

OPC DAY FINLAND 2019

6.-7.11.2019 @ EXPO AND CONVENTION CENTRE MESSukeskus HELSINKI
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PA-DIM OPC UA for Process Automation Frank Fengler, ABB

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The FieldComm Group is the leading source for open Digital Communication and Integration Technologies relative to measurement and automation for the benefit of the Process Industries.



FIELDCOMM GROUP™
*Connecting the World of
Process Automation*

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Why is common semantic important?



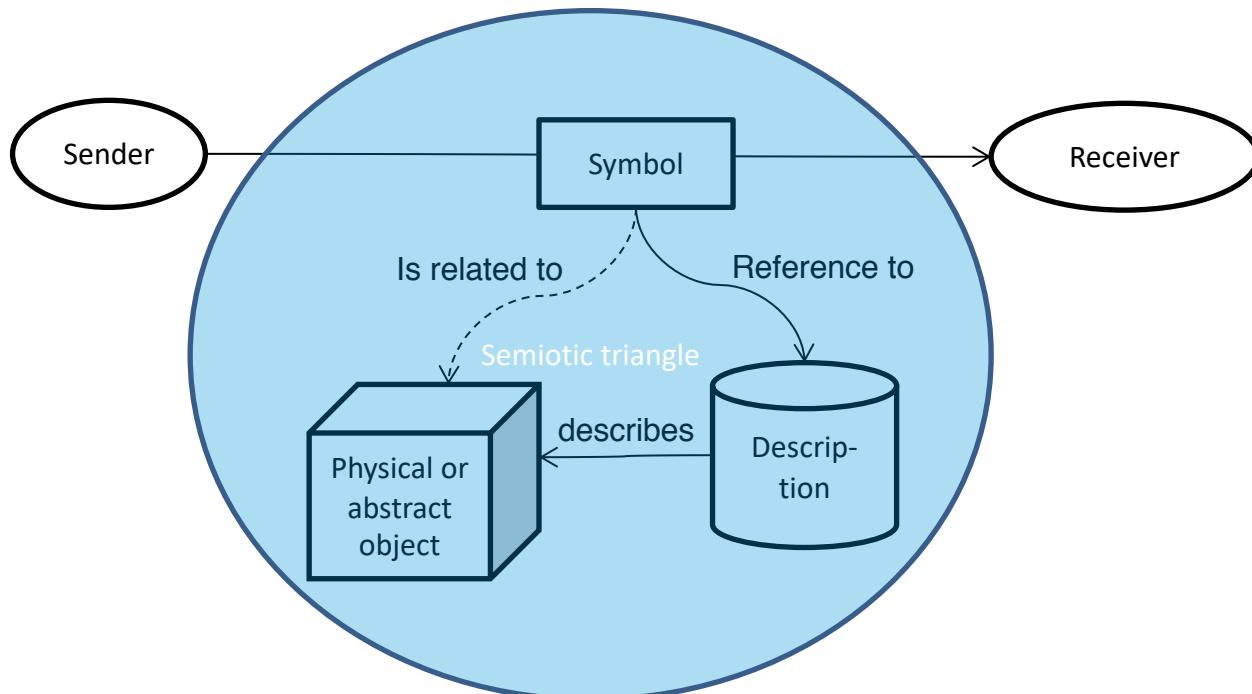
Jaguar



Quellen: Google Bilder, Wikipedia, ifak Magdeburg

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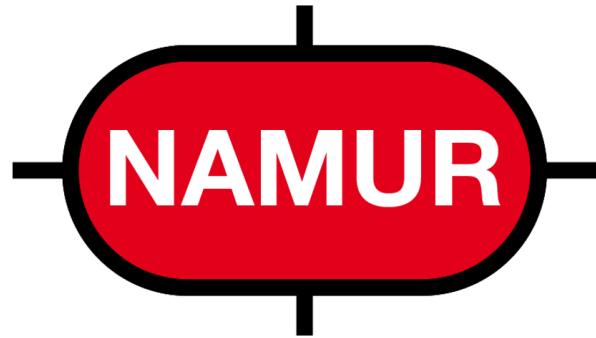
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NAMUR is an international user association of automation technology in process industries, representing the interests of their members for more than 65 years.



164 member companies

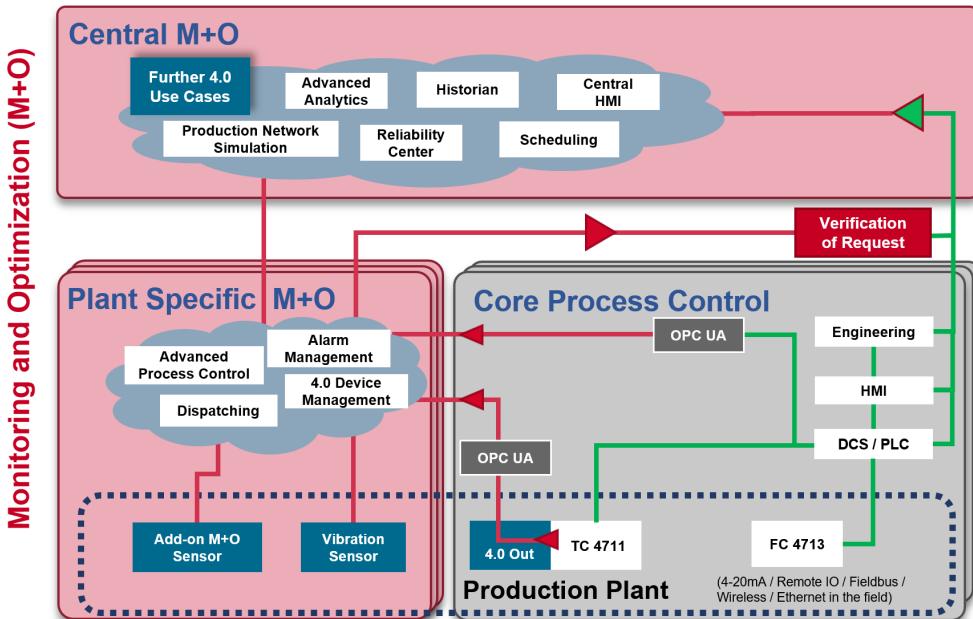
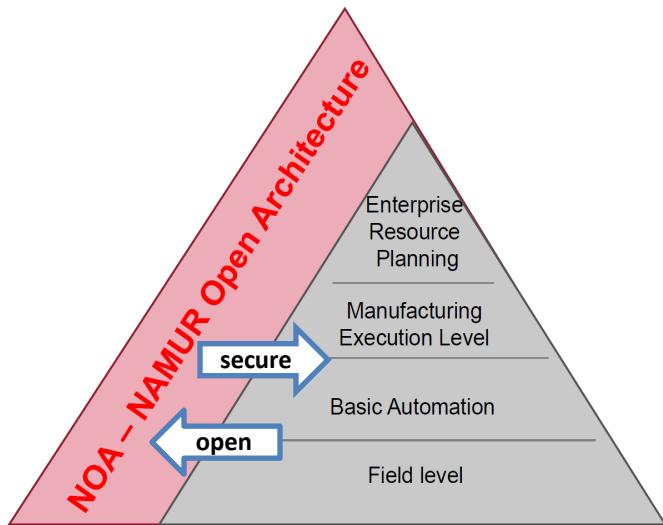
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NAMUR Open Architecture

NAMUR



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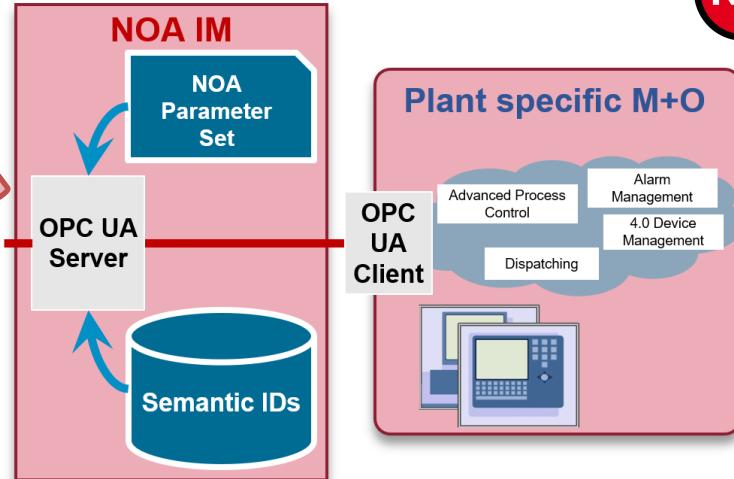
NOA Information Model

NAMUR

NE NOA defines

- Methodology to go from use case to parameter set
- NOA parameter set and semantics: **mandatory**

PA-DIM



NAMUR–ZVEI Collaboration defines

- Technical implementation of parameter set into OPC UA model
- NOA Information Model OPC UA implementation: **mandatory**
- Interface towards other organizations:



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NOA USE CASE DEFINITION			PARAMETER SET DEFINITION		SEMANTIC ID DEFINITION	
Field Device related						
...	Device Health	Device Lifecycle / Backup	Multivariable read process values	Multivariable possibility check	BrowseName	DisplayName = IEC CDD Short name
				Dimensioning/design check (for sensors & actuators)		Semantic ID
				Unique identification		
				Automated as Built		
x			x		SerialNumber	Serial number 0112/2///61987#ABA951 - serial number
x			x		OrderCode	Order code 0112/2///61987#ABA300 - code of product
x					RevisionCounter	Change counter 0112/2///61987#future
x			x x		Manufacturer	Manufacturer 0112/2///61987#ABA565 - manufacturer
x			x x		Model	Model 0112/2///61987#ABA567 - name of product
					DeviceManual	Device manual
					DeviceRevision	Device revision
x			x		SoftwareRevision	Software revision 0112/2///61987#ABA601 - software version
x			x		HardwareRevision	Hardware revision 0112/2///61987#ABA926 - hardware version
x			x x		DeviceClass	Device class 0112/2///61987#ABA566 - type of product
x x x x x			x		AssetID	Asset ID 0112/2///61987#ABA038 - identification code of device

Example for field device monitoring

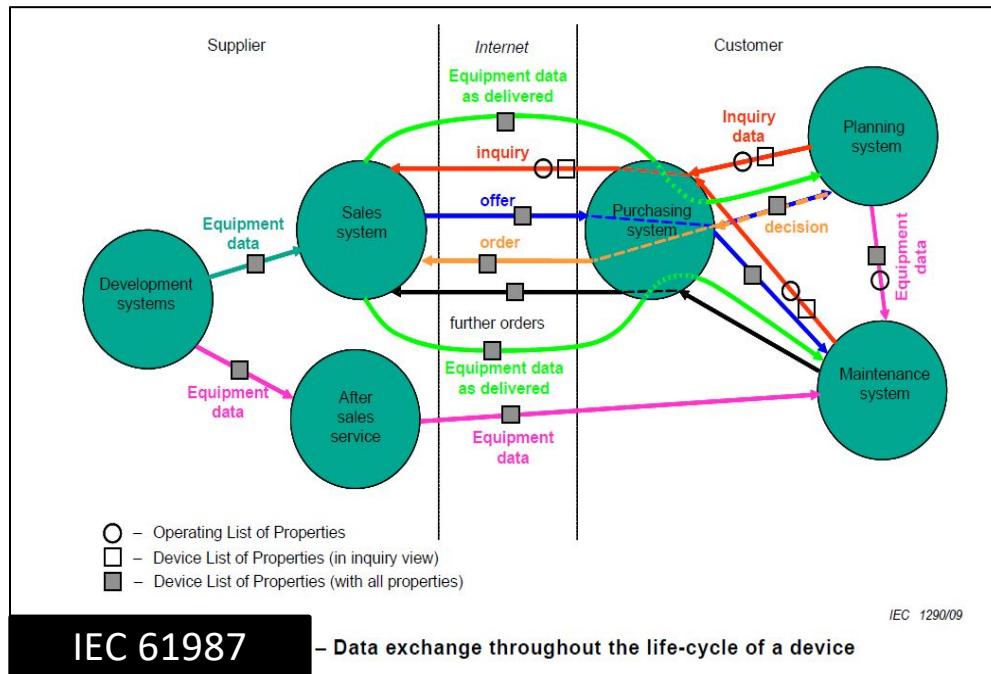
NOA Use Cases:

- Unique Identification
- Automated as Built
- Dimensioning design check
- Device Lifecycle / Backup
- Multivariable possibility check
- Multivariable read process values
- Device Health
- ...

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Information interoperability between life cycle phases and business partners and IT systems

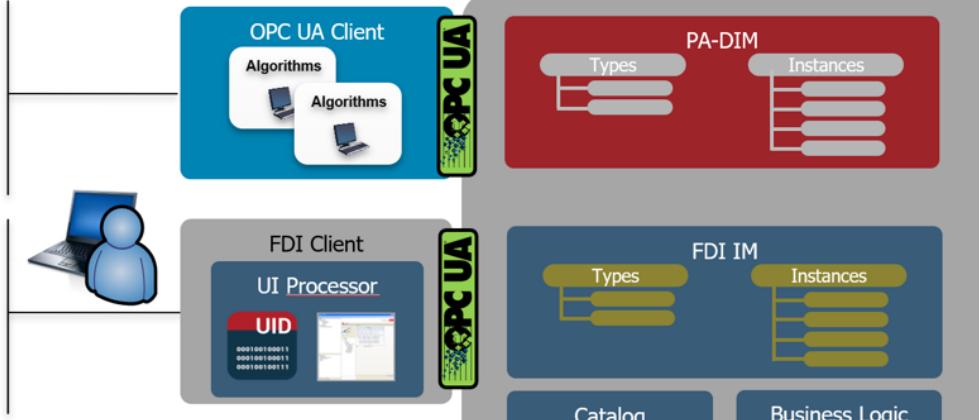


- Information with semantic description is the basis (properties)
- Information models need to be standardized in order to be automatically handled by IT business tools and machines
- Information models need to be independent from the communication protocol
- As broader standards are adopted, the higher the scale effects!

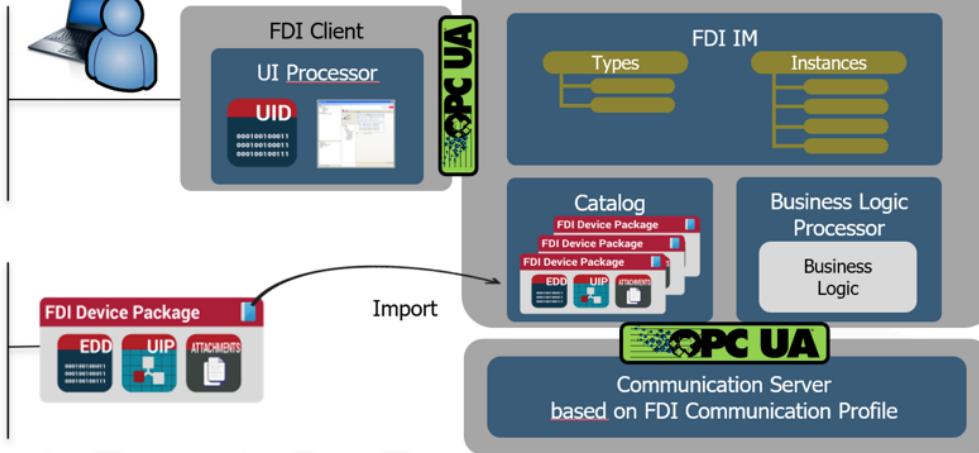
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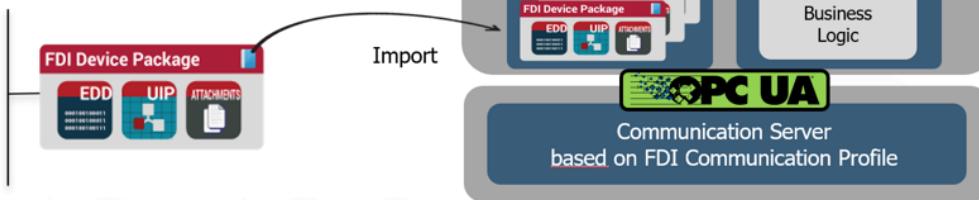
The OPC UA Device Information Model provides machine readable information



FDI client provides human-readable information for device parameterization



The FDI Device Package represents a device type

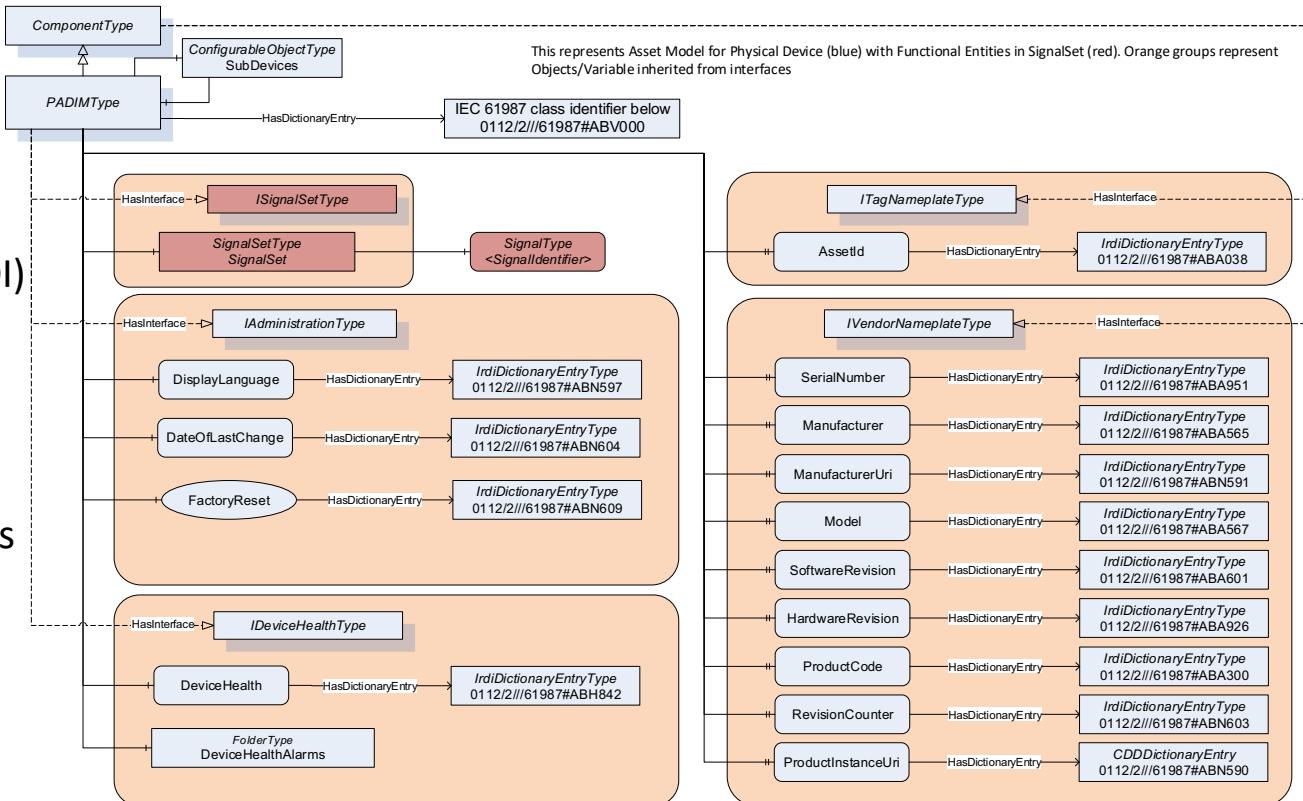


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PA-DIM

- PA-DIM is based on OPC UA Specification Part 100: Devices V1.02
- Semantic Dictionary IDs (IRDI) according to IEC61987 Common Data Dictionary
- Name Plate Interfaces are used from Part 100.
- Device (Asset) is described as using Interfaces
- Device has Set of Signals (Function) e.g. Process Variables

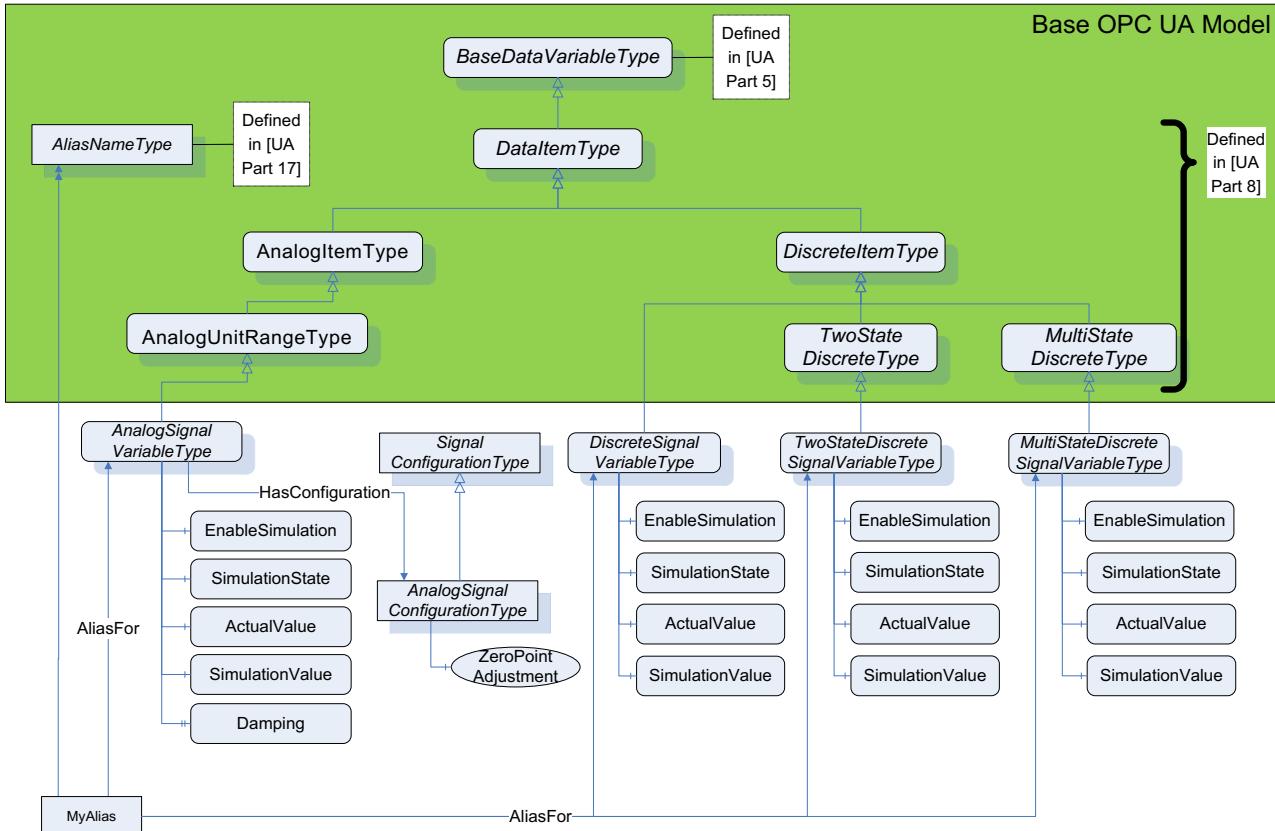


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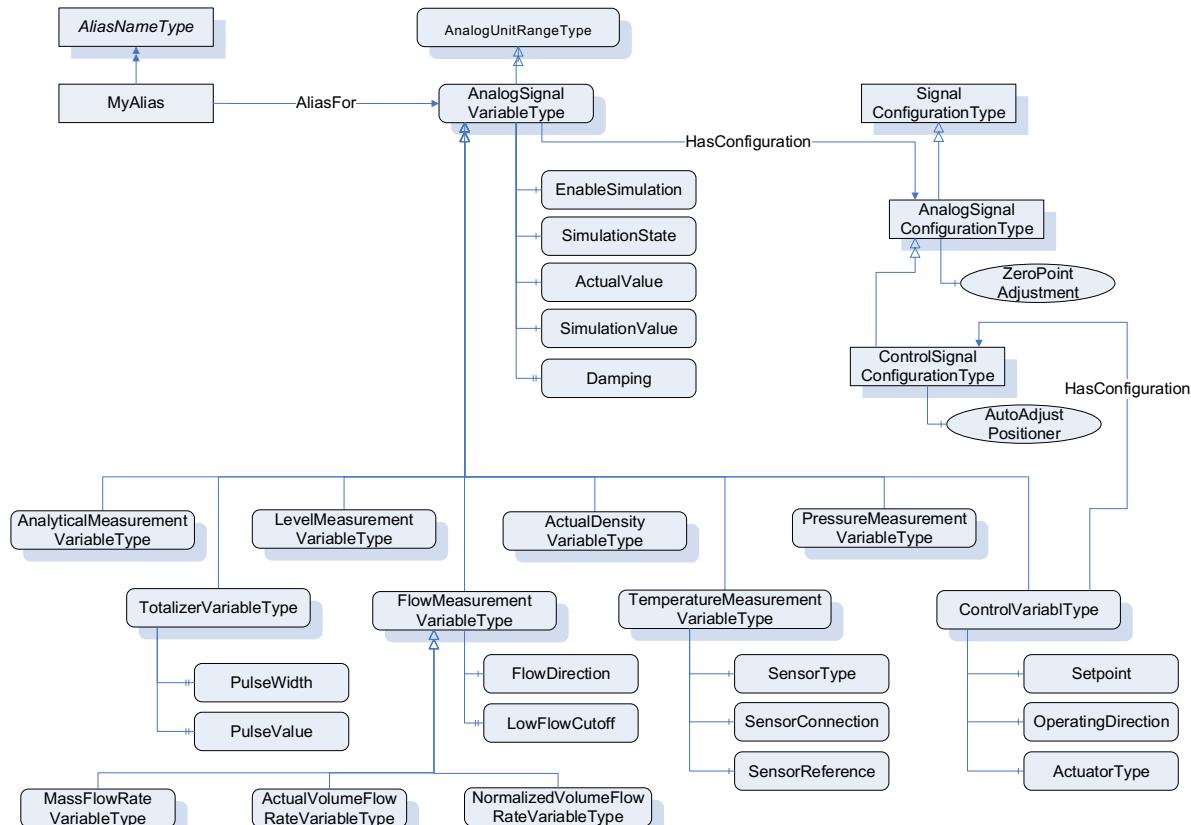
PA-DIM - Signals

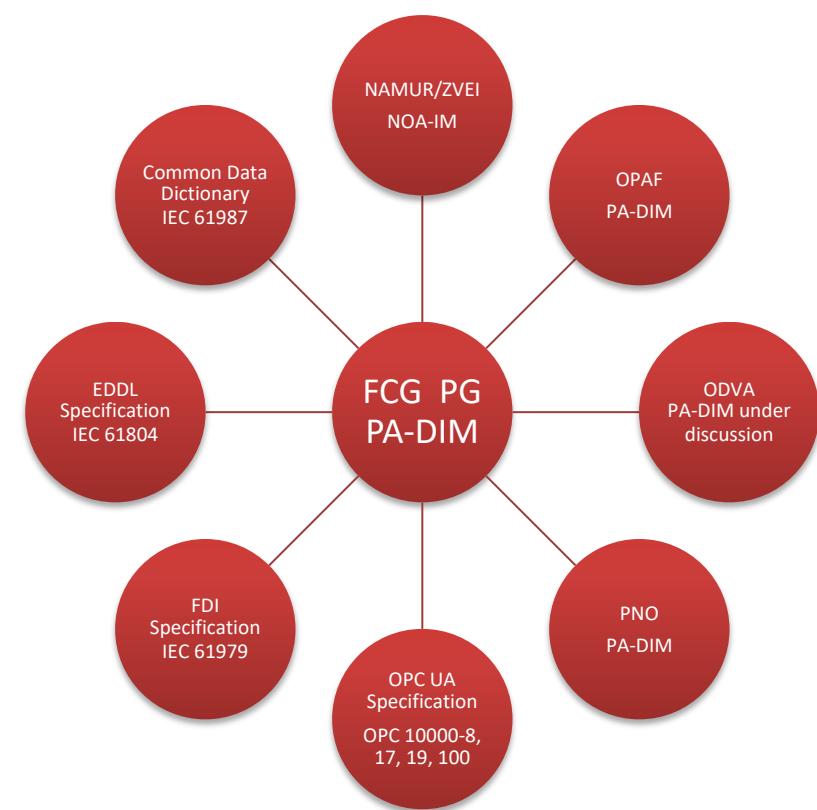
- Signals are VariableTypes
- Signals can be Analog or Discrete
- Signals are an extension of OPC UA Part 8
- Signals can be simulated
- Signals can have Alias name, known as Tag of a measurement/control value assigned by a user today.



PA-DIM - AnalogSignal

- AnalogSignalVariableType is an extension of OPC UA Part 8 AnalogUnitRangeType
- Methods are added via ConfigurationType Object with a HasConfiguration reference
- NE131 Device Core Parameter and NAMUR Open Architecture (NOA) are base for PA-DIM Signals
- All variables have a defined Semantic Dictionary ID (IRDI) for IEC 61987 CDD for the type e.g. for Damping 0112/2//61987#ABH526





PA-DIM is already broadly supported

FieldComm Group (FCG) specifies PA-DIM

PA-DIM is co-owned by OPC F

NAMUR has endorsed PA-DIM as NOA information model; Demo at NAMUR HV 2019

More information:

<http://go.fieldcommgroup.org/PA-DIM>

<https://www.ask4fdi.com/>

<https://www.fieldcommgroup.org/>

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OPC 30081

OPC UA for Process Automation Devices - PA-DIM

Release Candidate 1.00

2019-11-01

OPC UA Companion-Specification



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Thank you!



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