

Erste Schritte Richtung Catena-X

# Eigene Digitale Zwillinge im AAS Dataspace pilotieren

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 **Fraunhofer**  
IESE

Fraunhofer Institute for Experimental  
Software Engineering IESE

 **BaSyx**

 **NetApp®**

**IDTA**

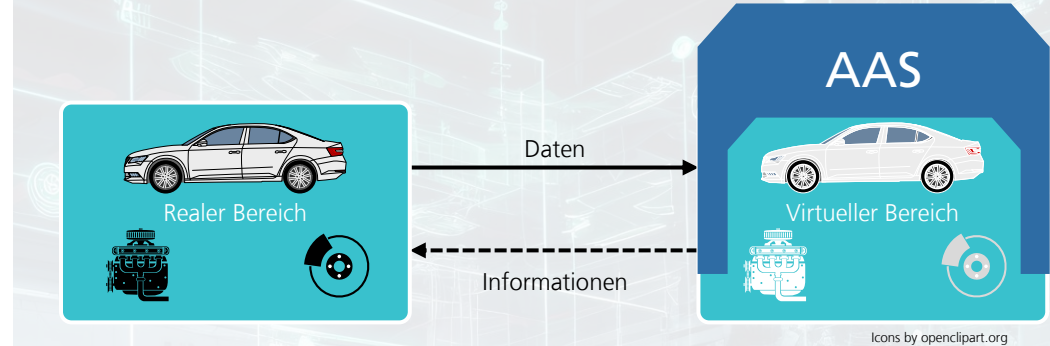
PLATTFORM  
**INDUSTRIE4.0**

# AAS Dataspace for Everybody

## AAS Adaption & Nutzeranforderungen

### Weite Verbreitung der Verwaltungsschale (VWS / AAS)

- Early-Adopter und technologieaffine Unternehmen
- Open-Source Lösungen sind für Nicht-Early-Adopter oft schwer aufzusetzen
- Komplexere Anwendungen brauchen komplexere Technologie-Stacks
- → Wir brauchen eine **einfache** Lösung zur Arbeit mit der AAS, Digitalen Zwillingen und zum Teilen der Daten



**NECEPTION** Neception® Digital Twin Infrastructure  
 Addressing the generation of interconnected digital information hubs by the best existing of your information data standardized Asset Administration Shell (AAS) and SAP, integrated data from ERP, CRM, MES, PLM, and other systems. The AAS provides the information and data automatically to an AAS. This allows companies to react to changes in real time. The AAS provides the information and data automatically to an AAS. This allows companies to react to changes in real time. The AAS provides the information and data automatically to an AAS. This allows companies to react to changes in real time.

**IDA** Home of the AAS  
 Get ready for the industrial implementation of the AAS. Get all the information and updates on the AAS information system, tools, standards and developments from this one stop shop for the AAS.

**MSG** Simplified System Design based on AAS  
 You are creating offerings and services for your customers? You are in a highly competitive environment? This presentation case Digital Twin based on the AAS-IP2022 introduces a new way of thinking and working. It shows how the AAS can be used to create a digital twin of your product and how this can be used to improve your business.

**BOSCH** Scaling Interoperable Digital Twins powered by Bosch Semantic Stack  
 Bosch Semantic Stack enables data-driven solutions for a wide range of digital transformation use cases. It provides a common data model and a set of tools and services that enable companies to create digital twins of their products and processes. This allows companies to react to changes in real time. The AAS provides the information and data automatically to an AAS. This allows companies to react to changes in real time.

**Classing** AAS Files for Manufacturer Products  
 Classing offers a solution that allows manufacturers to create Asset Administration Shells (AAS) for their products. This allows companies to react to changes in real time. The AAS provides the information and data automatically to an AAS. This allows companies to react to changes in real time.

**OBJECTIVE PARTNER** Budy Enterprise - AAS Management  
 With Budy Enterprise, you can create and edit AAS and manage them. Budy Enterprise makes your AAS active by linking them to the resources and data of your AAS and allowing you to manage them. This allows companies to react to changes in real time. The AAS provides the information and data automatically to an AAS. This allows companies to react to changes in real time.

**Schneider Electric** Control Cabinet Panel - Digital Product Passport 4.0  
 The digital product passport (DPP) is a key element of the AAS. It provides the information and data automatically to an AAS. This allows companies to react to changes in real time. The AAS provides the information and data automatically to an AAS. This allows companies to react to changes in real time.

**Durkert** Showing the Interoperability with the AAS  
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**UBEREDGE** All-in-one Edge with Integrated Private 5G Network  
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**UNIBERG** Digital Twin Suite for Digital Twins  
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**Fraunhofer** AAS for Interactive Digital Twins  
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**ZVEI** DPP4.0 - The Digital Product Passport for Industry 4.0  
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**Digital Product Passport for Connectors**  
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**inewo** Generation and Provision of AAS  
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**SAP** Digital Twin Ecosystem  
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**NOVATEC** The Digital Twin of a Greenhouse  
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**OK 'You' Robot**  
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**bill-X** Smart City and Smart Factory  
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**CONTACT** AAS in the Context of Engineering Data Management  
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**MITSUBISHI ELECTRIC** Automated Asset deployment via AAS  
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**SYSTEMS** The Power of Virtual Twins for Industry Transformation  
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**Plattform Industrie 4.0**  
 12,590 followers  
 1w · 5

**🔍 Datenraum zum Ausprobieren? Einfach mal loslegen? Das geht – am 7. Mai startet der AAS Dataspace 4 Everybody, ein Angebot ausdrücklich für kleine und mittlere Unternehmen.**  
 ...see more

See translation

The man is speaking in front of a large screen displaying a timeline of AAS development from 2010 to 2022. The timeline includes milestones like 'AAS in the Context of Engineering Data Management' and 'Automated Asset deployment via AAS'.

# Catena-X, Manufacturing-X, ...-X

## Anwendungsfälle für Digitale Lieferketten

### Diverse ...-X Projekte

- Anwendungsfälle für u.a. digitale Lieferketten
- Datenmodelle, ggfs. neue AAS Teilmodelle
- Governance, Prozesse, Herausforderungen, Lösungen, ...
- Meilenstein der Digitalisierung für Deutschland und Europa

#### Product Innovation Collaboration

- Digital Name Plate
- Digital Product Passport
- Change Notification
- Collaborative Innovation Tools
- Digital Twin for Collaborative Engineering
- ...

#### Production Optimization / Autonomous Factory

- Collaborative Condition Monitoring
- Federated Learning
- Collaborative Quality Management
- Modular Manufacturing
- Digital Twin for Process Simulation
- Self Configuration of Components
- ...

#### Supply Chain Transparency

- Material Traceability
- Synchronous Planning for Production
- Demand & Capacity Management
- ...

#### Energy & CO<sub>2</sub>-Management

- Energy Efficiency & Load Balancing
- Dynamic CO<sub>2</sub> Tracking & Management
- Energy Load Management
- Circularity
- ...

### Gründe für den Erfolg der Verwaltungsschale

- Einigung zwischen vielen Partnern, gemeinsame Anstrengung
- Wir konnten die AAS Nutzen, Testen, "damit Spielen"
- Neue Use-Cases im Kontext von Demonstratoren Testen
- Proof-of-Concepts entwickeln
- Real nutzbare Lösungen entwickeln
- **Benötigen wir eine Prototyping-Umgebung für Datenräume?**

### SUCCESS-STORIES



#### ZF FRIEDRICHSHAFEN AG

Flexibility and faster changes with Eclipse BaSyx – ZF Friedrichshafen AG is using Eclipse BaSyx to react quickly to changes. ZF experts integrated Eclipse BaSyx in a prototype manufacturing line, including digital twins and lot size one manufacturing. Now, changing the automated manufacturing process can happen in only a few minutes. This efficient adaptation enables the efficient production also of smallest lot sizes. Furthermore, the integration of new devices into the process is now 30% percent faster, compared to the traditional automation used before.

[REFERENCE](#) [CONTINUE READING](#)



#### SARTORIUS LAB INSTRUMENTS GMBH & CO. KG

In close cooperation with Fraunhofer IESE, Sartorius used Eclipse BaSyx to develop a modern system architecture with asset administration shells that supports the manufacturing of a high number of product variants. By using the standard components of Eclipse BaSyx, rapid success was achieved and a modular, versioned and flexible production was developed in an efficient and standardized approach.

[CONTINUE READING](#)



#### BOSCH REXROTH AG

Next generation manufacturing showcase: Robert Bosch GmbH was involved from the beginning in the development of the Eclipse BaSyx middleware. The Bosch Customer Experience Center CU.BE in Ulm showcases the potential of Eclipse BaSyx together with revolutionary solutions of Robert Bosch GmbH and Bosch Rexroth AG to realize next generation manufacturing.

[CONTINUE READING](#)



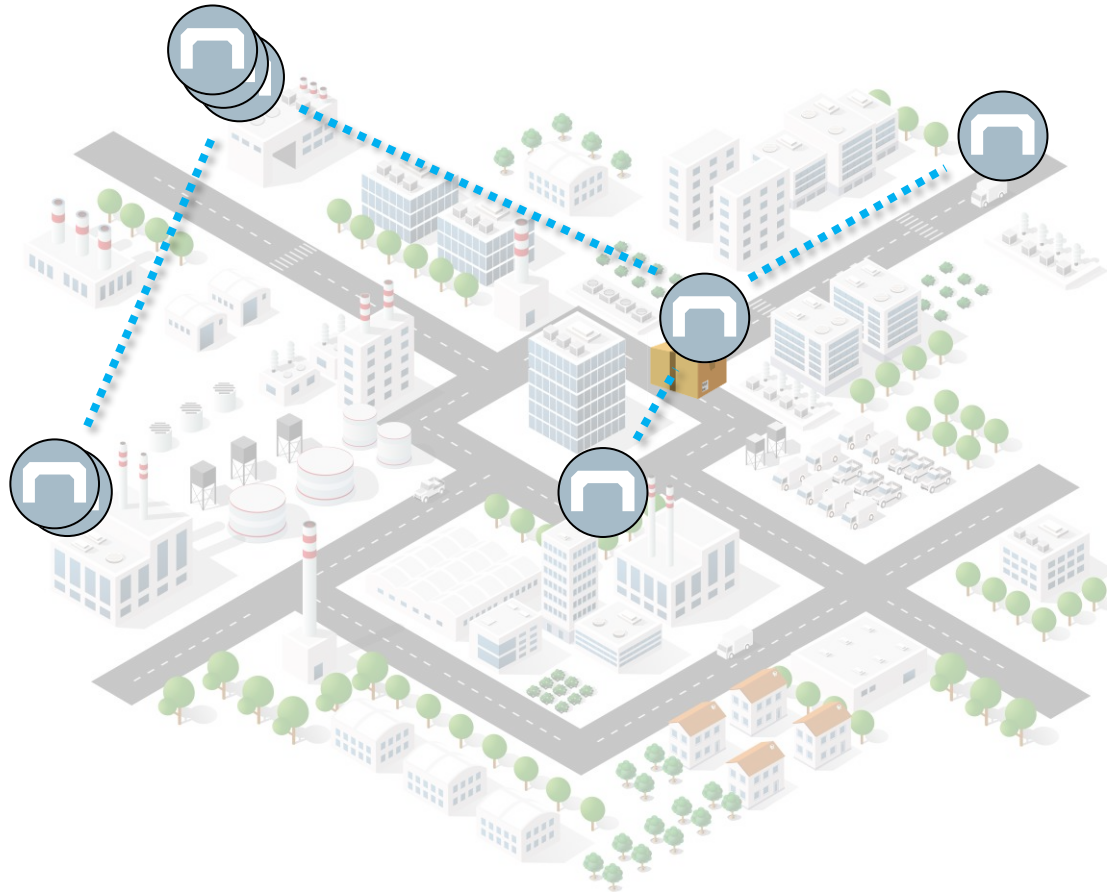
#### SICK AG

Creating a harmonized data space for an efficient intra-logistics SICK is one of the world's leading suppliers of sensor solutions for automation applications in factories, logistics and processes. As a technology and market leader, SICK creates the basis for safe and efficient control of processes, protection of people from accidents and prevention of environmental damage with sensor intelligence and application solutions. SICK controls its intra-logistics using event-based dynamic dispatching with the aim of increasing efficiency and flexibility.

[CONTINUE READING](#)

# AAS Dataspace for Everybody

## Motivation



## AAS Dataspace – Einfacher Austausch mit Digitalen Zwillingen

### Schnelle Einrichtung und Integration AAS-basierter Umgebungen

- Vorkonfigurierte Enterprise ready Umgebung für Digitale Zwillinge (DZs)
- Niedrige Einstiegshürden für DZs
- Bewährte und gepflegte AAS-Software-Setups und AAS-Tools
- Einfache Integration eigene Tools, Lösungen und Dienstleistungen

### Vereinfachtes Teilen der Zwillinge

- Erfahrungen sammeln durch die Realisierung von Datenräumen für DZs
- Evaluierung des Teilens von Teilmodelltypen
- Zugriff auf maschinenlesbare Definitionen von AAS-Teilmodellen

### Schnelle Einrichtung von AAS-Datenräumen

- Integration AAS-basierter Digital Twins mit Ihrer IT, OT und Ihren Geschäftsmodellen
- Integration von Datenraumtechnologien in Ihre Produkte, Prozesse und Dienstleistungen
- Entwicklung neuer Lösungen, Datenfreigabekonzepte und Geschäftsmodelle
- Testen und Skalieren von Digital Twin- und Datenraumlösungen

### Prototypen von unternehmensübergreifenden Digital Twins

- Realisierungspartner können effizient maßgeschneiderte AAS-Umgebungen für Benutzer einrichten
- Übertragung von Software-Setups in kommerzielle Hosting-Lösungen

### Realisierung von Kundenerlebniszentren und Prototyping-Umgebungen

- Aufzeigen der Vorteile der Verwaltungsschale und der Datenraumtechnologie für eigene Kunden
- Evaluierung der Integration von Datenraumtechnologien in Ihre Produkte

### Erstellen von Lern- und Trainingsumgebungen

- Schnelles Replizieren von AAS-Setups für Bildung und Training

# Verwaltungsschalendatenraum für Jedermann

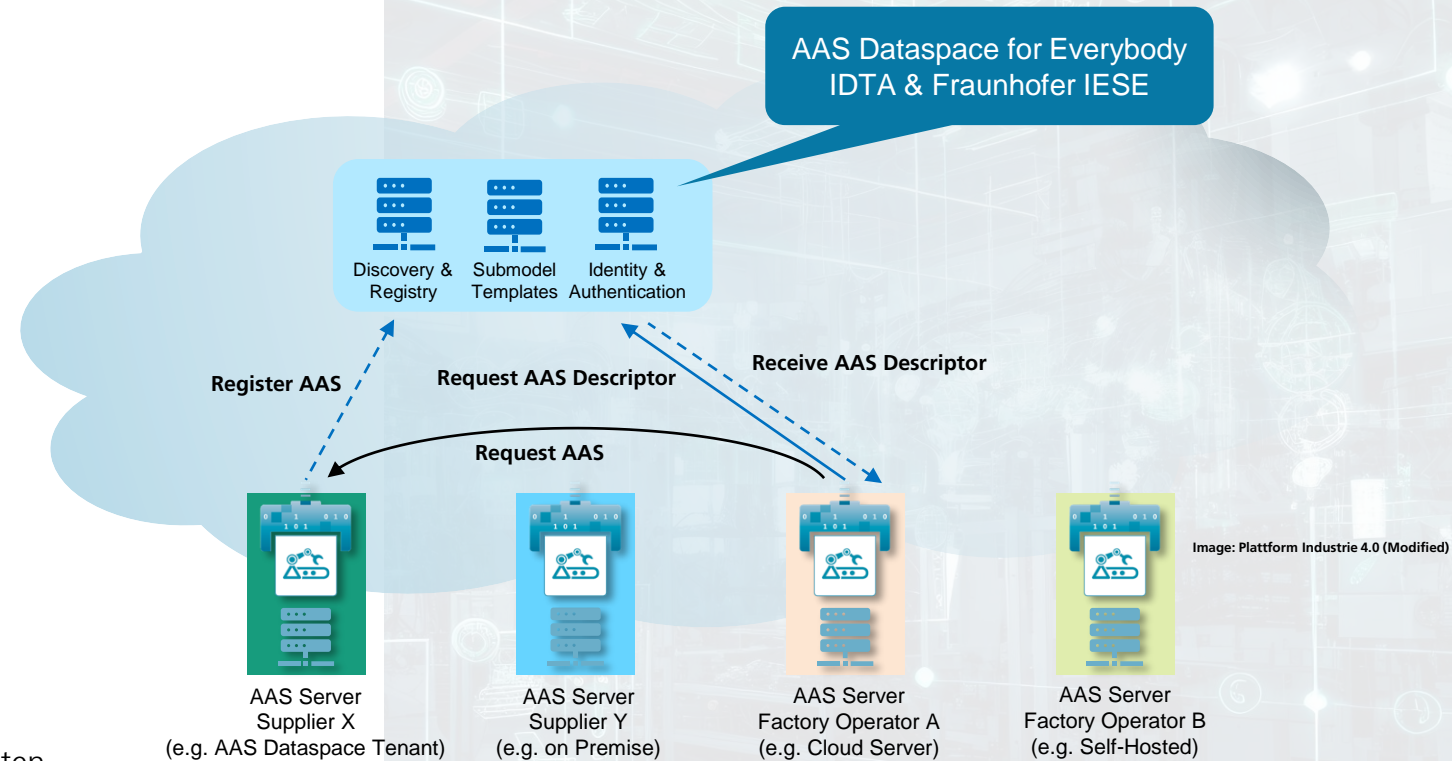
## Einfaches Teilen von Verwaltungsschalen-basierten Digitalen Zwillingen

### AAS Dataspace

- Teilen von AAS-basierten Digitalen Zwillingen
- Zugriff auf validierte AAS-Teilmodelle
- Einfache Zugriffskontrolle - **Welche** Daten werden **wann mit wem** geteilt?
- Prototypenumgebung für AAS-basierte Datenräume

### AAS-Infrastruktur

- Digitale Zwillinge bleiben auf den Servern der Unternehmen
- Der Datenraum stellt AAS-Templates, eine Registry und einen Identitätsprovider bereit
- Damit finden Nutzer Digitale Zwillinge auf Servern der Unternehmen
- Der Datenraum speichert dabei nur Links auf die AAS, nicht deren Daten



# AAS Dataspace for Everybody

## AAS-basierte Digital Twin-Umgebungen

### AAS-Infrastruktur: AAS/Digital Twin Umgebungen

#### Enterprise Ready AAS-Umgebung als Software-as-a-Service

- Enterprise Ready AAS-Deployments (Skalierbarkeit, Storage, Backup, Verfügbarkeit, ...)
- Vorkonfigurierte AAS-Umgebung (EDC, Frontends, weitere Tools)
- Einfache Integration von IT, OT, AAS, und Dataspaces in der eigenen Umgebung
- Inkl. Lösungen von qualifizierten Partnern
- Schnelle Einrichtung maßgeschneiderter AAS-Umgebungen

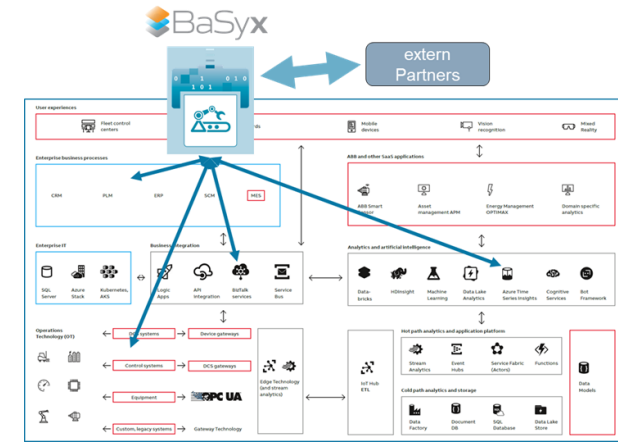
#### Erste Erfahrungen mit der Technologie sammeln, Kontinuierlicher Mehrwert

- Anpassung und Übertragung in andere Umgebungen (etwa self-hosted) möglich

### Automatisiertes Deployment der Software Infrastruktur

#### Anpassbare AAS-Umgebungen

- In einem eigenen, isolierten „Tenant“ als Umgebung
- Modular und Adaptierbar



- AAS Registry / Repository
- SM Registry / Repository
- Storage backend / Persistency layer
- Data bridge

+



Streamsheets (Data analytics, visualization)      Web-UI (Data access)      Node.RED (Automate processes)

+

Python scripting, Camunda (Lot size 1), ...

+

Enterprise runtime

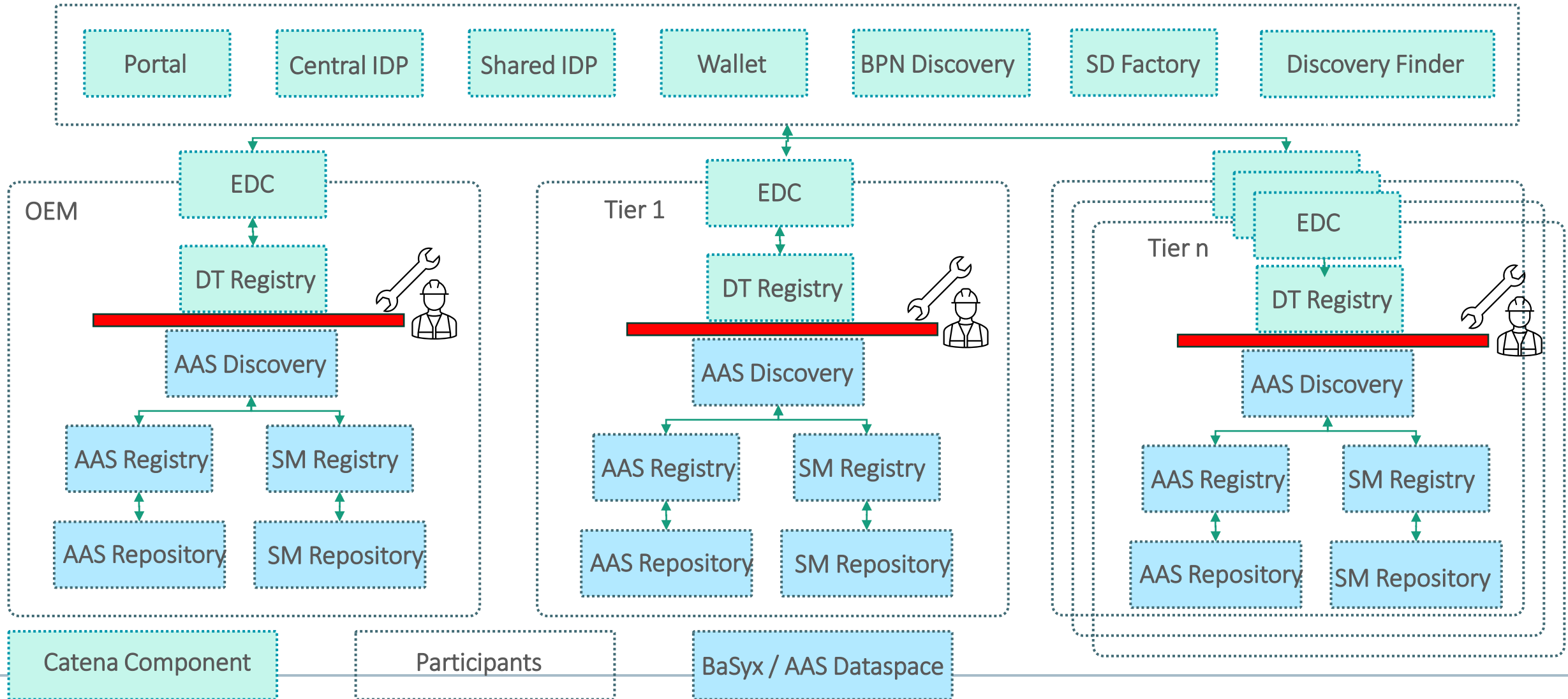
# AAS Dataspace for Everybody

## Kickoff – Impressionen



# AAS Dataspace & Catena-X (vereinfacht)

Catena X – Umsetzungsunternehmen





# AAS Dataspace for Everybody

## Kontakt Information

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### AAS Dataspace for Everybody

- Vereinfachtes Roll-Out und Testen von AAS-basierten Lösungen
- Das Ökosystem zur Nutzung und zum Teilen von AAS-basierten Digitalen Zwillingen
- Direkter Vorsprung in der Digitalisierung

### Kontakt-Informationen

- Rene Fischer
- [rene-pascal.fischer@iese.fraunhofer.de](mailto:rene-pascal.fischer@iese.fraunhofer.de) | [AASDataspace@iese.fraunhofer.de](mailto:AASDataspace@iese.fraunhofer.de)

