CASCADE

# ▣ Ontology Layers



#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Diagram |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| ▣ Ontology Layers | *zeigt* | [VDI2206](#h-1169054469)  [FMC](#h-875731638)  [SE-Top (SpecIF)](#h-733588347)  [DDP](#h-1018835925) |

# Unit Imports

### ▣ Basic Unit Categories

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Diagram |

### ▣ Basic Units

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Diagram |

## Basic Units

## Basic Length

## Basic Mass

## Basic Area

## Basic Volume

## Basic Time

## Basic Electric Current

## Basic Thermodynamic Temperature

## Basic Amount of Substance

## Basic Luminous Intensity

## Basic Speed and Velocity

## Basic Acceleration

## Basic Mass Density

## Basic Electric Current Density

## Basic Amount of Substance Concentration

## Basic Magnetic Field Strength

## Basic Luminance

# DDP

#### Aussagen

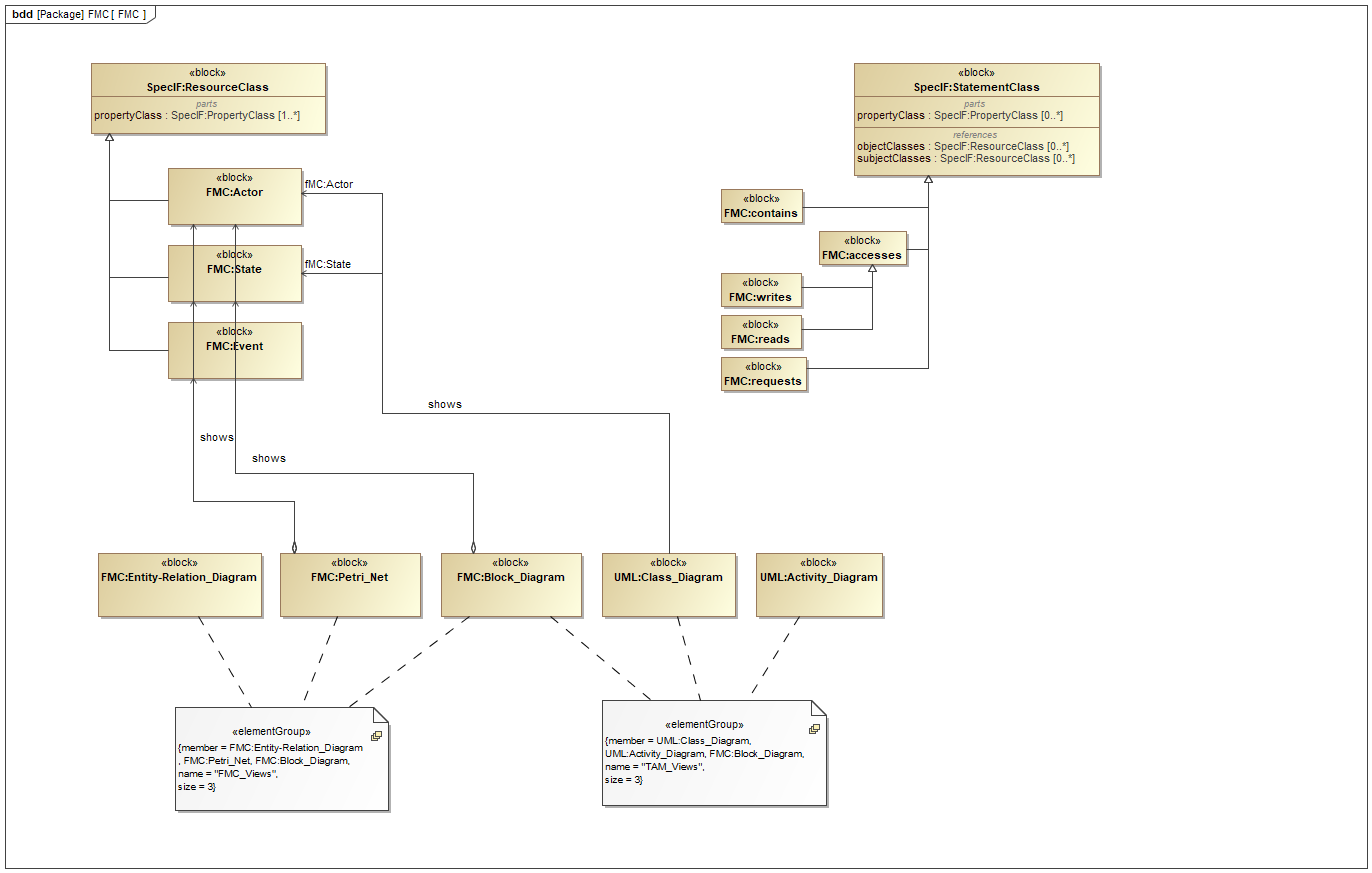
|  |  |  |
| --- | --- | --- |
| [▣ Ontology Layers](#h-794385073) | *zeigt* | DDP |

# FMC

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Ontology Layers](#h-794385073) | *zeigt* | FMC |

### ▣ FMC



#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Diagram |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| ▣ FMC | *zeigt* | [■ FMC:reads](#h1299020432)  [■ FMC:requests](#h787539728)  [■ Akteur](#h-209576579)  [■ FMC:accesses](#h2139577082)  [■ SpecIF:ResourceClass](#h258559133)  [■ Zustand](#h18365937)  [■ UML:Activity\_Diagram](#h885155404)  [■ SpecIF:StatementClass](#h-438471417)  [■ FMC:Petri\_Net](#h-1312830463)  [■ UML:Class\_Diagram](#h-1570659163)  [■ enthält](#h-449206901)  [■ Ereignis](#h930444896)  [■ FMC:writes](#h345975097)  [■ FMC:Entity-Relation\_Diagram](#h511294711)  [■ FMC:Block\_Diagram](#h-1045985623) |

### ■ Akteur

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121)  [▣ FMC](#h-1919301050) | *zeigt* | ■ Akteur |
| [■ Sensor](#h-2086859255)  [■ Information\_Processing](#h1714101918)  [■ Environment](#h-1823228623)  [■ Communication\_System](#h1986681671)  [■ Basic\_System](#h-1049666724)  [■ Human](#h-705930876)  [■ Mechatronic\_System](#h360443310)  [■ Actuator](#h397720083) | *spezialisiert* | ■ Akteur |
| ■ Akteur | *spezialisiert* | [■ SpecIF:ResourceClass](#h258559133) |

### ■ Zustand

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121)  [▣ FMC](#h-1919301050) | *zeigt* | ■ Zustand |
| [■ Material](#h-1635453010)  [■ Information](#h-1499273722)  [■ Energy](#h-1232461450) | *spezialisiert* | ■ Zustand |
| ■ Zustand | *spezialisiert* | [■ SpecIF:ResourceClass](#h258559133) |

### ■ Ereignis

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ Ereignis |
| ■ Ereignis | *spezialisiert* | [■ SpecIF:ResourceClass](#h258559133) |

### ■ FMC:Block\_Diagram

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:Block\_Diagram |

### ■ FMC:Petri\_Net

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:Petri\_Net |

### ■ FMC:Entity-Relation\_Diagram

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:Entity-Relation\_Diagram |

### ■ UML:Class\_Diagram

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ UML:Class\_Diagram |

### ■ UML:Activity\_Diagram

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ UML:Activity\_Diagram |

### ■ enthält

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ enthält |
| ■ enthält | *spezialisiert* | [■ SpecIF:StatementClass](#h-438471417) |

### ■ FMC:writes

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:writes |
| ■ FMC:writes | *spezialisiert* | [■ FMC:accesses](#h2139577082) |

### ■ FMC:reads

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:reads |
| ■ FMC:reads | *spezialisiert* | [■ FMC:accesses](#h2139577082) |

### ■ FMC:accesses

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:accesses |
| [■ FMC:reads](#h1299020432)  [■ FMC:writes](#h345975097) | *spezialisiert* | ■ FMC:accesses |
| ■ FMC:accesses | *spezialisiert* | [■ SpecIF:StatementClass](#h-438471417) |

### ■ FMC:requests

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

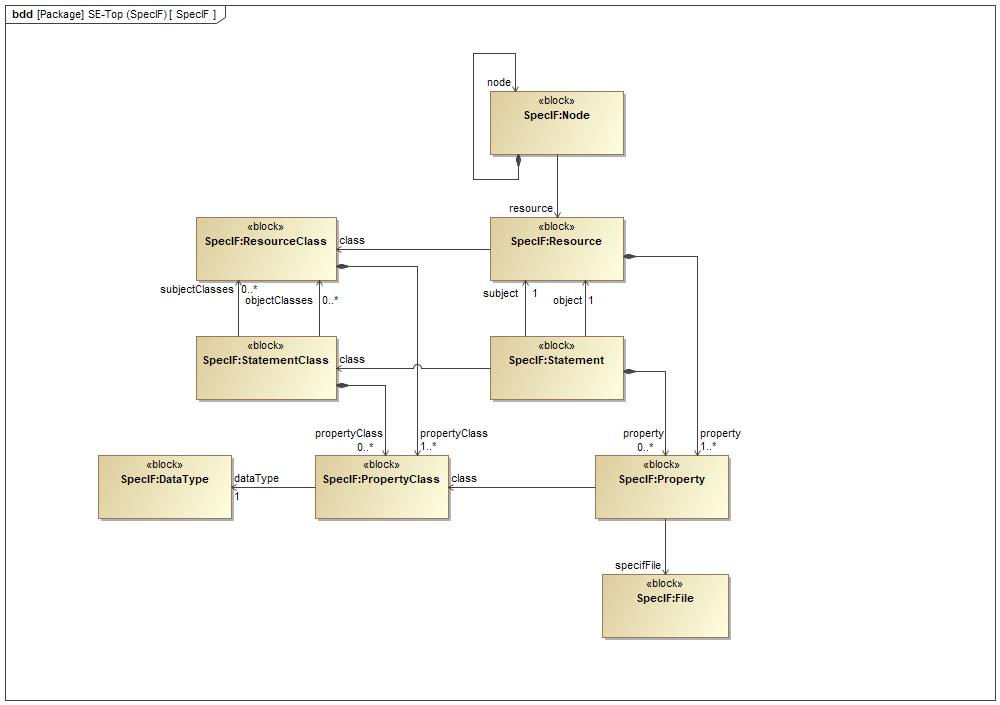
|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:requests |
| ■ FMC:requests | *spezialisiert* | [■ SpecIF:StatementClass](#h-438471417) |

# SE-Top (SpecIF)

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Ontology Layers](#h-794385073) | *zeigt* | SE-Top (SpecIF) |

### ▣ SpecIF



#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Diagram |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| ▣ SpecIF | *zeigt* | [■ SpecIF:ResourceClass](#h258559133)  [■ Ressource](#h914130924)  [■ SpecIF:StatementClass](#h-438471417)  [■ Aussage](#h-2111172016)  [■ SpecIF:Node](#h611720232)  [■ SpecIF:PropertyClass](#h191578573)  [■ SpecIF:DataType](#h-1025800482)  [■ Attribut](#h-1197588684)  [■ SpecIF:File](#h-1986041174) |

### ■ Ressource

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ Ressource |

### ■ Aussage

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ Aussage |

### ■ SpecIF:ResourceClass

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318)  [▣ FMC](#h-1919301050) | *zeigt* | ■ SpecIF:ResourceClass |
| [■ Ereignis](#h930444896)  [■ Zustand](#h18365937)  [■ Akteur](#h-209576579) | *spezialisiert* | ■ SpecIF:ResourceClass |

### ■ SpecIF:StatementClass

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318)  [▣ FMC](#h-1919301050) | *zeigt* | ■ SpecIF:StatementClass |
| [■ FMC:requests](#h787539728)  [■ FMC:accesses](#h2139577082)  [■ enthält](#h-449206901) | *spezialisiert* | ■ SpecIF:StatementClass |

### ■ SpecIF:Node

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ SpecIF:Node |

### ■ SpecIF:File

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ SpecIF:File |

### ■ Attribut

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ Attribut |

### ■ SpecIF:PropertyClass

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ SpecIF:PropertyClass |

### ■ SpecIF:DataType

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

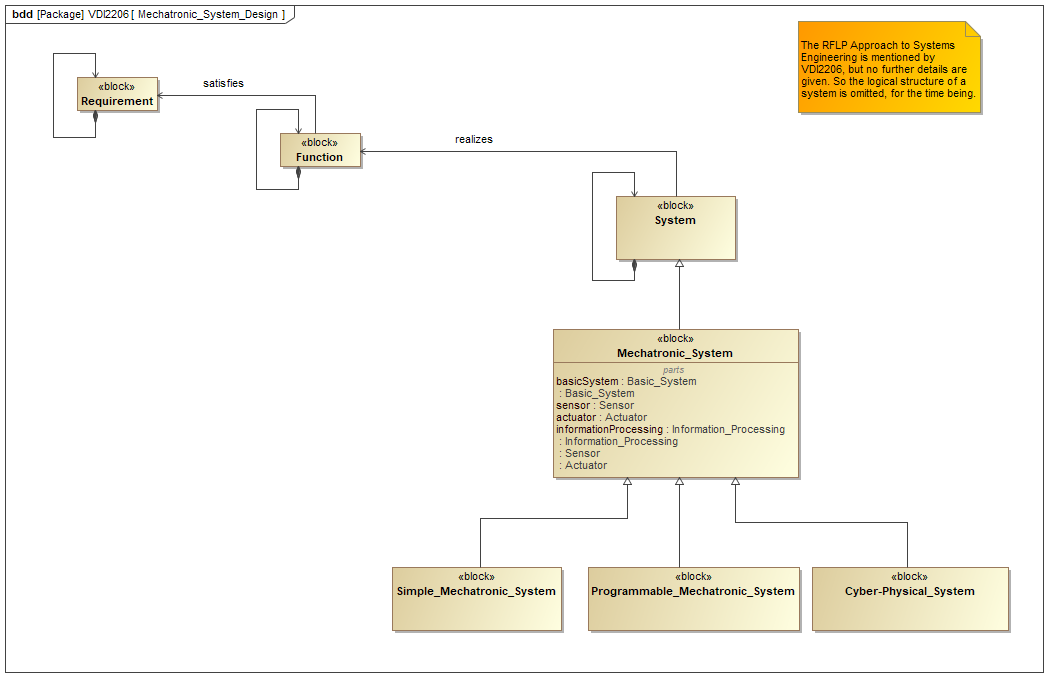
|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ SpecIF:DataType |

# VDI2206

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Ontology Layers](#h-794385073) | *zeigt* | VDI2206 |

### ▣ Mechatronic\_System\_Design



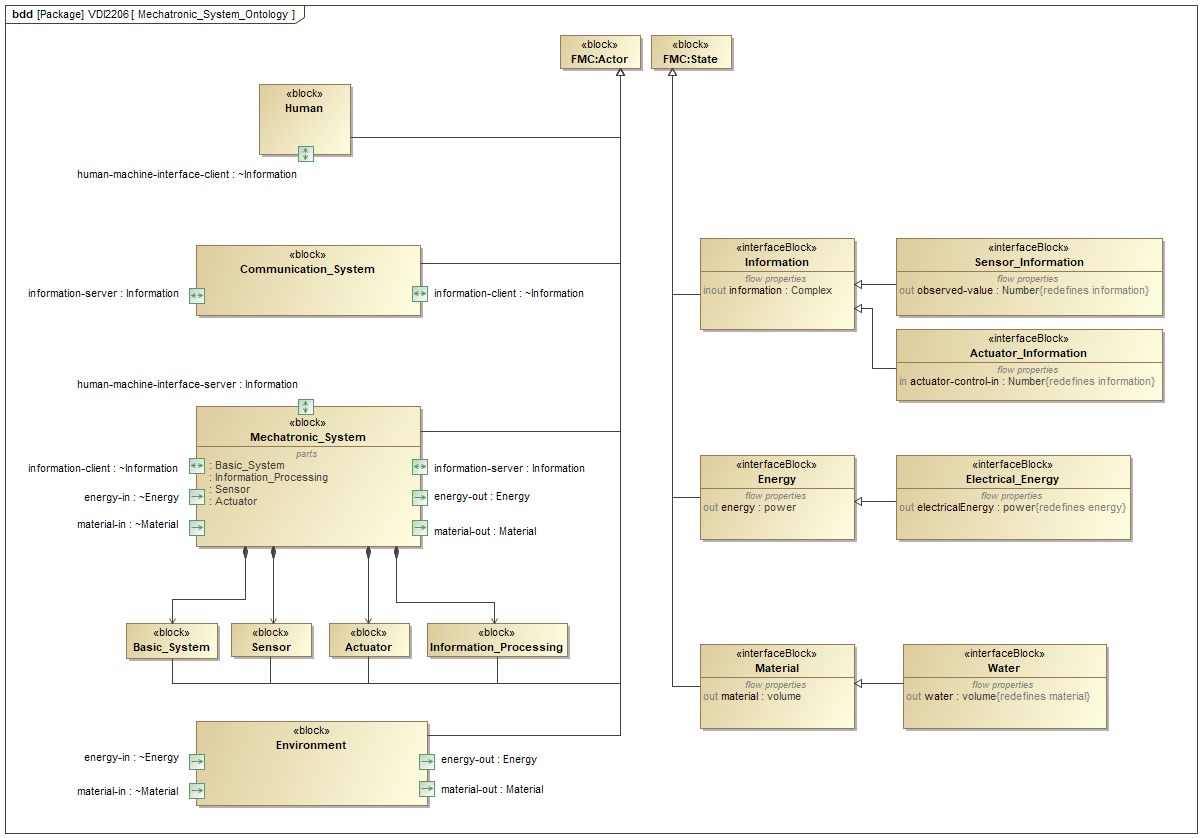
#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Diagram |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| ▣ Mechatronic\_System\_Design | *zeigt* | [■ Requirement](#h-1830682581)  [■ Function](#h-1152042268)  [■ Programmable\_Mechatronic\_System](#h-2040076704)  [■ Mechatronic\_System](#h360443310)  [■ Simple\_Mechatronic\_System](#h1161677036)  [■ System](#h2145904330)  [■ Cyber-Physical\_System](#h-1707777993) |

### ▣ Mechatronic\_System\_Ontology



#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Diagram |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| ▣ Mechatronic\_System\_Ontology | *zeigt* | [■ Sensor](#h-2086859255)  [■ Akteur](#h-209576579)  [■ Electrical\_Energy](#h-1522175680)  [■ Human](#h-705930876)  [■ Zustand](#h18365937)  [■ Environment](#h-1823228623)  [■ Water](#h-226201245)  [■ Energy](#h-1232461450)  [■ Actuator\_Information](#h1466939726)  [■ Communication\_System](#h1986681671)  [■ Basic\_System](#h-1049666724)  [■ Information](#h-1499273722)  [■ Information\_Processing](#h1714101918)  [■ Mechatronic\_System](#h360443310)  [■ Actuator](#h397720083)  [■ Material](#h-1635453010)  [■ Sensor\_Information](#h1958262333) |

### ■ Actuator

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Actuator |
| ■ Actuator | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Mechatronic\_System

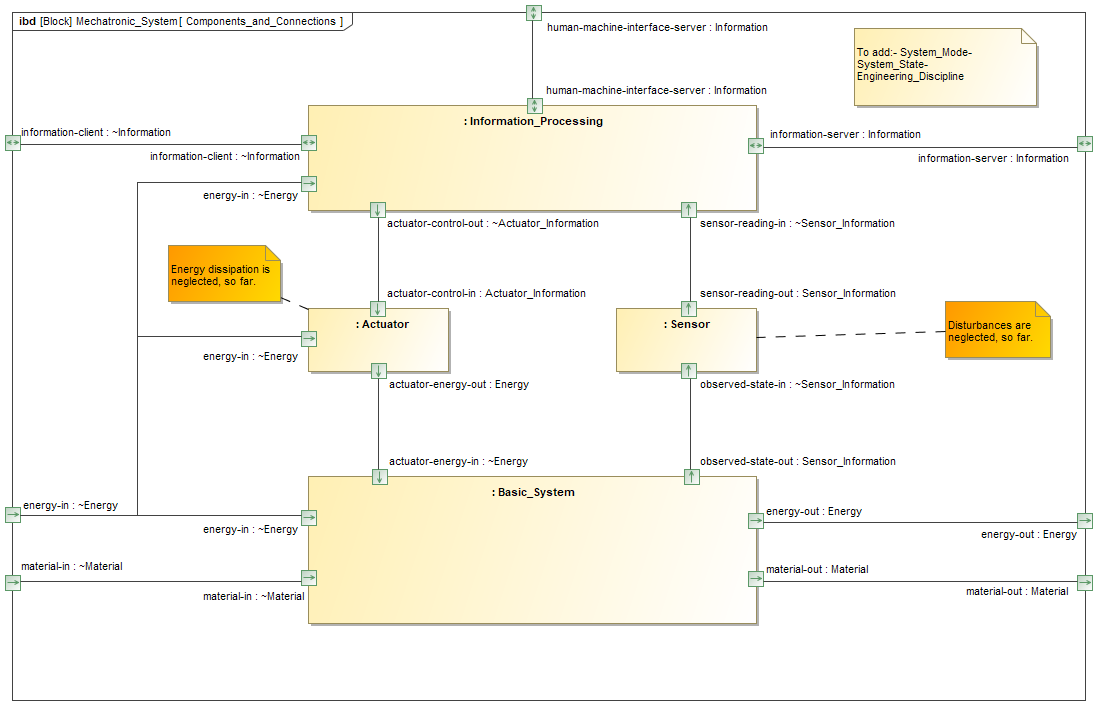
#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121)  [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Mechatronic\_System |
| [■ Simple\_Mechatronic\_System](#h1161677036)  [■ Programmable\_Mechatronic\_System](#h-2040076704)  [■ Cyber-Physical\_System](#h-1707777993) | *spezialisiert* | ■ Mechatronic\_System |
| ■ Mechatronic\_System | *spezialisiert* | [■ Akteur](#h-209576579)  [■ System](#h2145904330) |

### ▣ Components\_and\_Connections



#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Diagram |

### ■ Human

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Human |
| ■ Human | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Actuator\_Information

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Actuator\_Information |
| ■ Actuator\_Information | *spezialisiert* | [■ Information](#h-1499273722) |

### ■ Basic\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Basic\_System |
| ■ Basic\_System | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Communication\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Communication\_System |
| ■ Communication\_System | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Cyber-Physical\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Cyber-Physical\_System |
| ■ Cyber-Physical\_System | *spezialisiert* | [■ Mechatronic\_System](#h360443310) |

### ■ Electrical\_Energy

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Electrical\_Energy |
| ■ Electrical\_Energy | *spezialisiert* | [■ Energy](#h-1232461450) |

### ■ Environment

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Environment |
| ■ Environment | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Energy

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Energy |
| [■ Electrical\_Energy](#h-1522175680) | *spezialisiert* | ■ Energy |
| ■ Energy | *spezialisiert* | [■ Zustand](#h18365937) |

### ■ Function

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Function |

### ■ Information

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Information |
| [■ Sensor\_Information](#h1958262333)  [■ Actuator\_Information](#h1466939726) | *spezialisiert* | ■ Information |
| ■ Information | *spezialisiert* | [■ Zustand](#h18365937) |

### ■ Information\_Processing

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Information\_Processing |
| ■ Information\_Processing | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Material

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Material |
| [■ Water](#h-226201245) | *spezialisiert* | ■ Material |
| ■ Material | *spezialisiert* | [■ Zustand](#h18365937) |

### ■ Programmable\_Mechatronic\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Programmable\_Mechatronic\_System |
| ■ Programmable\_Mechatronic\_System | *spezialisiert* | [■ Mechatronic\_System](#h360443310) |

### ■ Requirement

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Requirement |

### ■ Sensor

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Sensor |
| ■ Sensor | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Sensor\_Information

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Sensor\_Information |
| ■ Sensor\_Information | *spezialisiert* | [■ Information](#h-1499273722) |

### ■ Simple\_Mechatronic\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Simple\_Mechatronic\_System |
| ■ Simple\_Mechatronic\_System | *spezialisiert* | [■ Mechatronic\_System](#h360443310) |

### ■ System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ System |
| [■ Mechatronic\_System](#h360443310) | *spezialisiert* | ■ System |

### ■ Water

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Water |
| ■ Water | *spezialisiert* | [■ Material](#h-1635453010) |

# Modellelemente (Glossar)

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | Modellelemente (Glossar) |

## Akteure

Ein 'Akteur' ist ein fundamentaler Modellelementtyp, der eine aktive Entität darstellt, sei es eine Aktivität, ein Prozessschritt, eine Funktion, eine Systemkomponente oder eine Rolle.

Die spezielle Verwendung von FMC:Actor wird mit einer dcterms:type Eigenschaft spezifiziert. Die Werte dieser Eigenschaft können Ontologiebegriffe sein, wie z.B. bpmn:timer.

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | Überschrift |

### ■ Actuator

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Actuator |
| ■ Actuator | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Actuator\_Information

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Actuator\_Information |
| ■ Actuator\_Information | *spezialisiert* | [■ Information](#h-1499273722) |

### ■ Basic\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Basic\_System |
| ■ Basic\_System | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Communication\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Communication\_System |
| ■ Communication\_System | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Cyber-Physical\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Cyber-Physical\_System |
| ■ Cyber-Physical\_System | *spezialisiert* | [■ Mechatronic\_System](#h360443310) |

### ■ Electrical\_Energy

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Electrical\_Energy |
| ■ Electrical\_Energy | *spezialisiert* | [■ Energy](#h-1232461450) |

### ■ Energy

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Energy |
| [■ Electrical\_Energy](#h-1522175680) | *spezialisiert* | ■ Energy |
| ■ Energy | *spezialisiert* | [■ Zustand](#h18365937) |

### ■ Environment

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Environment |
| ■ Environment | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ FMC:accesses

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:accesses |
| [■ FMC:reads](#h1299020432)  [■ FMC:writes](#h345975097) | *spezialisiert* | ■ FMC:accesses |
| ■ FMC:accesses | *spezialisiert* | [■ SpecIF:StatementClass](#h-438471417) |

### ■ Akteur

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121)  [▣ FMC](#h-1919301050) | *zeigt* | ■ Akteur |
| [■ Sensor](#h-2086859255)  [■ Information\_Processing](#h1714101918)  [■ Environment](#h-1823228623)  [■ Communication\_System](#h1986681671)  [■ Basic\_System](#h-1049666724)  [■ Human](#h-705930876)  [■ Mechatronic\_System](#h360443310)  [■ Actuator](#h397720083) | *spezialisiert* | ■ Akteur |
| ■ Akteur | *spezialisiert* | [■ SpecIF:ResourceClass](#h258559133) |

### ■ FMC:Block\_Diagram

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:Block\_Diagram |

### ■ enthält

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ enthält |
| ■ enthält | *spezialisiert* | [■ SpecIF:StatementClass](#h-438471417) |

### ■ FMC:Entity-Relation\_Diagram

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:Entity-Relation\_Diagram |

### ■ Ereignis

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ Ereignis |
| ■ Ereignis | *spezialisiert* | [■ SpecIF:ResourceClass](#h258559133) |

### ■ FMC:Petri\_Net

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:Petri\_Net |

### ■ FMC:reads

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:reads |
| ■ FMC:reads | *spezialisiert* | [■ FMC:accesses](#h2139577082) |

### ■ FMC:requests

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:requests |
| ■ FMC:requests | *spezialisiert* | [■ SpecIF:StatementClass](#h-438471417) |

### ■ Zustand

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121)  [▣ FMC](#h-1919301050) | *zeigt* | ■ Zustand |
| [■ Material](#h-1635453010)  [■ Information](#h-1499273722)  [■ Energy](#h-1232461450) | *spezialisiert* | ■ Zustand |
| ■ Zustand | *spezialisiert* | [■ SpecIF:ResourceClass](#h258559133) |

### ■ FMC:writes

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ FMC:writes |
| ■ FMC:writes | *spezialisiert* | [■ FMC:accesses](#h2139577082) |

### ■ Function

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Function |

### ■ Human

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Human |
| ■ Human | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Information

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Information |
| [■ Sensor\_Information](#h1958262333)  [■ Actuator\_Information](#h1466939726) | *spezialisiert* | ■ Information |
| ■ Information | *spezialisiert* | [■ Zustand](#h18365937) |

### ■ Information\_Processing

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Information\_Processing |
| ■ Information\_Processing | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Material

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Material |
| [■ Water](#h-226201245) | *spezialisiert* | ■ Material |
| ■ Material | *spezialisiert* | [■ Zustand](#h18365937) |

### ■ Mechatronic\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121)  [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Mechatronic\_System |
| [■ Simple\_Mechatronic\_System](#h1161677036)  [■ Programmable\_Mechatronic\_System](#h-2040076704)  [■ Cyber-Physical\_System](#h-1707777993) | *spezialisiert* | ■ Mechatronic\_System |
| ■ Mechatronic\_System | *spezialisiert* | [■ Akteur](#h-209576579)  [■ System](#h2145904330) |

### ■ Programmable\_Mechatronic\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Programmable\_Mechatronic\_System |
| ■ Programmable\_Mechatronic\_System | *spezialisiert* | [■ Mechatronic\_System](#h360443310) |

### ■ Requirement

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Requirement |

### ■ Sensor

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Sensor |
| ■ Sensor | *spezialisiert* | [■ Akteur](#h-209576579) |

### ■ Sensor\_Information

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Sensor\_Information |
| ■ Sensor\_Information | *spezialisiert* | [■ Information](#h-1499273722) |

### ■ Simple\_Mechatronic\_System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ Simple\_Mechatronic\_System |
| ■ Simple\_Mechatronic\_System | *spezialisiert* | [■ Mechatronic\_System](#h360443310) |

### ■ SpecIF:DataType

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ SpecIF:DataType |

### ■ SpecIF:File

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ SpecIF:File |

### ■ SpecIF:Node

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ SpecIF:Node |

### ■ Attribut

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ Attribut |

### ■ SpecIF:PropertyClass

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ SpecIF:PropertyClass |

### ■ Ressource

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ Ressource |

### ■ SpecIF:ResourceClass

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318)  [▣ FMC](#h-1919301050) | *zeigt* | ■ SpecIF:ResourceClass |
| [■ Ereignis](#h930444896)  [■ Zustand](#h18365937)  [■ Akteur](#h-209576579) | *spezialisiert* | ■ SpecIF:ResourceClass |

### ■ Aussage

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318) | *zeigt* | ■ Aussage |

### ■ SpecIF:StatementClass

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ SpecIF](#h-1464814318)  [▣ FMC](#h-1919301050) | *zeigt* | ■ SpecIF:StatementClass |
| [■ FMC:requests](#h787539728)  [■ FMC:accesses](#h2139577082)  [■ enthält](#h-449206901) | *spezialisiert* | ■ SpecIF:StatementClass |

### ■ System

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Design](#h-570445909) | *zeigt* | ■ System |
| [■ Mechatronic\_System](#h360443310) | *spezialisiert* | ■ System |

### ■ UML:Activity\_Diagram

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ UML:Activity\_Diagram |

### ■ UML:Class\_Diagram

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ FMC](#h-1919301050) | *zeigt* | ■ UML:Class\_Diagram |

### ■ Water

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | uml:Class |

#### Aussagen

|  |  |  |
| --- | --- | --- |
| [▣ Mechatronic\_System\_Ontology](#h-969568121) | *zeigt* | ■ Water |
| ■ Water | *spezialisiert* | [■ Material](#h-1635453010) |

## Zustände

Ein 'Zustand' ist ein fundamentaler Modellelementtyp, der eine passive Entität darstellt, sei es ein Wert, ein Dokument, ein Informationsspeicher, eine Bedingung oder eine physische Beschaffenheit.

Die spezielle Verwendung von FMC:State wird mit einer dcterms:type Eigenschaft spezifiziert. Die Werte dieser Eigenschaft können Ontologiebegriffe sein, wie z.B. ArchiMate:DataObject.

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | Überschrift |

## Ereignisse

Ein 'Ereignis' ist ein fundamentaler Modellelementtyp, der eine Zeitreferenz, eine Änderung einer Bedingung/eines Wertes oder allgemeiner ein Synchronisationsmittel darstellt.

Die spezielle Verwendung von FMC:Event wird mit einer dcterms:type Eigenschaft spezifiziert. Die Werte dieser Eigenschaft können Ontologiebegriffe sein, wie z.B. bpmn:startEvent.

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | Überschrift |

## Kollektionen und Gruppen

Eine 'Kollektion' ist eine logische Gruppierung bestimmter Modellelemente, die per SpecIF:contains Relation zusammen gefasst sind. Sie entspricht einer ['Gruppe'](https://camunda.com/bpmn/reference/) in BPMN Diagrammen. (*source:* [BPMN Tutorial](http://www.bpmn-tool.com/en/tutorial/))

#### Attribute

|  |  |
| --- | --- |
| *Element-Typ* | Überschrift |