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# FRAUNHOFER IOSB

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## Sharing Asset Administration Shells + International Data Spaces in Factory Environments

Demonstrator with “TableSort”

Dr. Ljiljana Stojanovic, Friedrich Volz



Karlsruhe



Ettlingen



Ilmenau



Lemgo



Görlitz

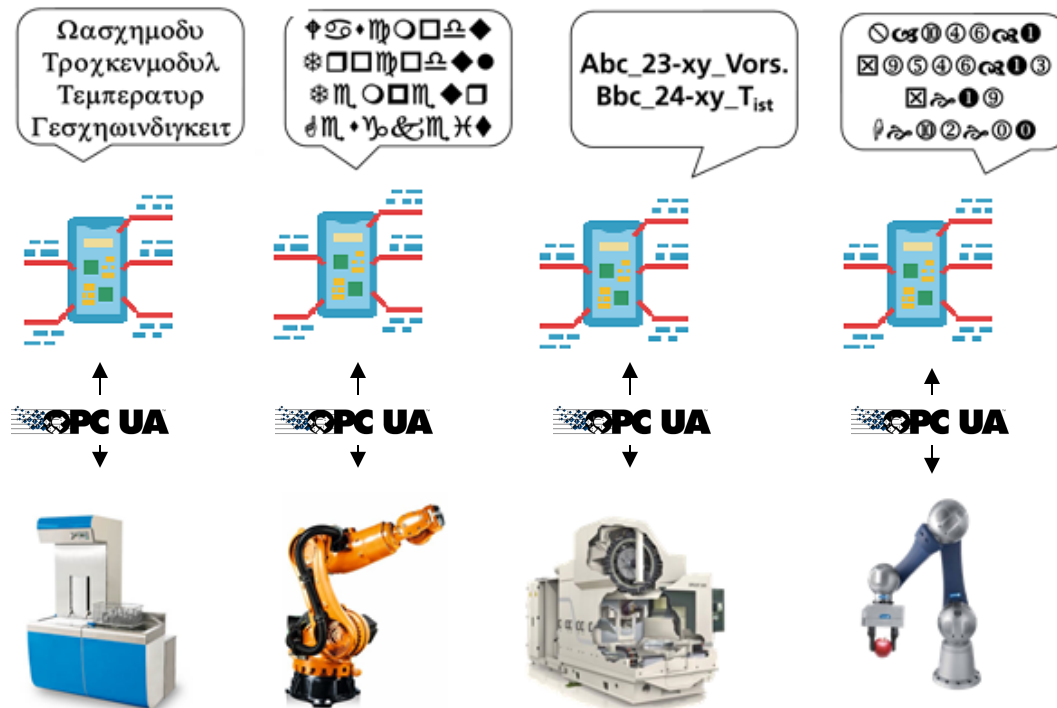


# MOTIVATION

## ASSET ADMINISTRATION SHELL

- Manufacturers create **digital twins** with different protocols & information models

Digital Twins





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# MOTIVATION

## ASSET ADMINISTRATION SHELL

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- There are different standardization approaches, but none has reached critical mass yet
- **Asset Administration Shell** → Platform Industry 4.0 specification → uniform information exchange with a set of protocols (REST, MQTT, OPC UA) and a standardized information model

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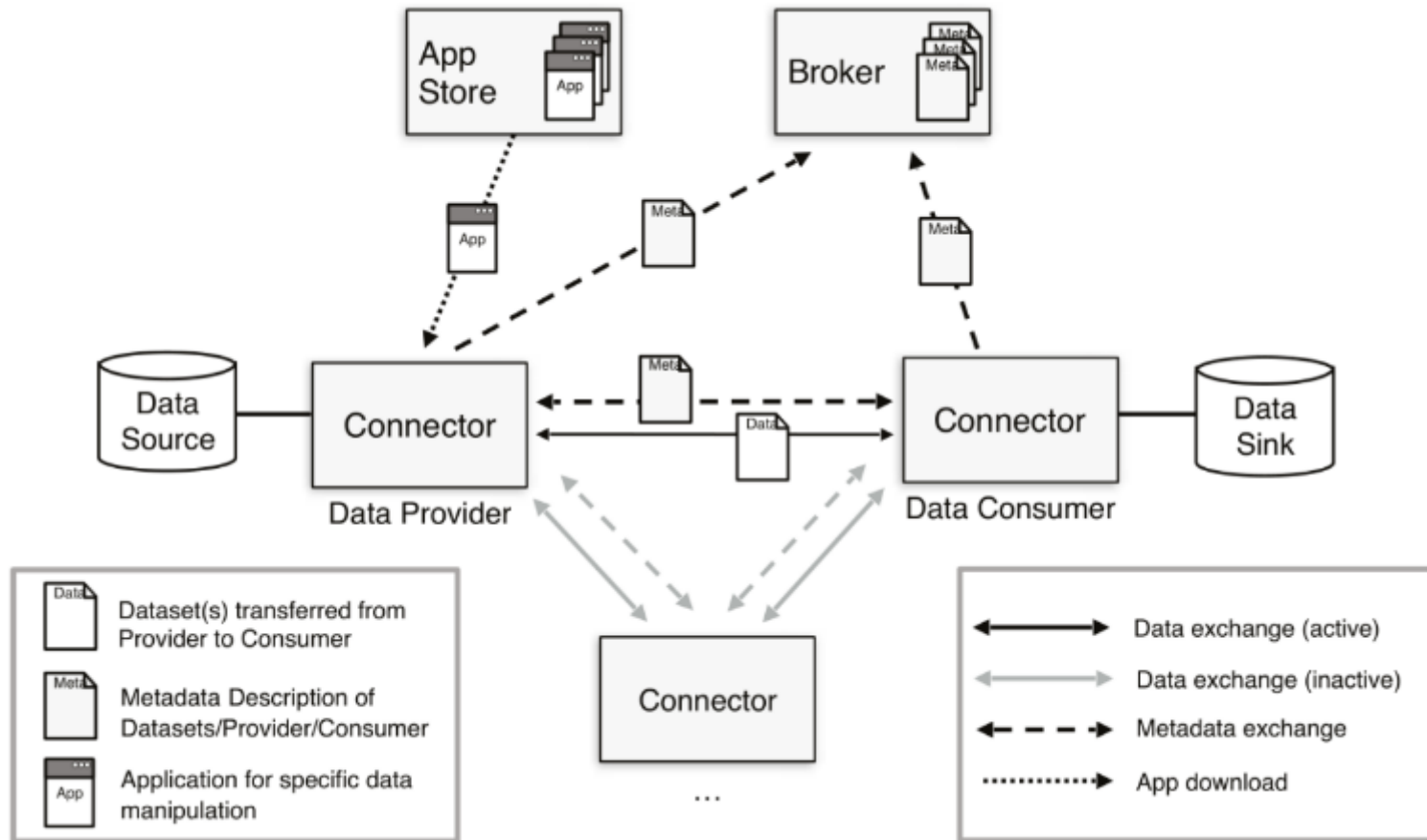
# MOTIVATION

## INTERNATIONAL DATA SPACES

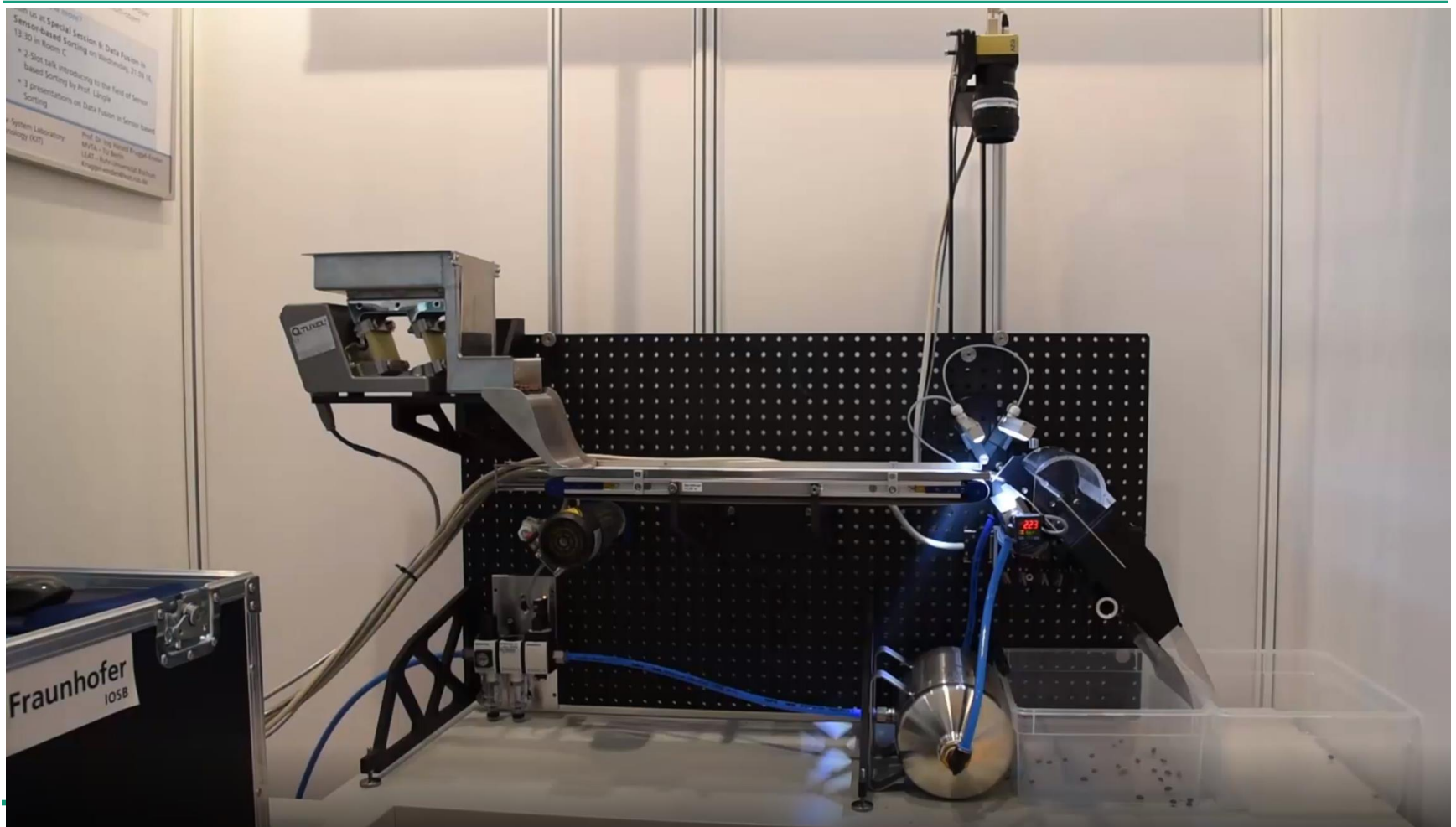
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- Currently no **standardized** data exchange platform in Europe
- Data exchange is **final**
  - when data is sent out or requested, the data consumer is responsible for storing and using it properly
  - security?
  - trust?
- **International Data Spaces (IDS)**

# INTERNATIONAL DATA SPACES



# OUR DEMO SCENARIO





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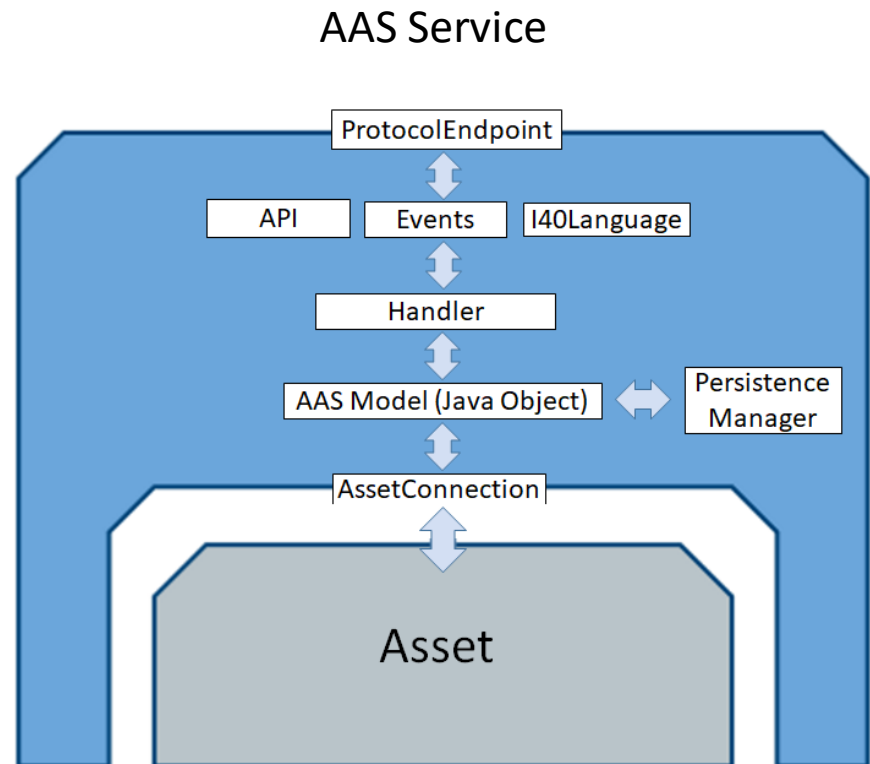
# INTEGRATION OF OPC SERVERS

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- How to integrate factory OPC servers in use-cases?
  - Possibilities:
    - Remodel existing OPC servers with AAS Companion Specification
    - Problem: OPC servers are not accessible with REST/MQTT
    - Fraunhofer IOSB Solution: Create an AAS Service

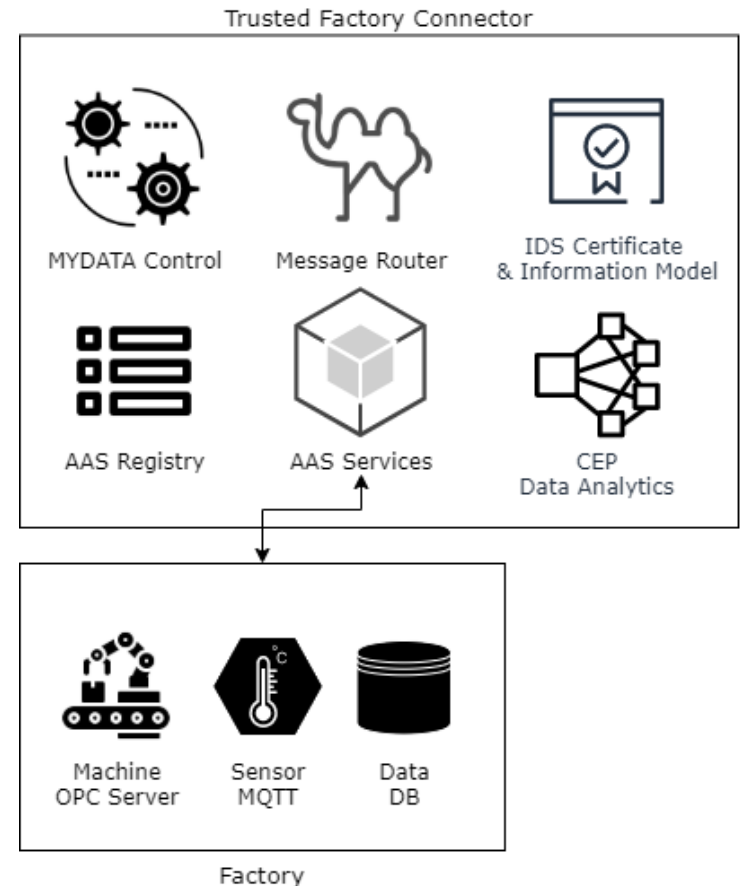
# AAS SERVICE

- AAS Service:
  - Integration of AASs in different formats
  - AAS services support AAS API
  - AAS services take over communication
  - AAS Registry is ready
  - → will be available as open-source soon!



# OUR WORK ON COMBINING AAS AND IDS

- **Trusted Factory Connector** as a gateway to the IDS
- Connects any factory to any IDS participant
- Based on existing Trusted Connector solution
- Supports additional Apps:
  - AAS Services to connect to factory assets over OPC UA, MQTT and proprietary asset connections
  - Data Usage Control and Provenance with the IDS Framework “MYDATA Control”
  - AAS Registry





# Coffee Bean Order Dashboard

Updated on 2020-10-21 14:28:06

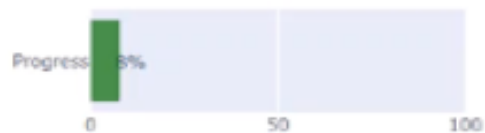
## Detected objects



## Order details

Order date: : 2020-10-21T13:44:00Z  
Amount : 50

## Total Progress



Estimated Remaining Time: t min

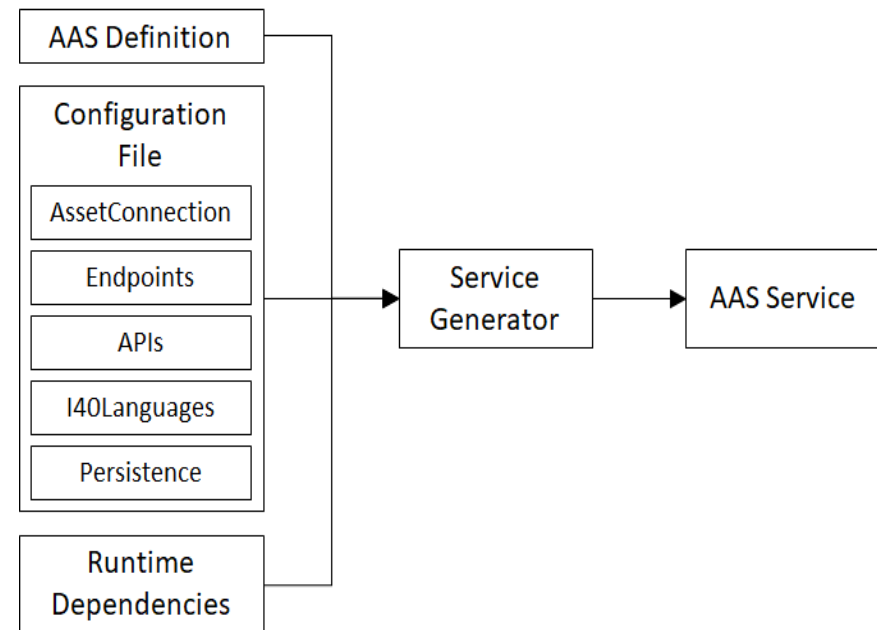
## Ordered beans

Type : Arabica  
Country : Brazil  
Roast : Light - Cinnamon  
Minimum Screen Size : 10  
Maximum Screen Size : 15  
Allow fractured : false

# CURRENT WORK & NEXT STEPS

- AAS related software:
  - Implement **AAS Service Generator & AAS Manager**
  - Improve **AAS Service (automatic AAS meta model updates)**

- → release open-source  
**“FAST for Digital Twins”**  
(Fraunhofer AAS Tools)



# Thank you for your attention!

## Dr. Ljiljana Stojanović

Head of “Smart Factory Systems“  
Fraunhofer IOSB, Fraunhofers tr. 1  
76131 Karlsruhe, Germany  
Tel.: +49-721-6091-287  
Email: [ljiljana.stojanovic@iosb.fraunhofer.de](mailto:ljiljana.stojanovic@iosb.fraunhofer.de)

## Friedrich Volz

Member of “Smart Factory Systems“  
Fraunhofer IOSB, Fraunhofers tr. 1  
76131 Karlsruhe, Germany  
Tel.: +49-721-6091-392  
Email: [friedrich.volz@iosb.fraunhofer.de](mailto:friedrich.volz@iosb.fraunhofer.de)

