



Forum Glass Technology



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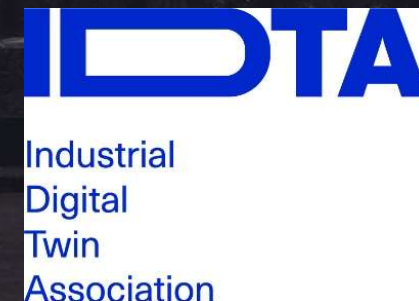
# How René Magritte inspired the Asset Admin Shell

Dr. Markus Schoisswohl, Hegla New Technology GmbH & Co. KG  
Dr. Christian Mosch, Industrial Digital Twin Association

## How René Magritte inspired Asset Admin Shell

...and how you can benefit from it in daily life

Dr. Markus Schoisswohl, Hegla New Technology GmbH & Co. KG  
Dr. Christian Mosch, Industrial Digital Twin Association



# How René Magritte inspired Asset Admin Shell ... and you benefit in daily life

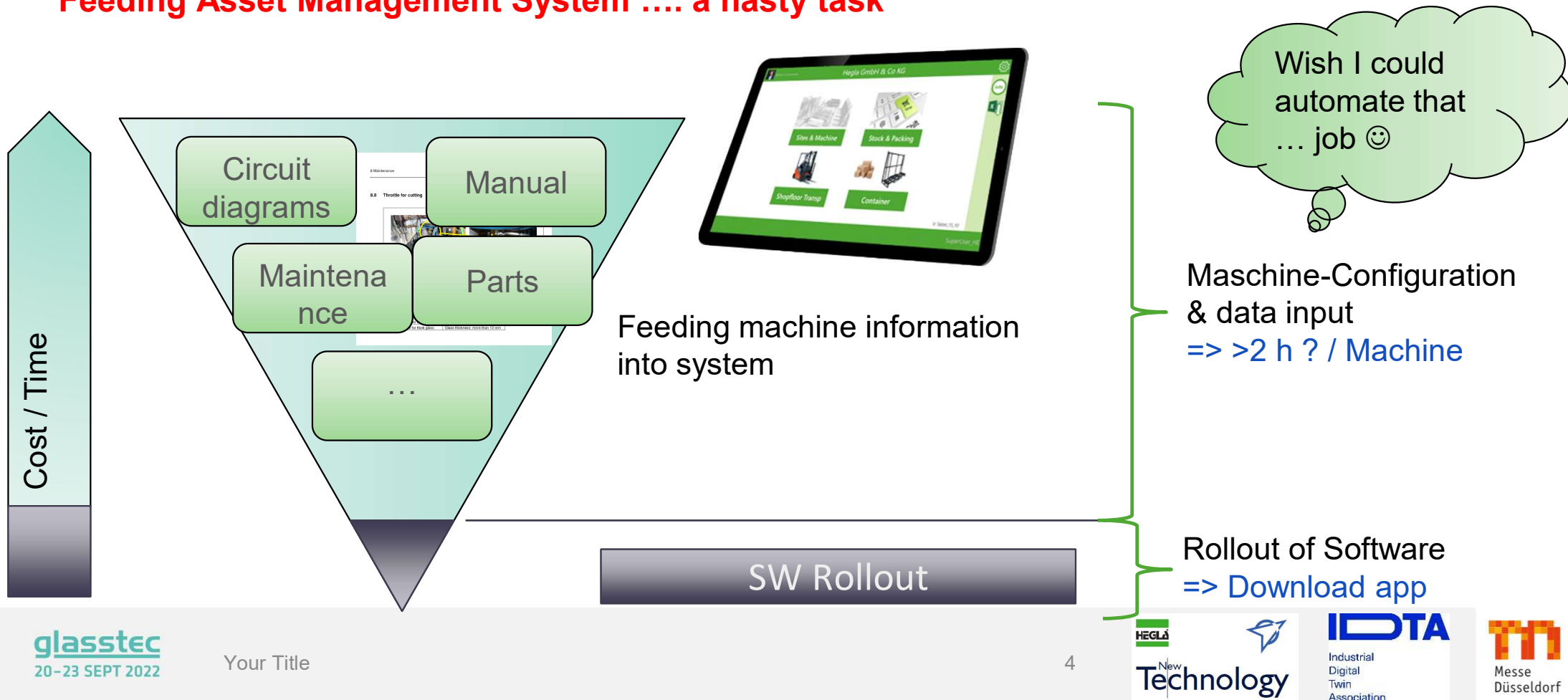
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## What we discuss today

1. **Today's challenges**
2. Asset Admin Shell in an Nutshell
3. Example
4. Summary



## Feeding Asset Management System .... a nasty task

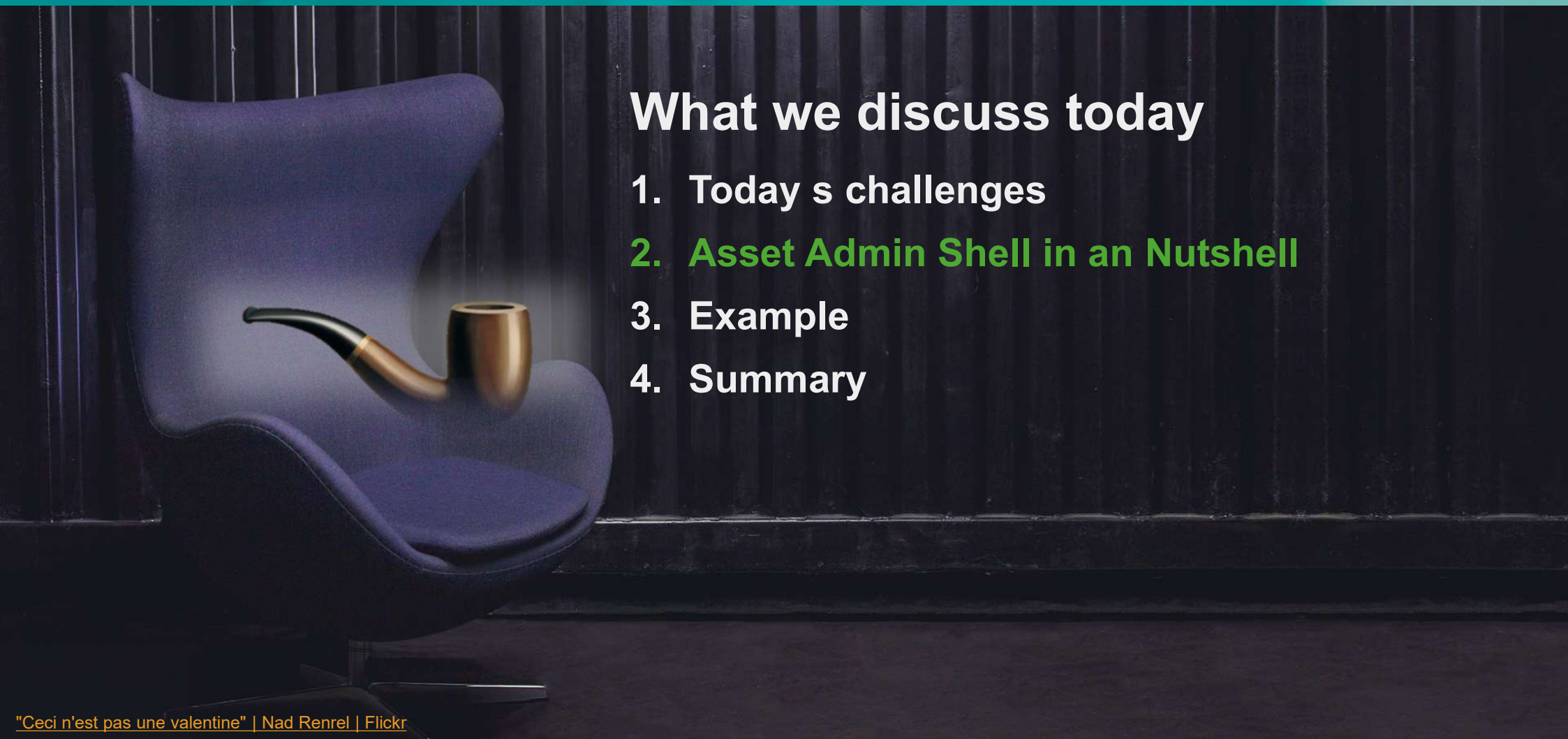


# How René Magritte inspired Asset Admin Shell ... and you benefit in daily life

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["Ceci n'est pas une valentine"](#) | Nad Renrel | Flickr

# Asset Admin Shell in an Nutshell

## What can we learn from Art

**Already 1929 René Magritte reflected about assets and their representation**



# Asset Admin Shell in an Nutshell

## What can we learn from Art

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... and today we found a good solution

### Asset Administration Shell



Asset: Pipe  
Holder: Max Mustermann  
Picture:



Docu:

- Function.pdf
- SafetyHazard.pdf

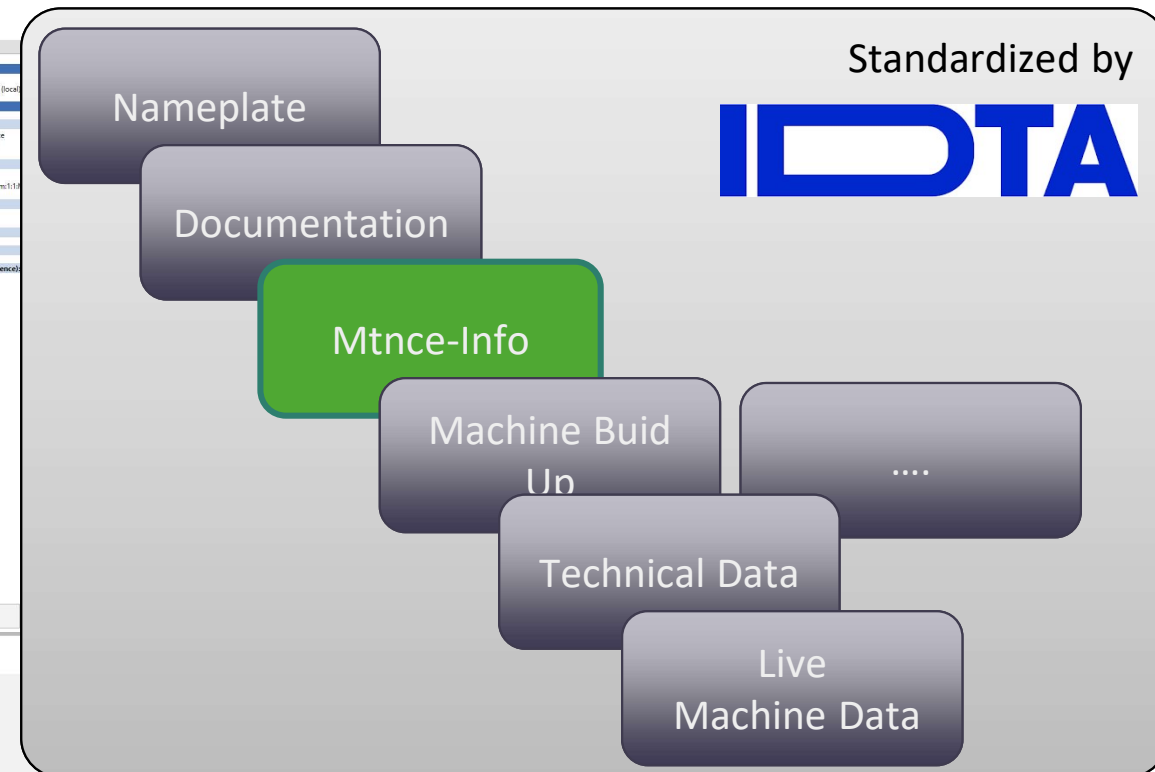
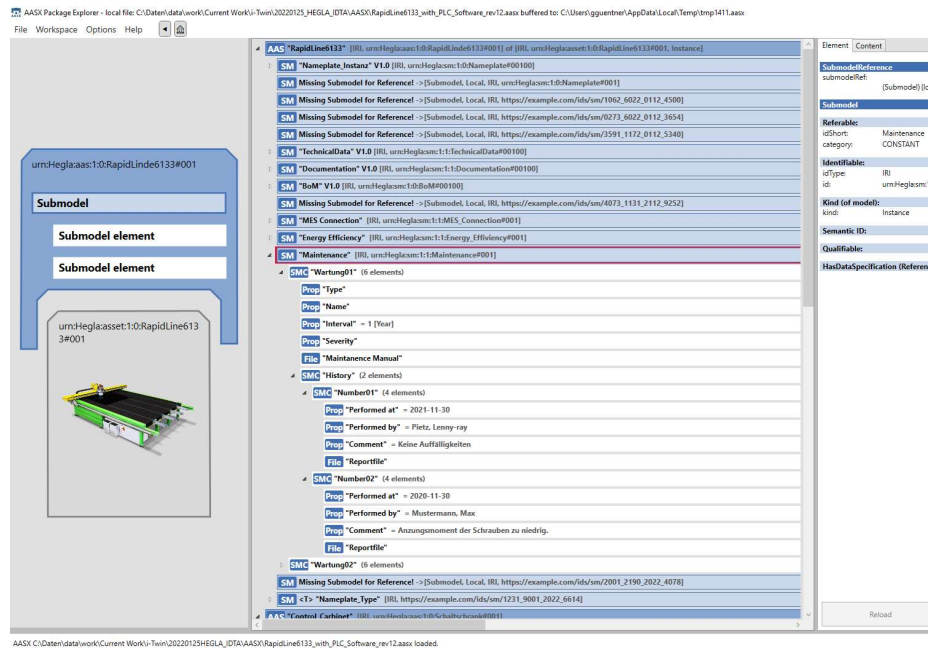
Another standard ?  
...let's smoke it in the pipe?



# Asset Admin Shell in an Nutshell

## What can we learn from Art

Ok, nice but why should I not smoke it in a pipe?  
because it holds all relevant Asset Data for you!!!!



# IDTA

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# Standardising the Industrial Digital Twin

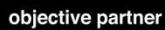
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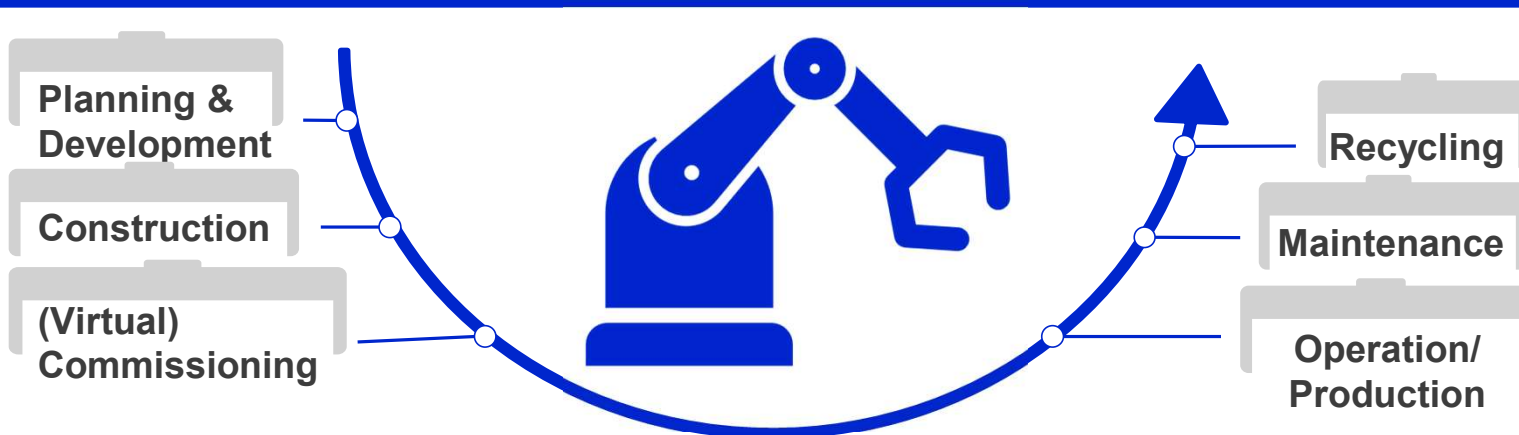
# Members: Suppliers – Users | OT – IT | Academia



# AAS: Digital Twin for the entire Asset Life Cycle

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## Asset Administration Shell



### Our goal

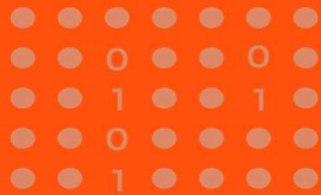
- Efficient scaling
- Standardization
- Complete life cycle

### Digital Twins today

- Application driven
- Specific & Efficient
- Only one Life Cycle
- Element

# Data and content for Asset Administration Shell

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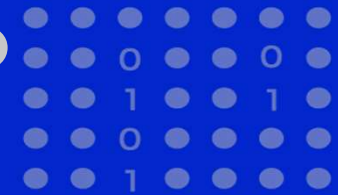
## Engineering

- 3D geometry models
- Drawings
- Simulation data
- Properties (e.g. via ECLASS)
- ...



## Documentations

- Installation and operating instructions
- Certificates
- Declaration of conformity
- ...



## Operation

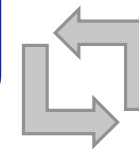
- Order data
- Operating data,
- Service Notice (e.g. via OPC UA)
- ...

# Standardized Submodels: Open Source on GitHub

## Standardized Submodels the Content of the AAS

Digital Nameplate	Contact Information	Handover Documentation	Module Type Package (MTP)	OPC UA Server Data Sheet
Software Nameplate	Engineering of Power Drives Trains	Product Carbon Footprint	Energy Monitoring	Time Series Data
Technical Data	Bill of Material (BOM)	Service Order Creation	Plant Asset Management	Simulation
Static/Life Cycle related			Active/Functions	

IDTA agile Plattform for Submodels  
– Currently >30 Submodels in Development



GitHub

# Overview of Submodel Templates on Website

<https://industrialdigitaltwin.org/en/content-hub/submodels>

**IDTA** Home Über IDTA Use Cases Technologie **Content Hub** News & Termine Suche...

IDTA TEILMODELLE

## Registered AAS Submodel Templates

Submodel Template	IDTA Number	Version	Status	View on GitHub
Inclusion of Module Type Package (MTP) Data	2001	1.0	In Review	Coming soon
Contact Information	2002	1.0	In Review	Coming soon
Generic Frame for Technical Data for Industrial Equipment in Manufacturing	2003	1.2	In Review	Coming soon
Handover Documentation	2004	1.2	In Review	Coming soon
Simulation	2005	1.0	In Development	<a href="#">GitHub</a> →
Digital Nameplate for Industrial Equipment	2006	1.1	In Development	Coming soon

## Test Result



Filename	SMT_qualified_ZVEI_Digital_Nameplate_V10.aasx
File Hash	sha256:05a7236bae192269f94b6781685f164470a16418cc33e59b0d8a7d3e1264d5dc
Testtools	0.1
Specification	3.0RC01
Date	May 12, 2022, 12:49 p.m.
Result	Passed

## Test Log

- aas:aasenv
  - aas:submodels
    - aas:submodel
      - aas:submodelElements
        - aas:submodelElement[1]

1		Compliance Test executed:
2	SUCCESS	Open file
3	SUCCESS	Read file
4	WARNING	aas qualifier on line 54 has more than one constraint, using the first one...
5	ERROR	KeyError aas:valueType on line 57 has no text!

## Asset Admin Shell is open to other Standards such as IFC4.x:

### BIM IFC4.x

- international Standard for Digital Twin of buildings
- Holds complete information set of building (Construction, Materials, Planning)

### Why is it important to integrate Machine AAS with IFC4.x: e.g.

- Engineering: Building requirements from Assets (size, load plan, media supply, AC...)
- Life Cycle:
  - Overall Energy Management,
  - Overall Facility Asset Management,
  - and many more

### Status:

- Aim is to establish cooperation until End of 2022



*„We believe that a standardized Interface between BIM IFC4.x and AAS for machines is a milestone for cross domain modelling, from which we can only guess a fragment of its future potential“*

Gunther Wölfle  
CEO buildingSMART  
Germany

# Asset Admin Shell in an Nutshell

## How it looks in real live

### Real Live Example: AAS of a Hegla Rapidcut cutting table

The screenshot displays the Asset Admin Shell (AAS) interface for a Hegla Rapidcut cutting table. The interface is divided into several panels:

- Left Panel:** Shows the AAS structure. The main AAS is "RapidLine6133" (IRI: urn:Hegla:1:0:RapidLine6133#001). It contains a "Submodel" element, which in turn contains "Submodel element" elements. One of these elements is "Maintenance" (IRI: urn:Hegla:asset:1:0:RapidLine6133#001).
- Center Panel:** Displays the detailed structure of the "Maintenance" submodel element. It lists various submodels (SM) and submodel classes (SMC) with their respective properties and values. For example, the "Maintenance" SM has properties like "Type", "Name", "Interval", "Severity", and "Maintenance Manual". It also lists "History" elements, including "Number01" and "Number02", each with properties like "Performed at", "Performed by", "Comment", and "Reportfile".
- Right Panel:** Shows the "Content" view of the "Maintenance" submodel element. It displays the "SubmodelReference" (submodelRef: (Submodel) (local) [IRI] urn:Hegla:1:1:Maintenance#001), the "Referable" (idShort: Maintenance, category: CONSTANT), the "Identifiable" (idType: IRI, id: urn:Hegla:1:1:Maintenance#001), the "Kind (of model)" (kind: Instance), the "Semantic ID", the "Qualifiable", and the "HasDataSpecification (Reference)".
- Bottom Panel:** Displays a 3D model of the Hegla Rapidcut cutting table, labeled "urn:Hegla:asset:1:0:RapidLine6133#001".

The status bar at the bottom indicates the file path: AASX C:\Daten\data\work\Current Work\Twin\20220125HEGLA\_IDTA\AASX\RapidLine6133\_with\_PLC\_Software\_rev12.aasx loaded.

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# Examples

## How it helps in real life

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### Automatic Import:

#### ➤ of Machine

- Machine Name
- Build up
- Relevant machine Documentation
- Maintenance Intervals

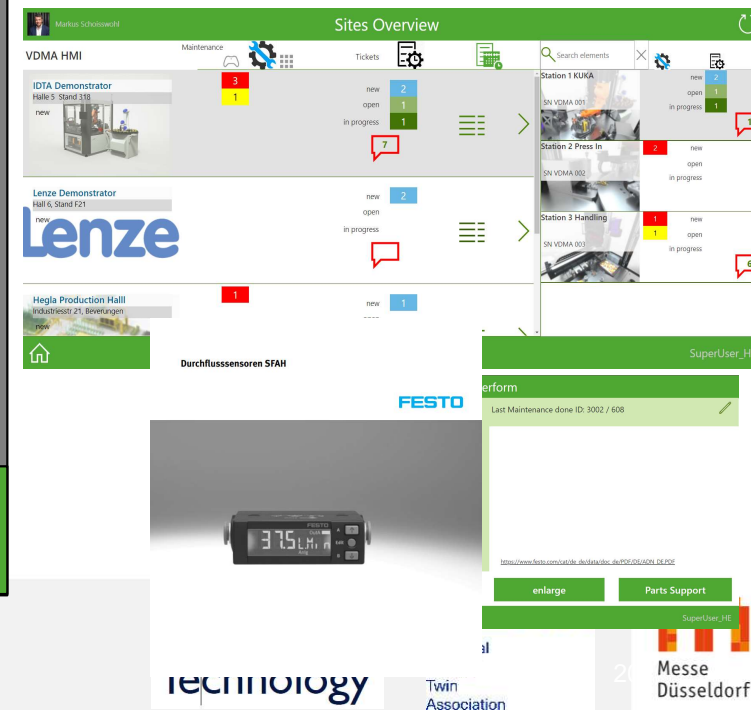
#### ➤ is a tremendous benefit!

- Reducing manual work
- Eliminating errors / omissions
- Insuring permanent access to actual data

Effort  
without  
AAS



using  
AAS



# Showcase of Hannover Trade Fair 2022

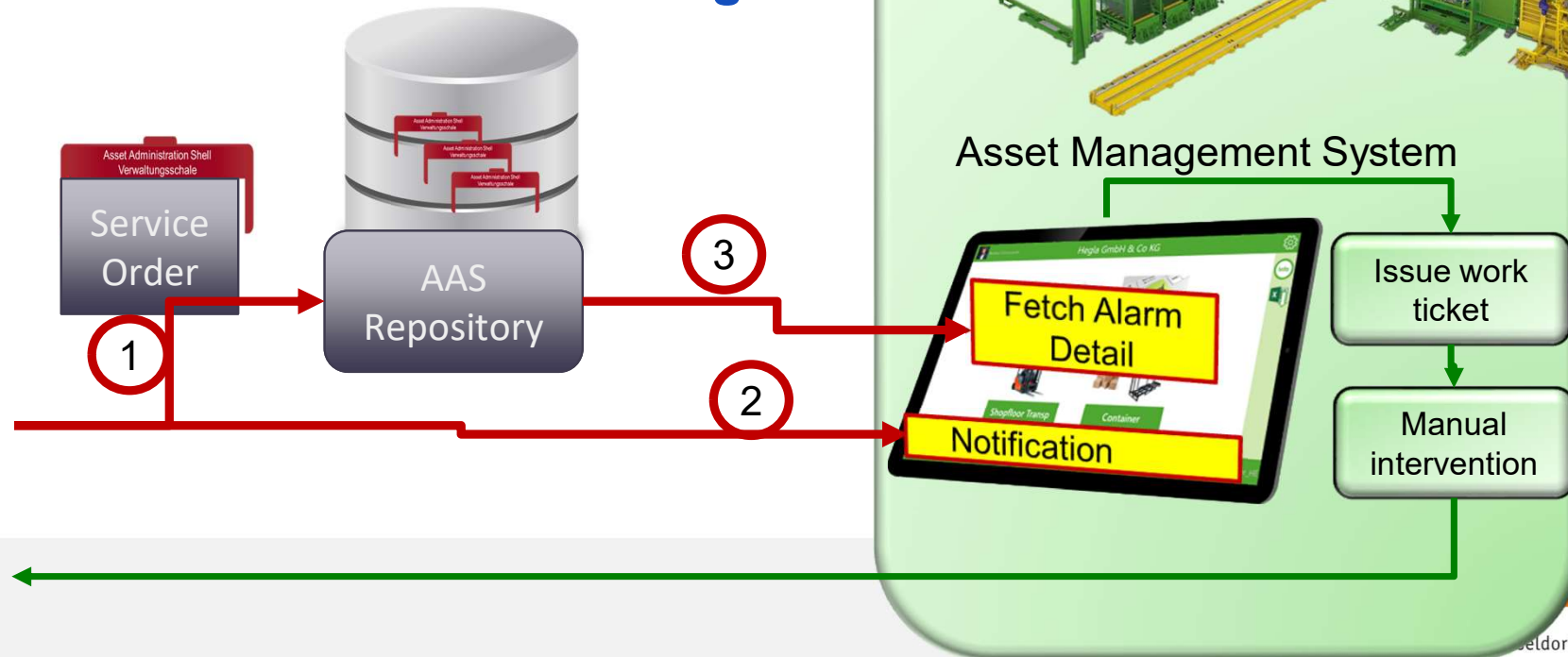
## ..let machines easily speak to Asset Management

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*Integrating Machine in Problem solving workflow with AAS*



... to ease trouble shooting !!



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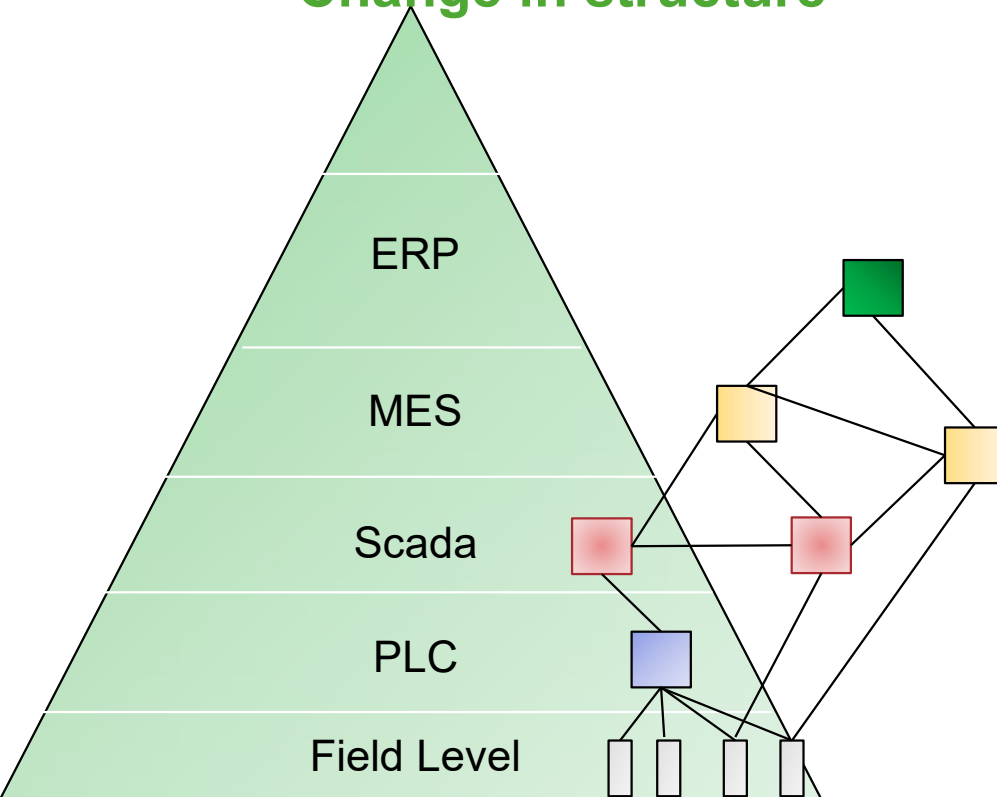


# Summary

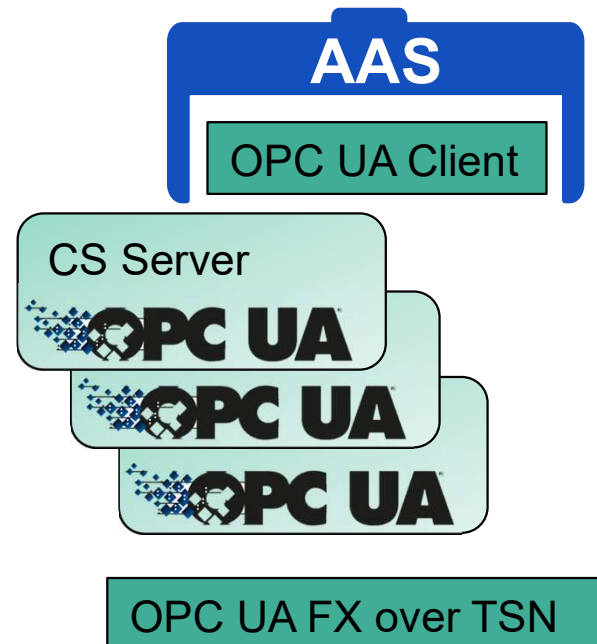
## How does it look like in Automation Structure

### How machine communication is going to change

#### Change in structure



#### Usefull technologies



#### Benefit

- ✓ Easy machine integration in organization
- ✓ Seamless machine integration into operation
- ✓ Standardized Fieldbus & connection

### The Asset Administration Shell AAS

- Is the structured way to organize your digital twin
- Is at the moment standardized by IDTA
- and saves time and money by transfer of data

.... and therefore you should not smoke it, but enjoy the pipe while AAS is doing the work for you.

