbeb" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="Icon" RefBaseClassPath="AutomationMLComponentBaseRCL/GraphicRepresentation">
    <Description>The role class "Icon" is a basic role class and the base class for standard or
    user defined role classes referencing icons of components.</Description>
  </RoleClass>
  <RoleClass Name="LogicModel" RefBaseClassPath="AutomationMLComponentBaseRCL/Model">
    <Description>The role class "LogicModel" is a basic abstract role class and the base class
    for standard or user defined role classes referencing component logic models.</Description>
  </RoleClass>
  <RoleClass Name="PLCopenXMLLogic"
  RefBaseClassPath="AutomationMLLogicRoleClassLib/LogicModelObject">
    <Description>The role class "PLCopenXMLLogic" shall be used for referencing a
    PLCopenXMLLogic model.</Description>

```

```

    <ExternalInterface Name="VariableInterface" ID="7306f95b-7e2e-4f3a-af1d-12f4e1d1e941"
RefBaseClassPath="AutomationMLPLCopenXMLInterfaceClassLib/VariableInterface"/>
    <ExternalInterface Name="LogicInterface" ID="ca8c37da-96d9-44a8-9c8c-68c5f6b8b420"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/PLCopen
XMLInterface/LogicInterface">
    <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
    </ExternalInterface>
</RoleClass>
<RoleClass Name="AMLLogic" RefBaseClassPath="AutomationMLLogicRoleClassLib/LogicModelObject">
    <Description>The role class "AMLLogic" shall be used for referencing an AMLLogic
model.</Description>
</RoleClass>
<RoleClass Name="FMILogic"
RefBaseClassPath="AutomationMLFMILogicRoleClassLib/FMILogicObject">
    <Description>This RoleClass "FMILogic" describes an instance of a co-simulation Functional
Mockup Unit according to the FMI standard, which is an open standard and is adopted by a variety of
simulation tools.</Description>
    <Attribute Name="Name" AttributeDataType="xs:string"/>
    <Attribute Name="Description" AttributeDataType="xs:string"/>
    <Attribute Name="FMIVersion" AttributeDataType="xs:string"/>
    <ExternalInterface Name="FMIReference" ID="fb47e6a7-2e9f-4e2e-bfa3-0288da9973c7"
RefBaseClassPath="AutomationMLFMIInterfaceClassLib/FMIReference">
    <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
    <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
    </ExternalInterface>
    <ExternalInterface Name="FMIVariableInterface" ID="41d8e7a0-4cfc-4b4f-baab-ef32e2d4072b"
RefBaseClassPath="AutomationMLFMIInterfaceClassLib/FMIVariableInterface">
    <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
    <Attribute Name="Name" AttributeDataType="xs:string"/>
    <Attribute Name="Causality" AttributeDataType="xs:string"/>
    </ExternalInterface>
</RoleClass>
</RoleClass>
<RoleClass Name="KinematicModel" RefBaseClassPath="AutomationMLComponentBaseRCL/Model">
    <Description>The basic abstract role class "KinematicModel" shall be used as base class for
standard or user defined role classes referencing component models.</Description>
</RoleClass>
<RoleClass Name="MaintenanceDescription"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <Description>The role class "MaintenanceDescription" is a abstract basic role class and the
base class for standard or user defined role classes defining maintenance description.</Description>
</RoleClass>
<RoleClass Name="Model" RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <Description>The basic abstract role class "Function" shall be used as base class for
standard or user defined role classes defining and referencing component models.</Description>
</RoleClass>
<RoleClass Name="Symbol" RefBaseClassPath="AutomationMLComponentBaseRCL/GraphicRepresentation">
    <Description>The role class "Symbol" shall be used for referencing a symbol of the Automation
Component.</Description>
</RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLComponentStandardRCL">
    <Description>The RoleClassLib AutomationMLComponentStandardRCL is defined in the Whitepaper
"Description of AutomationML Components". The document can be downloaded at
https://www.automationml.org/o.red.c/publications.html . The Version of the related WP is 1.1 State
October 2020 and has the Document Identifier WP Compo.</Description>
    <Version>1.1.0</Version>
    <RoleClass Name="AutomationComponent"
RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <Description>This role class defines a set of attributes to identify, classify and describe
an automation component as an industrial product which serves specific functions, i.e. for industrial
process or factory automation.</Description>
    <Attribute Name="IdentificationData">
    <Description>Identification data of the automation component type or instance
model.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACC011#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABC269#005"/>
    <Attribute Name="Manufacturer" AttributeDataType="xs:string">
    <Description>Name of the Manufacturer (person, company or organisation)</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE102#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA565#006"/>
    </Attribute>

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    <Attribute Name="ManufacturerURI" AttributeDataType="xs:string">
      <Description>Address of the product manufacturer on the world wide web (URL)
    </Description>
  </Attribute>
  <Attribute Name="DeviceClass" AttributeDataType="xs:string">
    <Description>Product family name of the manufacturer, characterization may be based on
its usage, operation principle, and its fabricated form</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE104#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA566#005"/>
  </Attribute>
  <Attribute Name="Model" AttributeDataType="xs:string">
    <Description>Product name or model code of the manufacturer</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE105#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA567#006"/>
  </Attribute>
  <Attribute Name="ProductCode" AttributeDataType="xs:string">
    <Description>Unique product identifier given by the manufacturer</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE103#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA300#005"/>
  </Attribute>
  <Attribute Name="OrderCode" AttributeDataType="xs:string">
    <Description>Unique combination of numbers and letters used to order the
device</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAH549#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA950#006"/>
  </Attribute>
  <Attribute Name="HardwareRevision" AttributeDataType="xs:string">
    <Description>Version of the hardware supplied with the component</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA926#005"/>
  </Attribute>
  <Attribute Name="SoftwareRevision" AttributeDataType="xs:string">
    <Description>Version of the firmware supplied with the component</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA302#004"/>
  </Attribute>
  <Attribute Name="SerialNumber" AttributeDataType="xs:string">
    <Description>Unique combination of numbers and letters to identify a manufactured
component sample</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA951#006"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#ADA029#001"/>
  </Attribute>
  <Attribute Name="FabricationNumber" AttributeDataType="xs:string">
    <Description>Alphanumeric character sequence to trace the date, time and circumstances
of fabrication</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABB062#005"/>
  </Attribute>
  <Attribute Name="ProductInstanceURI" AttributeDataType="xs:string">
    <Description>Unique global identification of the product type or sample (assetID)
using an universal resource identifier, such as an online URL to the product data.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABN591#001"/>
  </Attribute>
  <Attribute Name="GeneralTechnicalData">
    <Description>Classification data of the component.</Description>
    <Attribute Name="AmbientTemperature" AttributeDataType="xs:string">
      <Description>Operating temperature limits of the air surrounding the complete
component.</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE440#001"/>
      <Attribute Name="TemperatureMin" AttributeDataType="xs:int">
        <Description>Lowest ambient temperature for which the component operates within its
specified limits.</Description>
        <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAH008#002"/>
        <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA621#007"/>
      </Attribute>
      <Attribute Name="TemperatureMax" AttributeDataType="xs:int">
        <Description>Highest ambient temperature for which the component operates within
its specified limits.</Description>
        <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAH007#002"/>
        <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA623#007"/>
        <RefSemantic CorrespondingAttributePath="IRDI:"/>
      </Attribute>
    </Attribute>
  </Attribute>
  <Attribute Name="IPCode" AttributeDataType="xs:string">

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    <Description>Degree of protection (IP code) of the component provided by enclosure,
numerical classification in accordance with IEC 60529 preceded by the symbol IP.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAH011#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE248#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA558#006"/>
  </Attribute>
  <Attribute Name="Material" AttributeDataType="xs:string">
    <Description>Basic material of the housing of the component.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAE351#006"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE260#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA158#004"/>
  </Attribute>
  <Attribute Name="Weight" AttributeDataType="xs:float">
    <Description>Net weight: Value of the mass of the component with all fixed parts
without packaging and accessories.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#ACB032#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE808#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA553#006"/>
  </Attribute>
  <Attribute Name="Height" AttributeDataType="xs:integer" Unit="mm">
    <Description>Height of the body, vertical distance between the top and bottom of the
component when standing in its normal position of use, including connectors and terminals, without
accessory and cable.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAE020#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE801#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA574#006"/>
  </Attribute>
  <Attribute Name="Width" AttributeDataType="xs:integer">
    <Description>Width or breadth of the body, horizontal distance between the left-hand
and right-hand extremes of the component when standing in its normal position of use, including
connectors and terminals, without accessory and cable.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAE021#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE802#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA573#006"/>
  </Attribute>
  <Attribute Name="Length" AttributeDataType="xs:integer">
    <Description>Length of the body, horizontal distance between the front and back of the
component when standing in its normal position of use, including connectors and terminals, without
accessory and cable.</Description>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#AAE019#002"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE803#001"/>
    <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA640#006"/>
  </Attribute>
</Attribute>
<Attribute Name="CommercialData" AttributeDataType="">
  <Description>Commercial data related to the component.</Description>
  <Attribute Name="PackagingAndTransportation">
    <Description>Properties characterizing the packing and transportation (shipping) of a
product.</Description>
    <Attribute Name="GTIN" AttributeDataType="xs:string">
      <Description>Global Trade Item Number (GTIN). International unique and universal
item number for products and services used by trade and industry (formerly EAN)</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE101#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABA587#005"/>
    </Attribute>
    <Attribute Name="CustomsTariffNumber" AttributeDataType="xs:integer">
      <Description>Classification of a product according to trade regulations. Number
assigned to each type of product sold internationally.</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///62683#ACE109#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABI442#001"/>
    </Attribute>
    <Attribute Name="CountryOfOrigin" AttributeDataType="xs:string" Unit="code">
      <Description>Alphabetic 2-character code for the identification of the country in
which the good has been produced or manufactured according to criteria laid down for the application of
custom tariff or quantitative restrictions, or any measure related to trade. The provided value list
for the alphabetic 2-character code is based on ISO 3166-1, which is updated under
https://www.iso.org/iso-3166-country-codes.html</Description>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61360_4#ADA034#001"/>
      <RefSemantic CorrespondingAttributePath="IRDI:0112/2///61987#ABJ603#001"/>
    </Attribute>
  </Attribute>
</Attribute>
<Attribute Name="ProductDetails" AttributeDataType="xs:string">

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    <Attribute Name="DescriptionShort" AttributeDataType="xs:string"/>
    <Attribute Name="DescriptionLong" AttributeDataType="xs:string"/>
    <Attribute Name="InternationalPID" AttributeDataType="xs:string"/>
    <Attribute Name="ManufacturerPID" AttributeDataType="xs:string"/>
    <Attribute Name="SpecialTreatmentClass" AttributeDataType="xs:string">
      <RefSemantic CorrespondingAttributePath="ListType"/>
    </Attribute>
    <Attribute Name="Keyword" AttributeDataType="xs:string">
      <RefSemantic CorrespondingAttributePath="ListType"/>
    </Attribute>
    <Attribute Name="Remarks" AttributeDataType="xs:string"/>
  </Attribute>
  <Attribute Name="ProductOrderDetails">
    <Attribute Name="OrderUnit" AttributeDataType="xs:string"/>
    <Attribute Name="ContentUnit" AttributeDataType="xs:string"/>
    <Attribute Name="PriceQuantity" AttributeDataType="xs:string"/>
    <Attribute Name="QuantityMin" AttributeDataType="xs:float"/>
    <Attribute Name="QuantityInterval" AttributeDataType="xs:float"/>
    <Attribute Name="QuantityMax" AttributeDataType="xs:string"/>
    <Attribute Name="PackingUnits" AttributeDataType="xs:string"/>
    <Attribute Name="PackingSize" AttributeDataType="xs:string"/>
  </Attribute>
  <Attribute Name="ProductPriceDetails">
    <RefSemantic CorrespondingAttributePath="ListType"/>
    <Attribute Name="ValidStartDate" AttributeDataType="xs:date"/>
    <Attribute Name="ValidEndDate" AttributeDataType="xs:date"/>
    <Attribute Name="ProductPrice" AttributeDataType="xs:string">
      <Attribute Name="PriceAmount" AttributeDataType="xs:string"/>
      <Attribute Name="PriceCurrency" AttributeDataType="xs:string"/>
      <Attribute Name="Tax" AttributeDataType="xs:string"/>
      <Attribute Name="PriceFactor" AttributeDataType="xs:string"/>
      <Attribute Name="LowerBound" AttributeDataType="xs:string"/>
      <Attribute Name="Territory" AttributeDataType="xs:string">
        <RefSemantic CorrespondingAttributePath="ListType"/>
      </Attribute>
    </Attribute>
  </Attribute>
  <Attribute Name="ManufacturerDetails">
    <Attribute Name="Name" AttributeDataType="xs:string"/>
    <Attribute Name="Address1" AttributeDataType="xs:string"/>
    <Attribute Name="Address2" AttributeDataType="xs:string"/>
    <Attribute Name="ZipCode" AttributeDataType="xs:string"/>
    <Attribute Name="City" AttributeDataType="xs:string"/>
    <Attribute Name="Country" AttributeDataType="xs:string"/>
    <Attribute Name="ContactMail" AttributeDataType="xs:string"/>
    <Attribute Name="ContactPhone" AttributeDataType="xs:string"/>
    <Attribute Name="Website" AttributeDataType="xs:string"/>
  </Attribute>
</Attribute>
<Attribute Name="ParameterData" AttributeDataType="xs:string">
  <Description>Parameter data (configurable and read-only) of the component.</Description>
</Attribute>
</RoleClass>
<RoleClass Name="AutomationComponentSemanticSystem"
  RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
  <Description>The role class "AutomationComponentSemanticSystem" shall be used to define the
  semantic systems that are supported by the AutomationML Component. </Description>
  <Attribute Name="ClassificationSystem" AttributeDataType="xs:string">
    <Attribute Name="Name" AttributeDataType="xs:string"/>
    <Attribute Name="Version" AttributeDataType="xs:string"/>
    <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string"/>
    <Attribute Name="URL" AttributeDataType="xs:string"/>
  </Attribute>
  <Attribute Name="IEC 61987" AttributeDataType="xs:string">
    <Attribute Name="Version" AttributeDataType="xs:string">
      <Value>V2.0014.0016</Value>
    </Attribute>
    <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string">
      <Value>IRDI:0112/2///62683#</Value>
    </Attribute>
    <Attribute Name="URL" AttributeDataType="xs:string">

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<Value>https://cdd.iec.ch/cdd/iec61987/iec61987.nsf/TreeFrameset?OpenFrameSet&ongletactif=1</Value>
</Attribute>
</Attribute>
<Attribute Name="IEC 61360-4" AttributeDataType="xs:string">
  <Attribute Name="Version" AttributeDataType="xs:string">
    <Value>V2.0014.0016</Value>
  </Attribute>
  <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string">
    <Value>IRDI:0112/2///61360_4#</Value>
  </Attribute>
  <Attribute Name="URL" AttributeDataType="xs:string">
    <Value>https://cdd.iec.ch/cdd/iec61360/iec61360.nsf/TreeFrameset?OpenFrameSet&ongletactif=1</Value>
  </Attribute>
  <Attribute Name="IEC 62683" AttributeDataType="xs:string">
    <Attribute Name="Version" AttributeDataType="xs:string">
      <Value>V2.0014.0016</Value>
    </Attribute>
    <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string">
      <Value>IRDI:0112/2///62683#</Value>
    </Attribute>
    <Attribute Name="URL" AttributeDataType="xs:string">
      <Value>https://cdd.iec.ch/cdd/iec62683/iec62683.nsf/TreeFrameset?OpenFrameSet&ongletactif=1</Value>
    </Attribute>
  </Attribute>
  <Attribute Name="eClass" AttributeDataType="xs:string">
    <Attribute Name="Version" AttributeDataType="xs:string">
      <Value>11.0</Value>
    </Attribute>
    <Attribute Name="RefSemanticPrefix" AttributeDataType="xs:string">
      <Value>IRDI:0173</Value>
    </Attribute>
    <Attribute Name="URL" AttributeDataType="xs:string">
      <Value>https://www.eclasscontent.com</Value>
    </Attribute>
  </Attribute>
</RoleClass>
<RoleClass Name="BehaviourModel" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel">
  <Description>The role class "BehaviourModel" shall be used in order to specify a logic model
integration as behaviour model of AutomationML Component.</Description>
</RoleClass>
<RoleClass Name="Function" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel">
  <Description>The role class "Function" shall be used in order to specify a logic model
integration as function of AutomationML Component.</Description>
</RoleClass>
<RoleClass Name="SimulationModel" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel">
  <Description>The role class "SimulationModel" shall be used in order to specify a logic model
integration as simulation model of AutomationML Component.</Description>
</RoleClass>
<RoleClass Name="SequencingModel" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel">
  <Description>The role class "SequencingModel" shall be used in order to specify all the
interface related information of an sequence model of an AutomationML Component or Composite
Component.</Description>
</RoleClass>
<RoleClass Name="Sequence" RefBaseClassPath="AutomationMLComponentStandardRCL/SequencingModel">
  <Description>The role class "Sequence" shall be used in order to specify all the interface
related information of a PLCopen XML sequence model.</Description>
</RoleClass>
<RoleClass Name="SequenceElement"
RefBaseClassPath="AutomationMLComponentStandardRCL/SequencingModel">
  <Description>The role class "SequenceElement" shall be used in order to specify all the
interface related information of a sequence element.</Description>
</RoleClass>
<RoleClass Name="SkillModel" RefBaseClassPath="AutomationMLComponentBaseRCL/Model"
ChangeMode="create">

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    <Description>The role class "SkillModel" shall be used to define or reference skill models of
an automation Component.</Description>
  </RoleClass>
  <RoleClass Name="SkillLogicModel" RefBaseClassPath="AutomationMLComponentBaseRCL/LogicModel"
ChangeMode="change">
    <Description>The role class "SkillLogicModel" shall be used in order to specify a logic model
integration as behaviour model of AutomationML Component.</Description>
  </RoleClass>
  <RoleClass Name="SkillConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
    <Description>SkillConnector is used as an engineering interface for skill-based systems
engineering. SkillConnector provides interfaces necessary to connect the components logically in an
automation system and also to connect with products and process in a manufacturing plant </Description>
  </RoleClass>
  <RoleClass Name="COLLADAKinematicModel"
RefBaseClassPath="AutomationMLComponentBaseRCL/KinematicModel">
    <Description>The role class "COLLADAKinematicModel" shall be used in order to specify all the
interface related information of a COLLADA kinematic model of an AutomationML Component or Composite
Component.</Description>
    <ExternalInterface Name="COLLADAInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/COLLADA
Interface" ID="4515b789-fc7b-410d-8756-2ffe16255139">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="refType" AttributeDataType="xs:string"/>
      <Attribute Name="target" AttributeDataType="xs:token"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="COLLADAKinematicJoint"
RefBaseClassPath="AutomationMLComponentStandardRCL/COLLADAKinematicModel">
    <Description>The role class "COLLADAKinematicJoint" shall be used in order to specify all
joint information of a COLLADA kinematic model of the AutomationML Component.</Description>
    <ExternalInterface Name="JointInterface" ID="d62522cb-76b9-49f2-9f1d-38aa7afa30ff"
RefBaseClassPath="AutomationMLComponentBaseICL/JointInterface"/>
  </RoleClass>
  <RoleClass Name="COLLADAKinematicAttachment"
RefBaseClassPath="AutomationMLComponentStandardRCL/COLLADAKinematicModel">
    <Description>The role class "COLLADAKinematicAttachment" shall be used in order to specify
all attachment information of a COLLADA kinematic model of the AutomationML Component.</Description>
    <ExternalInterface Name="AttachmentInterface" ID="5a7555a1-1b49-4abe-9f64-23f33c81d41f"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/AttachmentInterface"/>
  </RoleClass>
  <RoleClass Name="COLLADAGeometryModel"
RefBaseClassPath="AutomationMLComponentBaseRCL/GeometryModel">
    <Description>The role class "COLLADAGeometryModel" shall be used in order to specify all the
interface related information of a COLLADA geometry model.</Description>
    <ExternalInterface Name="COLLADAInterface" ID="d7d00603-9b83-4e1c-821f-ee2fb28a4aa1"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/ExternalDataConnector/COLLADA
Interface">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="refType" AttributeDataType="xs:string"/>
      <Attribute Name="target" AttributeDataType="xs:token"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="COLLADAGeometryAttachment"
RefBaseClassPath="AutomationMLComponentStandardRCL/COLLADAGeometryModel">
    <Description>The role class "COLLADAGeometryAttachment" shall be used in order to specify all
attachment information of a COLLADA geometry model of the AutomationML Component.</Description>
    <ExternalInterface Name="AttachmentInterface" ID="1913fd44-cb01-4c0d-9f8f-6fbfdea2755f"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/AttachmentInterface"/>
  </RoleClass>
  <RoleClass Name="JTGeometryModel" RefBaseClassPath="AutomationMLComponentBaseRCL/GeometryModel">
    <Description>The role class "JTGeometryModel" shall be used in order to specify all the
interface related information of a JT geometry model.</Description>
    <ExternalInterface Name="JTReference" ID="aedac47c-741d-4e2e-b8d7-4443ef055535"
RefBaseClassPath="AutomationMLComponentBaseICL/JTReference">
      <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
      <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="2DGeometryModel" RefBaseClassPath="AutomationMLComponentBaseRCL/GeometryModel">
    <Description>The role class "2DGeometryModel" shall be used in order to specify all the
interface related information of a 2D geometry model.</Description>

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    <ExternalInterface Name="2DReference" ID="8b7f8789-f132-4692-9871-1a10cf1df20f"
RefBaseClassPath="AutomationMLComponentBaseICL/2DReference">
    <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
    <Attribute Name="MIMETYPE" AttributeDataType="xs:string"/>
    </ExternalInterface>
</RoleClass>
<RoleClass Name="ComponentPicture"
RefBaseClassPath="AutomationMLComponentBaseRCL/GraphicRepresentation">
    <Description>The role class "ComponentPicture" shall be used for referencing a picture of the
Automation component.</Description>
</RoleClass>
<RoleClass Name="ElectricSymbol" RefBaseClassPath="AutomationMLComponentBaseRCL/Symbol">
    <Description>The role class "ElectricSymbol" shall be used for referencing a electric symbol
of the Automation component.</Description>
</RoleClass>
<RoleClass Name="HydraulicSymbol" RefBaseClassPath="AutomationMLComponentBaseRCL/Symbol">
    <Description>The role class "HydraulicSymbol" shall be used for referencing a hydraulic
symbol of the automation component.</Description>
</RoleClass>
<RoleClass Name="PneumaticSymbol" RefBaseClassPath="AutomationMLComponentBaseRCL/Symbol">
    <Description>The role class "PneumaticSymbol" shall be used for referencing a pneumatic
symbol of the automation component.</Description>
</RoleClass>
<RoleClass Name="ComponentIcon" RefBaseClassPath="AutomationMLComponentBaseRCL/Icon">
    <Description>The role class "ComponentIcon" shall be used for referencing a icon of the
automation component.</Description>
</RoleClass>
<RoleClass Name="ManufacturerIcon" RefBaseClassPath="AutomationMLComponentBaseRCL/Icon">
    <Description>The role class "ComponentPicture" shall be used for referencing a picture of the
Automation component.</Description>
</RoleClass>
<RoleClass Name="Certificate" RefBaseClassPath="AutomationMLComponentBaseRCL/Documentation">
    <Description>The role class "Certificate" shall be used for referencing a certification
document of the automation component.</Description>
</RoleClass>
<RoleClass Name="MechanicConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
    <Description>The role class "MechanicConnector" shall be used to define the representation of
a mechanical fastening interface of an automation component within its AutomationML Component
representation.</Description>
    <ExternalInterface Name="MechanicInterface" ID="f161edf3-c422-4cf7-9bf6-e4cba061b15c"
RefBaseClassPath="AutomationMLComponentBaseICL/MechanicInterface"/>
</RoleClass>
<RoleClass Name="MultiConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector"/>
<RoleClass Name="LogicConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
    <Description>The role class "LogicConnector" shall be used in order to specify all the
related information of an logic connector of an automation component within its AutomationML Component
representation.</Description>
    <ExternalInterface Name="SignalInterface"
RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/Communication/SignalInterface"
ID="17bd2a73-0f1a-4d4b-9451-c9621f1047bf"/>
</RoleClass>
<RoleClass Name="ElectricConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
    <Description>The role class "ElectricConnector" shall be used in order to specify all the
related information of an electric connector of an automation component within its AutomationML
Component representation.</Description>
    <ExternalInterface Name="ElectricInterface" ID="6d752fce-f141-4d8a-a8b5-0064ad19f707"
RefBaseClassPath="AutomationMLComponentBaseICL/ElectricInterface"/>
</RoleClass>
<RoleClass Name="FluidicConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
    <Description>The role class "FluidicConnector" is an abstract role class and the base class
for standard or user defined role classes referencing fluidic connectors.</Description>
</RoleClass>
<RoleClass Name="LiquidicConnector"
RefBaseClassPath="AutomationMLComponentStandardRCL/FluidicConnector">
    <Description>The role class "LiquidicConnector" shall be used in order to specify all the
related information of a liquidic connector of an automation component within its AutomationML
Component representation.</Description>
    <ExternalInterface Name="LiquidicInterface" ID="5f170a3d-7d61-47e6-8a45-63e8b7448609"
RefBaseClassPath="AutomationMLComponentBaseICL/LiquidicInterface"/>
</RoleClass>
<RoleClass Name="PneumaticConnector"
RefBaseClassPath="AutomationMLComponentStandardRCL/FluidicConnector">

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    <Description>The role class "PneumaticConnector" shall be used in order to specify all the
    related information of a pneumatic connector of an automation component within its AutomationML
    Component representation.</Description>
    <ExternalInterface Name="PneumaticInterface" ID="0f7d6ec8-7078-49bc-918b-33773609c977"
    RefBaseClassPath="AutomationMLComponentBaseICL/PneumaticInterface"/>
  </RoleClass>
  <RoleClass Name="HydraulicConnector"
  RefBaseClassPath="AutomationMLComponentStandardRCL/FluidicConnector">
    <Description>The role class "HydraulicConnector" shall be used in order to specify all the
    related information of a hydraulic connector of an automation component within its AutomationML
    Component representation.</Description>
    <ExternalInterface Name="HydraulicInterface" ID="56f6607e-fa42-4d34-89e9-82c196a4adba"
    RefBaseClassPath="AutomationMLComponentBaseICL/HydraulicInterface"/>
  </RoleClass>
  <RoleClass Name="SensorConnector" RefBaseClassPath="AutomationMLComponentBaseRCL/Connector">
    <Description>SensorConnector is the process interface to physically sense the properties of
    interest (i.e. a mechanical movement or object presence within a spatial detection area or mediums
    states like temperature or pressure). It is used for both mechanical construction and simulation
    environments.</Description>
    <ExternalInterface Name="SensorInterface" ID="46fae3e7-fa14-4d27-a650-d135811affac"
    RefBaseClassPath="AutomationMLComponentBaseICL/SensorInterface"/>
  </RoleClass>
  <RoleClass Name="MaintenanceDescriptionGroup"
  RefBaseClassPath="AutomationMLComponentBaseRCL/MaintenanceDescription">
    <Description>??</Description>
    <Attribute Name="TopicName" AttributeDataType="xs:string"/>
  </RoleClass>
  <RoleClass Name="MaintenanceDescriptionItem"
  RefBaseClassPath="AutomationMLComponentBaseRCL/MaintenanceDescription">
    <Description>The role class "MaintenanceDescriptionItem" shall be used to define a single
    maintenance task.</Description>
    <Attribute Name="Index" AttributeDataType="xs:PositiveInteger"/>
    <Attribute Name="SubTopic" AttributeDataType="xs:string"/>
    <Attribute Name="WorkDescription" AttributeDataType="xs:string"/>
    <Attribute Name="Cycle" AttributeDataType="xs:duration"/>
    <Attribute Name="PlannedTimePerWorker" AttributeDataType="xs:duration"/>
    <Attribute Name="ActivityKey" AttributeDataType="xs:string"/>
    <Attribute Name="ExecutionKey" AttributeDataType="xs:string"/>
    <Attribute Name="FunctionKey" AttributeDataType="xs:string"/>
    <Attribute Name="PersonnelKey" AttributeDataType="xs:string"/>
    <Attribute Name="LastExecution" AttributeDataType="xs:string"/>
  </RoleClass>
</RoleClassLib>
<RoleClassLib Name="AutomationMLLogicRoleClassLib">
  <Description>AutomationMLLogicRoleClassLib specifies all logic related role
  classes.</Description>
  <Version>1.0.0</Version>
  <RoleClass Name="InterlockingTargetGroup"
  RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole/Group">
    <ExternalInterface Name="ConnectionInterlockingSourceGroup" ID="70e6b544-9120-4fc9-b059-
    8d97c59f75f2"
    RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/InterlockingConnector"/>
    <ExternalInterface Name="ReferenceInterlockingLogicModel" ID="b1a85f25-1ecf-4048-bdd3-
    84085d81b06a" RefBaseClassPath="AutomationMLLogicInterfaceClassLib/InterlockingLogicModelInterface"/>
  </RoleClass>
  <RoleClass Name="InterlockingSourceGroup"
  RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole/Group">
    <ExternalInterface Name="ConnectionInterlockingTargetGroup" ID="adf94976-a6d0-4960-b5af-
    55719a3e2130"
    RefBaseClassPath="AutomationMLInterfaceClassLib/AutomationMLBaseInterface/InterlockingConnector"/>
    <ExternalInterface Name="ReferenceInterlockingLogicModel" ID="617c8706-8ee7-4e7b-8b94-
    900afe19f4f7" RefBaseClassPath="AutomationMLLogicInterfaceClassLib/InterlockingLogicModelInterface"/>
    <ExternalInterface Name="ReferenceInterlockingVariable" ID="3472f585-cf80-4b83-a355-
    db401cf18af9" RefBaseClassPath="AutomationMLLogicInterfaceClassLib/InterlockingVariableInterface">
      <Attribute Name="Direction" AttributeDataType="xs:string"/>
      <Attribute Name="SafeConditionEquals" AttributeDataType="xs:boolean"/>
    </ExternalInterface>
  </RoleClass>
  <RoleClass Name="LogicModelObject"
  RefBaseClassPath="AutomationMLBaseRoleClassLib/AutomationMLBaseRole">
    <ExternalInterface Name="ReferenceSequence" ID="0370baf8-4ba1-420a-9cc4-4810b84c1fd7"
    RefBaseClassPath="AutomationMLLogicInterfaceClassLib/SequencingLogicModelInterface"/>

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    <ExternalInterface Name="ReferenceBehaviour" ID="26f13ad6-479c-4121-a327-1114af968155"
RefBaseClassPath="AutomationMLLogicInterfaceClassLib/BehaviourLogicModelInterface"/>
  </RoleClass>
</RoleClassLib>
<SystemUnitClassLib Name="CompositeComponent ExampleSUCLib">
  <Version>1.0.1</Version>
  <SystemUnitClass Name="Machine" ID="d519a747-dbf1-4972-9c56-744266253f38">
    <InternalElement Name="Picture" ID="b9d11f05-ed4e-4430-888c-ba4297b2e3df">
      <ExternalInterface Name="GraphicRepresentationReference" ID="05b15c6a-11ed-49bb-8ecf-
2ec9cde3182e" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
          <Value>/Machine.bmp</Value>
        </Attribute>
      </ExternalInterface>
      <RoleRequirements
RefBaseRoleClassPath="AutomationMLComponentStandardRCL/ComponentPicture">
        <ExternalInterface Name="GraphicRepresentationReference" ID="d1c0d574-0e86-4970-beb7-
ea072e789d80" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
          <Attribute Name="refURI" AttributeDataType="xs:anyURI">
            <Value>/Machine.bmp</Value>
          </Attribute>
        </ExternalInterface>
      </RoleRequirements>
    </InternalElement>
    <InternalElement Name="Icon" ID="9110e316-db56-4572-8564-fa0cb6108031">
      <ExternalInterface Name="GraphicRepresentationReference" ID="3c67ca6e-76c8-4a48-b113-
84f6698f82d1" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
          <Value>/Machine.ico</Value>
        </Attribute>
      </ExternalInterface>
      <RoleRequirements RefBaseRoleClassPath="AutomationMLComponentStandardRCL/ComponentIcon">
        <ExternalInterface Name="GraphicRepresentationReference" ID="e564b286-1030-486e-87e5-
3f6c44a96cf5" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
          <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
        </ExternalInterface>
      </RoleRequirements>
    </InternalElement>
    <InternalElement Name="MachineInformation" ID="a1278f22-e9fa-44e3-97af-c84c8fe523a3">
      <Attribute Name="SpecVersion" AttributeDataType="xs:string">
        <Value>1.1</Value>
      </Attribute>
      <Attribute Name="DocLang" AttributeDataType="xs:string">
        <Value>ja-JP</Value>
      </Attribute>
      <ExternalInterface Name="CSP+ForMachineReference" ID="87f3880e-b9f4-4806-9ccd-
387502c8242b" RefBaseClassPath="CCLinkICL/CSP+ForMachineReference">
        <Description>The interface class "CSP+ForMachineReference" shall be used in order to
reference CSP+ for Machine device description files in AutomationML.</Description>
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
          <Description>URI of the corresponding device description file.</Description>
          <DefaultValue/>
          <Value>/SampleCSP+ForMachine_1.00A_ja.cspp</Value>
        </Attribute>
        <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
          <Description>MIMETYPE of the file according to RFC2046.</Description>
          <DefaultValue>application/xml</DefaultValue>
          <Value>application/xml</Value>
        </Attribute>
        <Attribute Name="Version" AttributeDataType="xs:string">
          <Description>The version of the actual device description file that is referenced
here.</Description>
          <Value>1.0</Value>
        </Attribute>
      </ExternalInterface>
      <RoleRequirements RefBaseRoleClassPath="CCLinkRCL/CSP+ForMachine">
        <Attribute Name="SpecVersion" AttributeDataType="xs:string"/>
        <Attribute Name="DocLang" AttributeDataType="xs:string"/>
        <ExternalInterface Name="CSP+ForMachineReference" ID="87cb07b8-4075-4d24-bc89-
c904bbcaeeaa" RefBaseClassPath="CCLinkICL/CSP+ForMachineReference">
          <Description>The interface class "CSP+ForMachineReference" shall be used in order
to reference CSP+ for Machine device description files in AutomationML.</Description>

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        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
            <Description>URI of the corresponding device description file.</Description>
        </Attribute>
        <Attribute Name="MIMETYPE" AttributeDataType="xs:string">
            <Description>MIMETYPE of the file according to RFC2046.</Description>
            <DefaultValue>application/xml</DefaultValue>
        </Attribute>
        <Attribute Name="Version" AttributeDataType="xs:string">
            <Description>The version of the actual device description file that is
referenced here.</Description>
        </Attribute>
    </ExternalInterface>
</RoleRequirements>
</InternalElement>
<InternalElement Name="R120CPU" ID="4ace9543-5831-46d4-9382-194258444ada">
    <InternalElement Name="Picture" ID="3b7dfa9d-40b4-46cf-b846-85ce3f575661">
        <ExternalInterface Name="GraphicRepresentationReference" ID="65a41e98-bc11-4f05-b99b-
b0e7a541168d" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
            <Attribute Name="refURI" AttributeDataType="xs:anyURI">
                <Value>/R120CPU.bmp</Value>
            </Attribute>
        </ExternalInterface>
        <RoleRequirements
RefBaseRoleClassPath="AutomationMLComponentStandardRCL/ComponentPicture">
            <ExternalInterface Name="GraphicRepresentationReference" ID="95dba1ee-58e9-4328-
bd6a-d8ae602bca3c" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
                <Attribute Name="refURI" AttributeDataType="xs:anyURI">
                    <Value/>
                </Attribute>
            </ExternalInterface>
        </RoleRequirements>
    </InternalElement>
    <InternalElement Name="Icon" ID="5f6fd012-19f1-4825-940e-daea0dafc442">
        <ExternalInterface Name="GraphicRepresentationReference" ID="06cdcd15-c514-4cd2-971d-
0437474264c4" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
            <Attribute Name="refURI" AttributeDataType="xs:anyURI">
                <Value>/R120CPU.ico</Value>
            </Attribute>
        </ExternalInterface>
        <RoleRequirements
RefBaseRoleClassPath="AutomationMLComponentStandardRCL/ComponentIcon">
            <ExternalInterface Name="GraphicRepresentationReference" ID="28063eba-5272-4a27-
bc4d-73481921614b" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
                <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
            </ExternalInterface>
        </RoleRequirements>
    </InternalElement>
    <RoleRequirements
RefBaseRoleClassPath="AutomationMLComponentStandardRCL/AutomationComponent">
        <Attribute Name="ComponentInformation">
            <Attribute Name="ShortDescription" AttributeDataType="xs:string">
                <Description>Manufacturer product description</Description>
                <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AAU734#001"/>
                <!--0173-1#02-AAP805#002 ???-->
            </Attribute>
            <Attribute Name="ArticleIdentificationOfVendor" AttributeDataType="xs:string">
                <Description>Product article number of manufacturer</Description>
                <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AA0676#003"/>
                <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE103#001"/>
            </Attribute>
            <Attribute Name="InstanceIdentifier" AttributeDataType="xs:string">
                <Description>Bitte erklären??</Description>
            </Attribute>
            <Attribute Name="Manufacturer" AttributeDataType="xs:string">
                <Description>Manufacturer name</Description>
                <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AA0677#002"/>
                <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE102#001"/>
            </Attribute>
            <Attribute Name="OperationConditions">
                <Attribute Name="TemperaturRange">
                    <!-- überflüssige Ebene ???-->
                </Attribute>
            </Attribute>
        </Attribute>
    </RoleRequirements>

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    <Description>operating temperature limits, determined under prescribed
conditions, of the air surrounding the complete device</Description>
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE440#001"/>
    <!-- LEVEL(MIN,MAX) OF REAL_MEASURE_TYPE -->
    <Attribute Name="MinTemperatur" AttributeDataType="xs:float" Unit="°C">
        <Description>Minimum operating ambient temperature</Description>
        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AAS160#001"/>
    </Attribute>
    <Attribute Name="MaxTemperatur" AttributeDataType="xs:float" Unit="°C">
        <Description>Maximum operating ambient temperature</Description>
        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AAS155#001"/>
    </Attribute>
</Attribute>
<Attribute Name="IP-Protection" AttributeDataType="xs:string">
    <Description>Protection type IP</Description>
    <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAG975#011"/>
    <!-- 0173-1#02-BAG342#005 0173-1#09-AAB479#008???-->
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE248#001"/>
</Attribute>
</Attribute>
<Attribute Name="MechanicDescriptionAndPhysicalCharacteristics">
    <Attribute Name="TypeIdentifier" AttributeDataType="xs:string">
        <Description>Bitte erklären??</Description>
        <RefSemantic CorrespondingAttributePath="ECLASS:/">
    </Attribute>
    <Attribute Name="Mass" AttributeDataType="xs:float" Unit="g">
        <Description>Net weight: Value of the mass of the product with all fixed
parts without packaging and accessories.</Description>
        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAD875#006"/>
        <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE808#001"/>
    </Attribute>
    <Attribute Name="Material" AttributeDataType="xs:string">
        <Description>Housing material</Description>
        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAC461#010"/>
        <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE260#001"/>
    </Attribute>
    <Attribute Name="Height" AttributeDataType="xs:integer" Unit="mm">
        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAD849#00"/>
        <!-- 0173-1#02-BAA020#008 ???-->
        <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE801#001"/>
    </Attribute>
    <Attribute Name="Width" AttributeDataType="xs:integer" Unit="mm">
        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAD823#004"/>
        <!-- 0173-1#02-BAF016#005 ???-->
        <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE802#001"/>
    </Attribute>
    <Attribute Name="Length" AttributeDataType="xs:integer" Unit="mm">
        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAD856#005"/>
        <!-- 0173-1#02-BAB577#007 ???-->
        <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE803#001"/>
    </Attribute>
</Attribute>
</Attribute>
<Attribute Name="ReferenceFeatureSystem" AttributeDataType="">
    <Description>Bitte erklären??</Description>
    <RefSemantic CorrespondingAttributePath="ListType"/>
    <Attribute Name="Version" AttributeDataType="xs:string"/>
    <Attribute Name="SystemName" AttributeDataType="xs:string"/>
    <Attribute Name="ListOfFeature" AttributeDataType="xs:string">
        <RefSemantic CorrespondingAttributePath="">
    </Attribute>
</Attribute>
</Attribute>
<Attribute Name="ComponentCommercialInformation">
    <Description>Diese kommerziellen Attribute sind stark anwendungsabhängig: hier
kundenseitiges Warenwirtschaftssystem...??</Description>
    <Attribute Name="ProductDetails" AttributeDataType="xs:string">
        <Attribute Name="DescriptionShort" AttributeDataType="xs:string"/>
        <Attribute Name="DescriptionLong" AttributeDataType="xs:string"/>
        <Attribute Name="InternationalPID" AttributeDataType="xs:string"/>
        <Attribute Name="ManufacturerPID" AttributeDataType="xs:string">
            <!-- duplicate to ArticleIdentificationOfVendor -->
        </Attribute>
        <Description>unique product identifier of the manufacturer</Description>

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        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AA0676#002"/>
        <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE103#001"/>
    </Attribute>
    <Attribute Name="SpecialTreatmentClass" AttributeDataType="xs:string">
        <Description>Bitte erklären??</Description>
        <RefSemantic CorrespondingAttributePath="ListType"/>
    </Attribute>
    <Attribute Name="Keyword" AttributeDataType="xs:string">
        <Description>Bitte erklären??</Description>
        <RefSemantic CorrespondingAttributePath="ListType"/>
    </Attribute>
    <Attribute Name="Remarks" AttributeDataType="xs:string">
        <!-- <Description>Bitte erklären??</Description> -->
    </Attribute>
    <Attribute Name="ProductOrderDetails">
        <Attribute Name="OrderUnit" AttributeDataType="xs:string"/>
        <Attribute Name="ContentUnit" AttributeDataType="xs:string"/>
        <Attribute Name="PriceQuantity" AttributeDataType="xs:string"/>
        <Attribute Name="QuantityMin" AttributeDataType="xs:float"/>
        <Attribute Name="QuantityInterval" AttributeDataType="xs:float"/>
        <Attribute Name="QuantityMax" AttributeDataType="xs:string"/>
        <Attribute Name="PackingUnits" AttributeDataType="xs:string"/>
    </Attribute>
    <Attribute Name="ProductPriceDetails">
        <RefSemantic CorrespondingAttributePath="ListType"/>
        <Attribute Name="ValidStartDate" AttributeDataType="xs:date"/>
        <Attribute Name="ValidEndDate" AttributeDataType="xs:date"/>
        <Attribute Name="ProductPrice" AttributeDataType="xs:string">
            <Attribute Name="PriceAmount" AttributeDataType="xs:string"/>
            <Attribute Name="PriceCurrency" AttributeDataType="xs:string"/>
            <Attribute Name="Tax" AttributeDataType="xs:string"/>
            <Attribute Name="PriceFactor" AttributeDataType="xs:string"/>
            <Attribute Name="LowerBound" AttributeDataType="xs:string"/>
            <Attribute Name="Territory" AttributeDataType="xs:string">
                <RefSemantic CorrespondingAttributePath="ListType"/>
            </Attribute>
        </Attribute>
    </Attribute>
    <Attribute Name="ManufacturerDetails">
        <!-- are supplier details meant here ???-->
        <Attribute Name="Name" AttributeDataType="xs:string"/>
        <Attribute Name="Address1" AttributeDataType="xs:string"/>
        <Attribute Name="Address2" AttributeDataType="xs:string"/>
        <Attribute Name="ZipCode" AttributeDataType="xs:string"/>
        <Attribute Name="City" AttributeDataType="xs:string"/>
        <Attribute Name="Country" AttributeDataType="xs:string"/>
        <Attribute Name="ContactMail" AttributeDataType="xs:string"/>
        <Attribute Name="ContactPhone" AttributeDataType="xs:string"/>
        <Attribute Name="Website" AttributeDataType="xs:string"/>
    </Attribute>
</RoleRequirements>
</InternalElement>
<InternalElement Name="RJ72GF15-T2" ID="a8e69ec5-fa85-4f01-8af6-f54443c3d3ce">
    <InternalElement Name="Picture" ID="60ddd009-e3e4-4783-9e0a-86900d383d83">
        <ExternalInterface Name="GraphicRepresentationReference" ID="62a0f7f2-bd07-4da8-bda8-e12c3245ba03" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
            <Attribute Name="refURI" AttributeDataType="xs:anyURI">
                <Value>/RJ72GF15-T2.bmp</Value>
            </Attribute>
        </ExternalInterface>
    </InternalElement>
    <RoleRequirements
        RefBaseRoleClassPath="AutomationMLComponentStandardRCL/ComponentPicture">
        <ExternalInterface Name="GraphicRepresentationReference" ID="ba79ebad-546f-486b-a33a-4586bae1fdc6" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
            <Attribute Name="refURI" AttributeDataType="xs:anyURI">
                </ExternalInterface>
        </RoleRequirements>
    </InternalElement>
    <InternalElement Name="Icon" ID="6a1b3028-3382-47be-aade-b712257ccb9d">
        <ExternalInterface Name="GraphicRepresentationReference" ID="48150ff2-312e-4db3-8d6c-50738fa4d1db" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">

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        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
            <Value>RJ72GF15-T2.ico</Value>
        </Attribute>
    </ExternalInterface>
    <RoleRequirements
RefBaseRoleClassPath="AutomationMLComponentStandardRCL/ComponentIcon">
        <ExternalInterface Name="GraphicRepresentationReference" ID="c7f756d9-80b6-4261-
9867-27f273f28326" RefBaseClassPath="AutomationMLComponentBaseICL/GraphicRepresentationReference">
            <Attribute Name="refURI" AttributeDataType="xs:anyURI"/>
        </ExternalInterface>
    </RoleRequirements>
</InternalElement>
<InternalElement Name="DeviceDescription" ID="8f8ec61b-cc38-4395-b58b-dac6202ef461">
    <Attribute Name="SpecVersion" AttributeDataType="xs:string">
        <Value>2.0</Value>
    </Attribute>
    <Attribute Name="DocLang" AttributeDataType="xs:string">
        <Value>en-US</Value>
    </Attribute>
    <ExternalInterface Name="CSP+Reference" ID="30adf9d2-75d8-4565-bf54-ec6d79a1d501"
RefBaseClassPath="CCLinkICL/CSP+Reference">
        <Description>The interface class "CSP+Reference" shall be used in order to
reference CSP+ device description files in AutomationML.</Description>
        <Attribute Name="refURI" AttributeDataType="xs:anyURI">
            <Description>URI of the corresponding device description file.</Description>
            <Value>RJ72GF15-T2.xml</Value>
        </Attribute>
        <Attribute Name="MimeType" AttributeDataType="xs:string">
            <Description>MimeType of the file according to RFC2046.</Description>
            <DefaultValue>application/xml</DefaultValue>
            <Value>application/xml</Value>
        </Attribute>
        <Attribute Name="Version" AttributeDataType="xs:string">
            <Description>The version of the actual device description file that is
referenced here.</Description>
            <Value>1.3</Value>
        </Attribute>
    </ExternalInterface>
    <RoleRequirements RefBaseRoleClassPath="CCLinkRCL/CSP+ ">
        <Attribute Name="SpecVersion" AttributeDataType="xs:string"/>
        <Attribute Name="DocLang" AttributeDataType="xs:string"/>
        <ExternalInterface Name="CSP+Reference" ID="7a1f4ef8-e30c-4da9-8f1a-c44e90cee9c8"
RefBaseClassPath="CCLinkICL/CSP+Reference">
            <Description>The interface class "CSP+Reference" shall be used in order to
reference CSP+ device description files in AutomationML.</Description>
            <Attribute Name="refURI" AttributeDataType="xs:anyURI">
                <Description>URI of the corresponding device description file.</Description>
            </Attribute>
            <Attribute Name="MimeType" AttributeDataType="xs:string">
                <Description>MimeType of the file according to RFC2046.</Description>
                <DefaultValue>application/xml</DefaultValue>
                <Value/>
            </Attribute>
            <Attribute Name="Version" AttributeDataType="xs:string">
                <Description>The version of the actual device description file that is
referenced here.</Description>
            </Attribute>
        </ExternalInterface>
    </RoleRequirements>
</InternalElement>
<RoleRequirements
RefBaseRoleClassPath="AutomationMLComponentStandardRCL/AutomationComponent">
    <Attribute Name="ComponentInformation">
        <Attribute Name="ShortDescription" AttributeDataType="xs:string">
            <Description>Manufacturer product description</Description>
            <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AAU734#001"/>
            <!--0173-1#02-AAP805#002 ???-->
        </Attribute>
        <Attribute Name="ArticleIdentificationOfVendor" AttributeDataType="xs:string">
            <Description>Product article number of manufacturer</Description>
            <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AA0676#003"/>
            <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE103#001"/>

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</Attribute>
<Attribute Name="InstanceIdentifier" AttributeDataType="xs:string">
  <Description>Bitte erklären??</Description>
</Attribute>
<Attribute Name="Manufacturer" AttributeDataType="xs:string">
  <Description>Manufacturer name</Description>
  <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AA0677#002"/>
  <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE102#001"/>
</Attribute>
<Attribute Name="OperationConditions">
  <Attribute Name="TemperaturRange">
    <!-- überflüssige Ebene ???-->
    <Description>operating temperature limits, determined under prescribed
conditions, of the air surrounding the complete device</Description>
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE440#001"/>
    <!-- LEVEL(MIN,MAX) OF REAL_MEASURE_TYPE -->
    <Attribute Name="MinTemperatur" AttributeDataType="xs:float" Unit="°C">
      <Description>Minimum operating ambient temperature</Description>
      <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AAS160#001"/>
    </Attribute>
    <Attribute Name="MaxTemperatur" AttributeDataType="xs:float" Unit="°C">
      <Description>Maximum operating ambient temperature</Description>
      <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AAS155#001"/>
    </Attribute>
  </Attribute>
  <Attribute Name="IP-Protection" AttributeDataType="xs:string">
    <Description>Protection type IP</Description>
    <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAG975#011"/>
    <!-- 0173-1#02-BAG342#005 0173-1#09-AAB479#008??-->
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE248#001"/>
  </Attribute>
</Attribute>
<Attribute Name="MechanicDescriptionAndPhysicalCharacteristics">
  <Attribute Name="TypeIdentifier" AttributeDataType="xs:string">
    <Description>Bitte erklären??</Description>
    <RefSemantic CorrespondingAttributePath="ECLASS:"/>
  </Attribute>
  <Attribute Name="Mass" AttributeDataType="xs:float" Unit="g">
    <Description>Net weight: Value of the mass of the product with all fixed
parts without packaging and accessories.</Description>
    <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAD875#006"/>
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE808#001"/>
  </Attribute>
  <Attribute Name="Material" AttributeDataType="xs:string">
    <Description>Housing material</Description>
    <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAC461#010"/>
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE260#001"/>
  </Attribute>
  <Attribute Name="Height" AttributeDataType="xs:integer" Unit="mm">
    <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAD849#00"/>
    <!-- 0173-1#02-BAA020#008 ???-->
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE801#001"/>
  </Attribute>
  <Attribute Name="Width" AttributeDataType="xs:integer" Unit="mm">
    <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAD823#004"/>
    <!-- 0173-1#02-BAF016#005 ???-->
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE802#001"/>
  </Attribute>
  <Attribute Name="Length" AttributeDataType="xs:integer" Unit="mm">
    <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-BAD856#005"/>
    <!-- 0173-1#02-BAB577#007 ???-->
    <RefSemantic CorrespondingAttributePath="0112/2///62683#ACE803#001"/>
  </Attribute>
</Attribute>
<Attribute Name="ReferenceFeatureSystem" AttributeDataType="">
  <Description>Bitte erklären??</Description>
  <RefSemantic CorrespondingAttributePath="ListType"/>
  <Attribute Name="Version" AttributeDataType="xs:string"/>
  <Attribute Name="SystemName" AttributeDataType="xs:string"/>
  <Attribute Name="ListOfFeature" AttributeDataType="xs:string">
    <RefSemantic CorrespondingAttributePath=""/>
  </Attribute>
</Attribute>

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    </Attribute>
  </Attribute>
  <Attribute Name="ComponentCommercialInformation">
    <Description>Diese kommerziellen Attribute sind stark anwendungsabhängig: hier
    kundenseitiges Warenwirtschaftssystem...??</Description>
    <Attribute Name="ProductDetails" AttributeDataType="xs:string">
      <Attribute Name="DescriptionShort" AttributeDataType="xs:string"/>
      <Attribute Name="DescriptionLong" AttributeDataType="xs:string"/>
      <Attribute Name="InternationalPID" AttributeDataType="xs:string"/>
      <Attribute Name="ManufacturerPID" AttributeDataType="xs:string">
        <!-- duplicate to ArticleIdentificationOfVendor -->
        <Description>unique product identifier of the manufacturer</Description>
        <RefSemantic CorrespondingAttributePath="ECLASS:0173-1#02-AA0676#002"/>
        <RefSemantic CorrespondingAttributePath="0112/2//62683#ACE103#001"/>
      </Attribute>
      <Attribute Name="SpecialTreatmentClass" AttributeDataType="xs:string">
        <Description>Bitte erklären??</Description>
        <RefSemantic CorrespondingAttributePath="ListType"/>
      </Attribute>
      <Attribute Name="Keyword" AttributeDataType="xs:string">
        <Description>Bitte erklären??</Description>
        <RefSemantic CorrespondingAttributePath="ListType"/>
      </Attribute>
      <Attribute Name="Remarks" AttributeDataType="xs:string"/>
      <!-- <Description>Bitte erklären??</Description> -->
    </Attribute>
    <Attribute Name="ProductOrderDetails">
      <Attribute Name="OrderUnit" AttributeDataType="xs:string"/>
      <Attribute Name="ContentUnit" AttributeDataType="xs:string"/>
      <Attribute Name="PriceQuantity" AttributeDataType="xs:string"/>
      <Attribute Name="QuantityMin" AttributeDataType="xs:float"/>
      <Attribute Name="QuantityInterval" AttributeDataType="xs:float"/>
      <Attribute Name="QuantityMax" AttributeDataType="xs:string"/>
      <Attribute Name="PackingUnits" AttributeDataType="xs:string"/>
    </Attribute>
    <Attribute Name="ProductPriceDetails">
      <RefSemantic CorrespondingAttributePath="ListType"/>
      <Attribute Name="ValidStartDate" AttributeDataType="xs:date"/>
      <Attribute Name="ValidEndDate" AttributeDataType="xs:date"/>
      <Attribute Name="ProductPrice" AttributeDataType="xs:string">
        <Attribute Name="PriceAmount" AttributeDataType="xs:string"/>
        <Attribute Name="PriceCurrency" AttributeDataType="xs:string"/>
        <Attribute Name="Tax" AttributeDataType="xs:string"/>
        <Attribute Name="PriceFactor" AttributeDataType="xs:string"/>
        <Attribute Name="LowerBound" AttributeDataType="xs:string"/>
        <Attribute Name="Territory" AttributeDataType="xs:string">
          <RefSemantic CorrespondingAttributePath="ListType"/>
        </Attribute>
      </Attribute>
    </Attribute>
  </Attribute>
  <Attribute Name="ManufacturerDetails">
    <!-- are supplier details meant here ??-->
    <Attribute Name="Name" AttributeDataType="xs:string"/>
    <Attribute Name="Address1" AttributeDataType="xs:string"/>
    <Attribute Name="Address2" AttributeDataType="xs:string"/>
    <Attribute Name="ZipCode" AttributeDataType="xs:string"/>
    <Attribute Name="City" AttributeDataType="xs:string"/>
    <Attribute Name="Country" AttributeDataType="xs:string"/>
    <Attribute Name="ContactMail" AttributeDataType="xs:string"/>
    <Attribute Name="ContactPhone" AttributeDataType="xs:string"/>
    <Attribute Name="Website" AttributeDataType="xs:string"/>
  </Attribute>
</RoleRequirements>
</InternalElement>
<SupportedRoleClass RefRoleClassPath="AutomationMLComponentStandardRCL/AutomationComponent"/>
</SystemUnitClass>
</SystemUnitClassLib>
</CAEXFile>

```