



PUBLIC

Aerospace & Defense: Analytics Enabled Airline - Co-Innovation & Research

17 Members



Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages

FAU
FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

TECHNISCHE
UNIVERSITÄT
DRESDEN

Rolls-Royce

MTU Aero Engines
DIEHL
Aerospace

JEPPESEN
AEROTEC COMPANY



INFORM

Universität Stuttgart



P A C E
a TXT company

BOEING

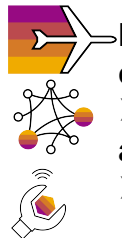
TECHNISCHE
UNIVERSITÄT
DARMSTADT

Technische
Universität
Braunschweig

Fraunhofer
FKIE

DLR
SAP

Use Case



Holistic optimization of airline operation by connection all relevant stakeholders with SAP Data Hub and predict maintenance issues using SAP Predictive Maintenance and Service

Optimizing data orchestration for MRO (Co-Innovation & Research Programme)

Background:

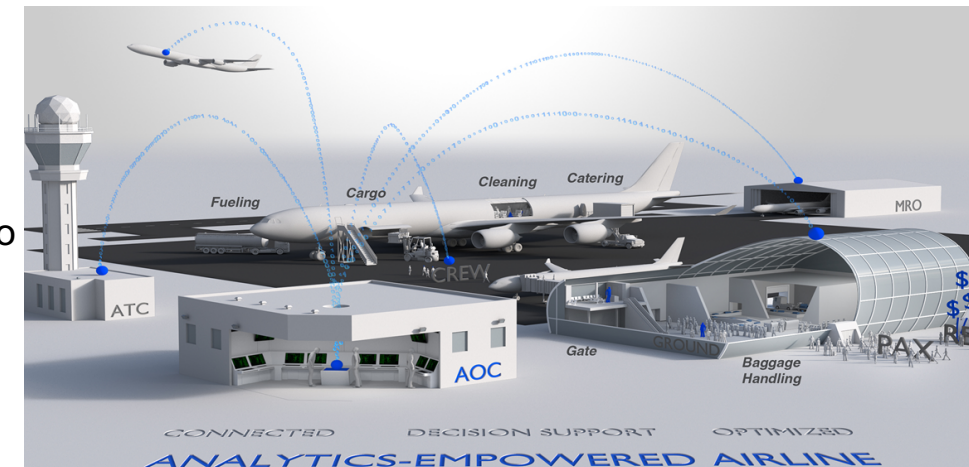
Since 1995, the German Federal Government has promoted the research and technology development in the "LuFo" aviation research programme. The main focus of the current, fifth, edition of the programme includes strengthening the sector as a lead market for Industrie 4.0, and developing new digital products.

Objective:

The goal is to enable aircraft manufacturers, operators and suppliers to operate more efficiently, thereby increasing the efficiency of global aviation.

Status:

- Prototype of data orchestration platform: Partner systems connected to SAP Data Hub & 1st data orchestration realized
- Prototype of decision making system for maintenance scenario
- Presentations at external industry events



Challenge statement

Question of data sovereignty

- Today's situation: OEMs create their own data platform try to get all other stakeholders on their platform to get more insights and to realize the digital twin and digital thread.
- Challenge: collaboration versus competition and getting the most value out of the available data.
- This challenge is also part of the OPs-TIMAL project.

LUFTHANSA TECHNIK UND AIRBUS

In der Luftfahrt tobt der Kampf um die Datenhoheit

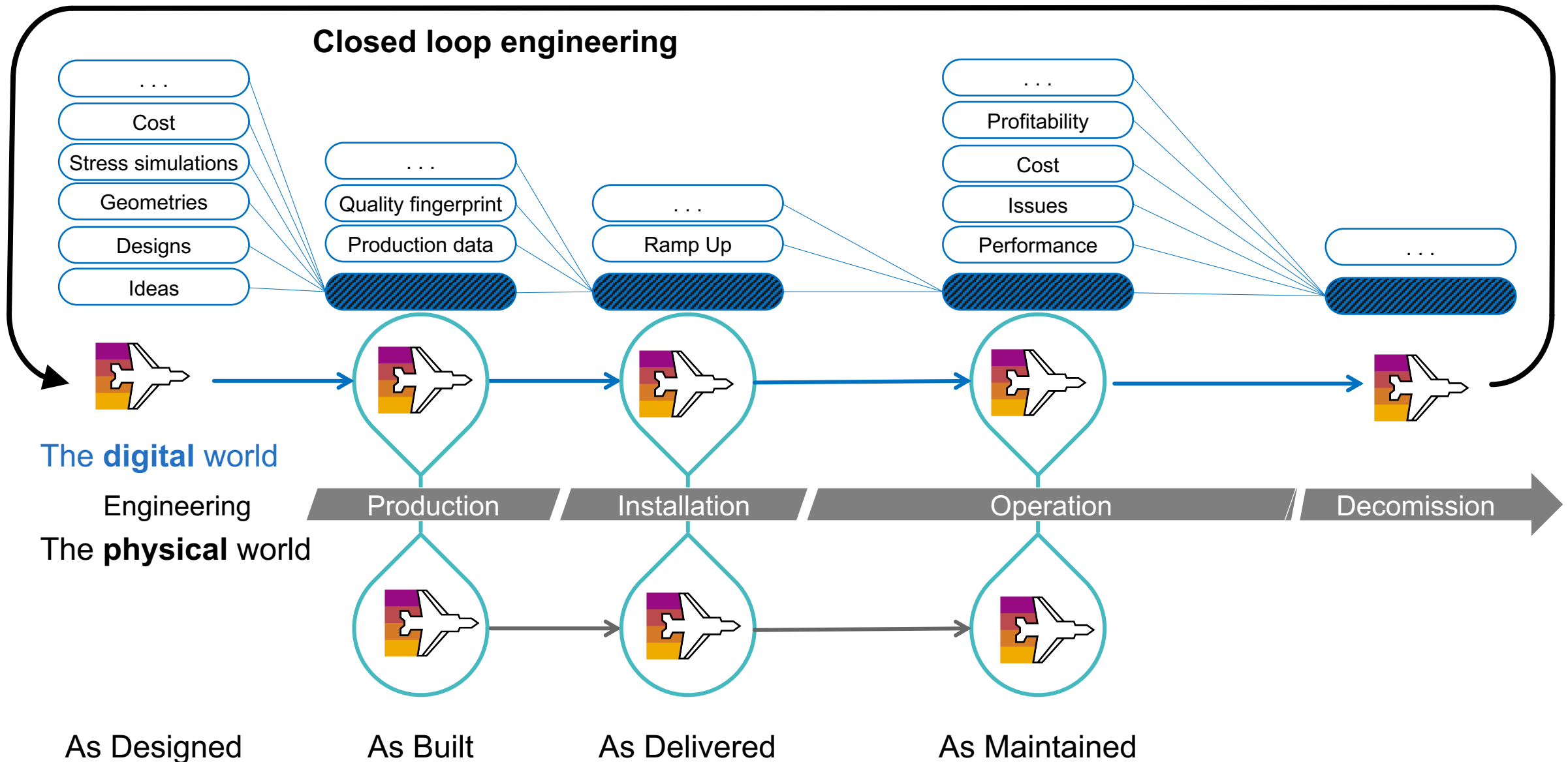
Der Plan des Flugzeug-Herstellers Airbus, das Google der Luftfahrt zu werden, stößt auf massive Kritik bei Lufthansa Technik. Man fürchtet ein Daten-Monopol.

The story behind: Digital Twin

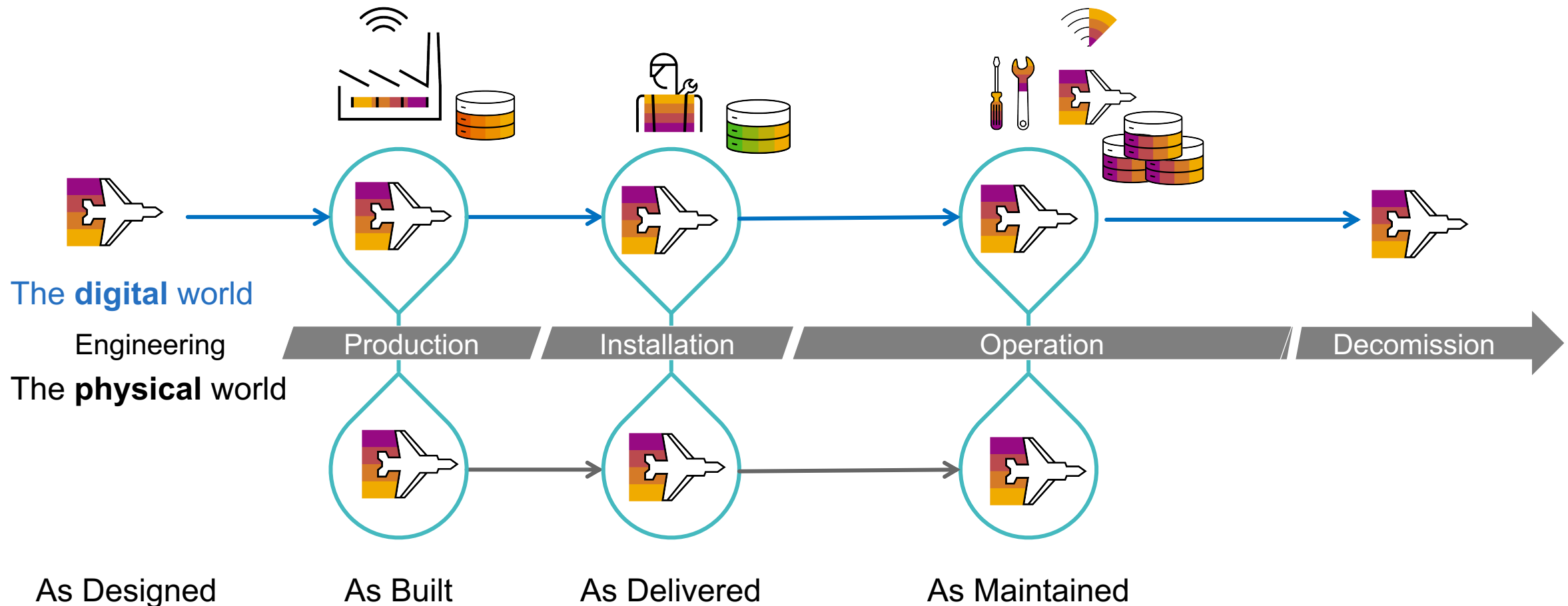
The more data is available on an entity or a thing, the more complete and powerful the Digital Twin gets.



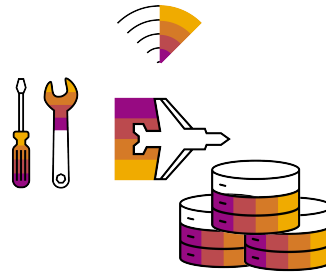
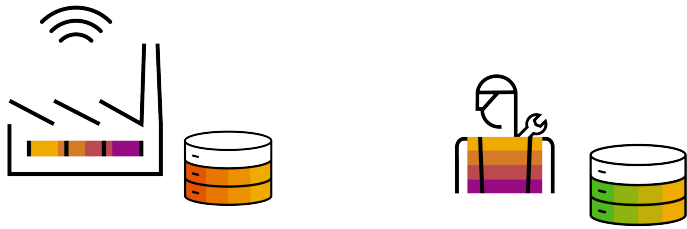
The **digital twin** needs to cover the entire life-cycle



The **digital twin** in aerospace challenges



The digital twin in aerospace challenges

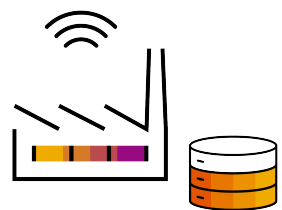


There are a lot of different stakeholders and parties involved:

- Airports
- Airlines
- Aerospace control
- Limited resources like
 - Time
 - Kerosin
 - money

The digital twin

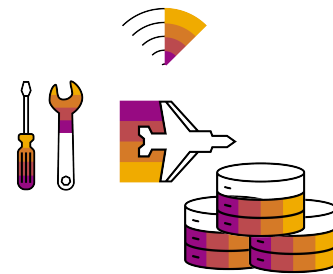
Centralized data lake



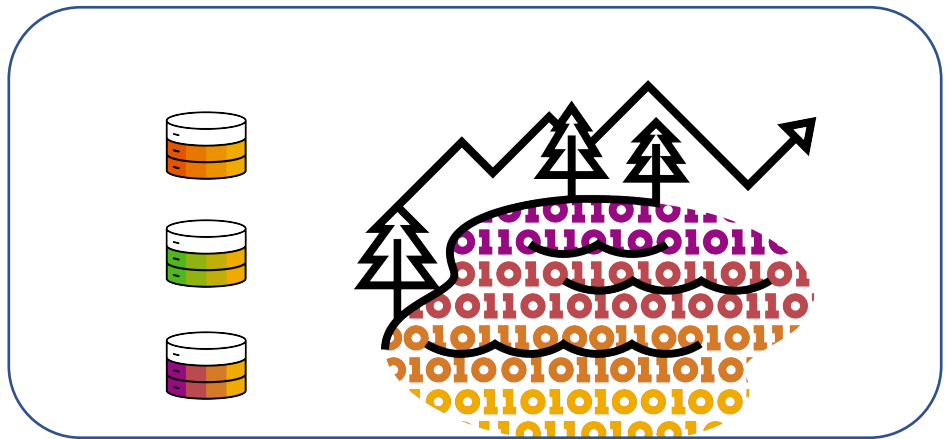
Replicate data



Replicate data

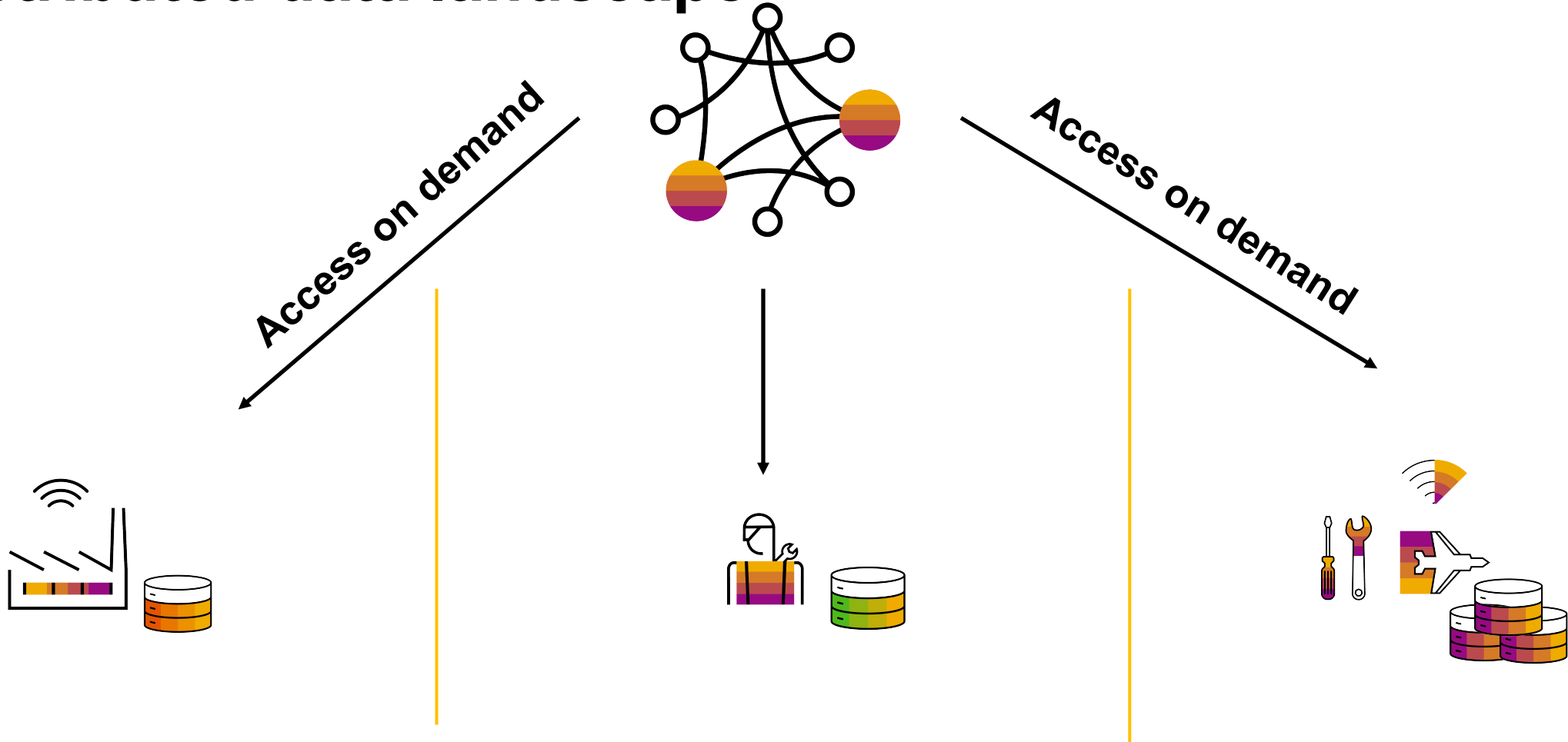


Replicate data



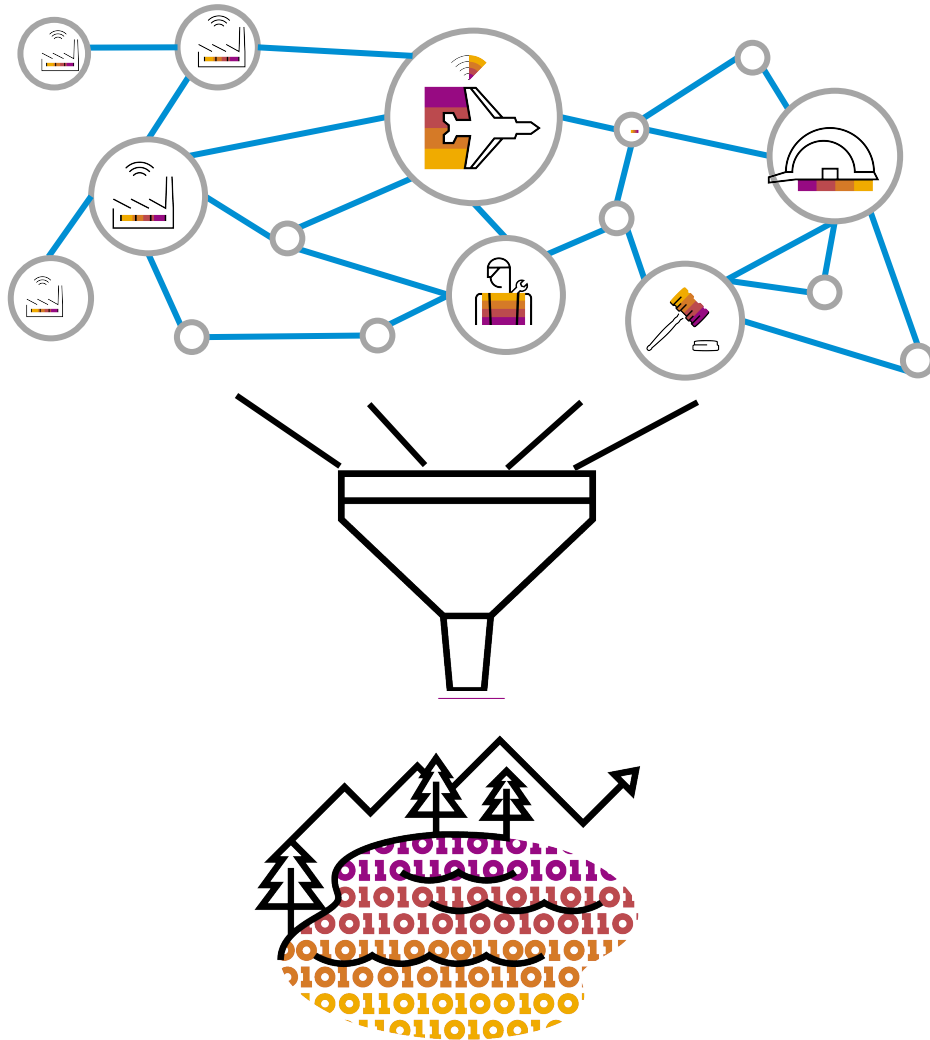
The digital twin

Distributed data landscape



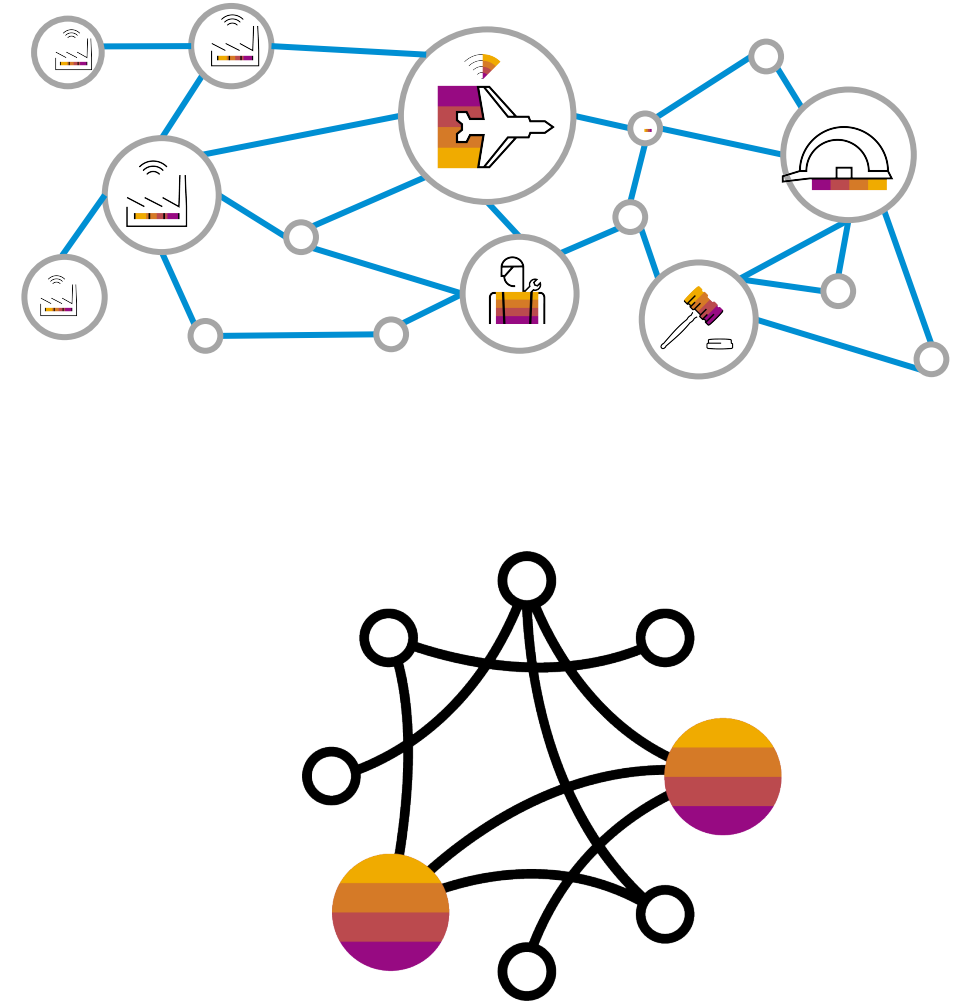
How do we get there? Data Lake or Data Orchestration?

Centralized Data Lake



+

Distributed Data Landscape



Building Data-Driven Applications

Operator behavior at runtime

Visual Design via SAP Data Hub Modeler

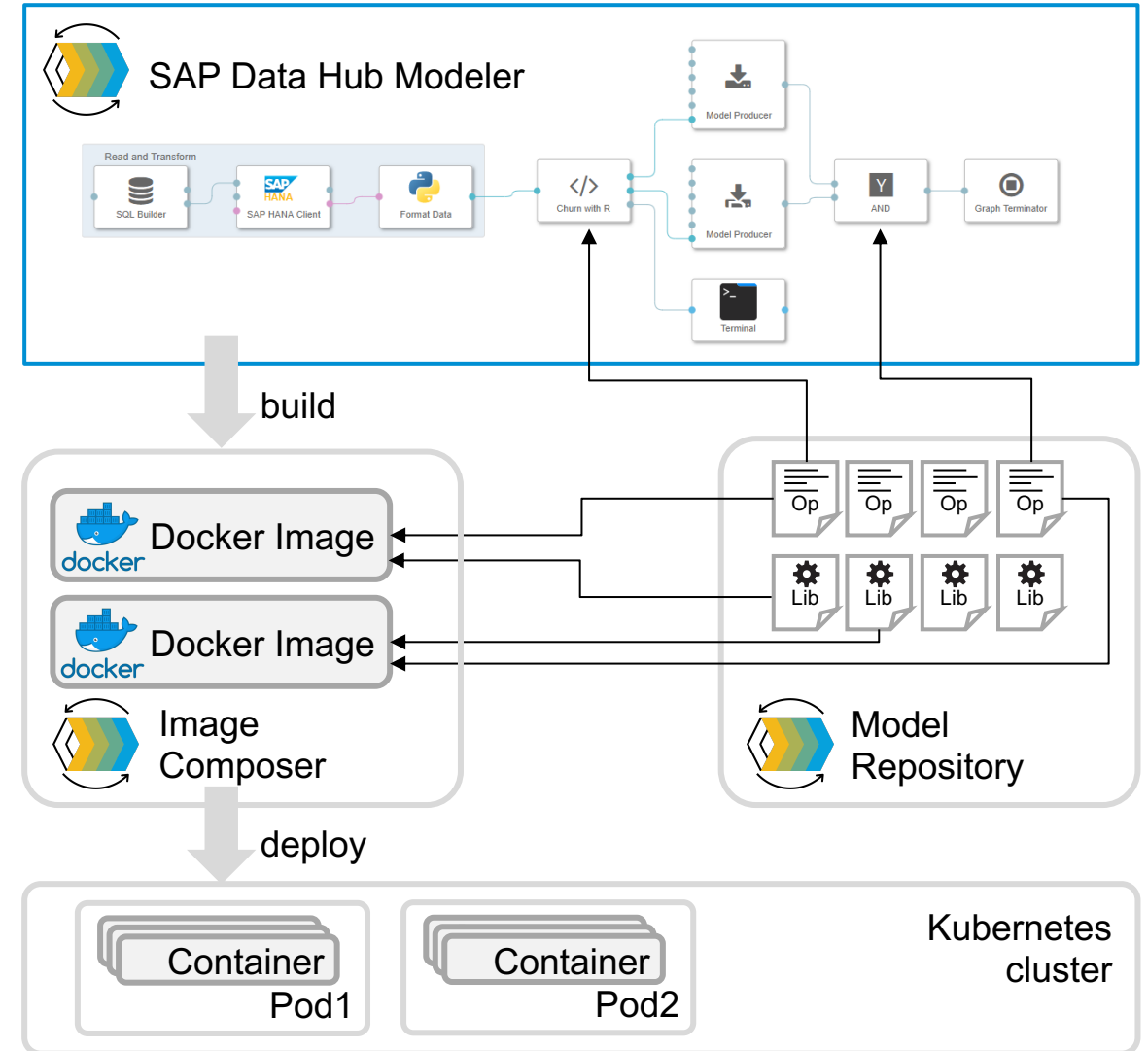
- Intuitive design of complex data streams and transformations
- Execution and monitoring

Model Repository

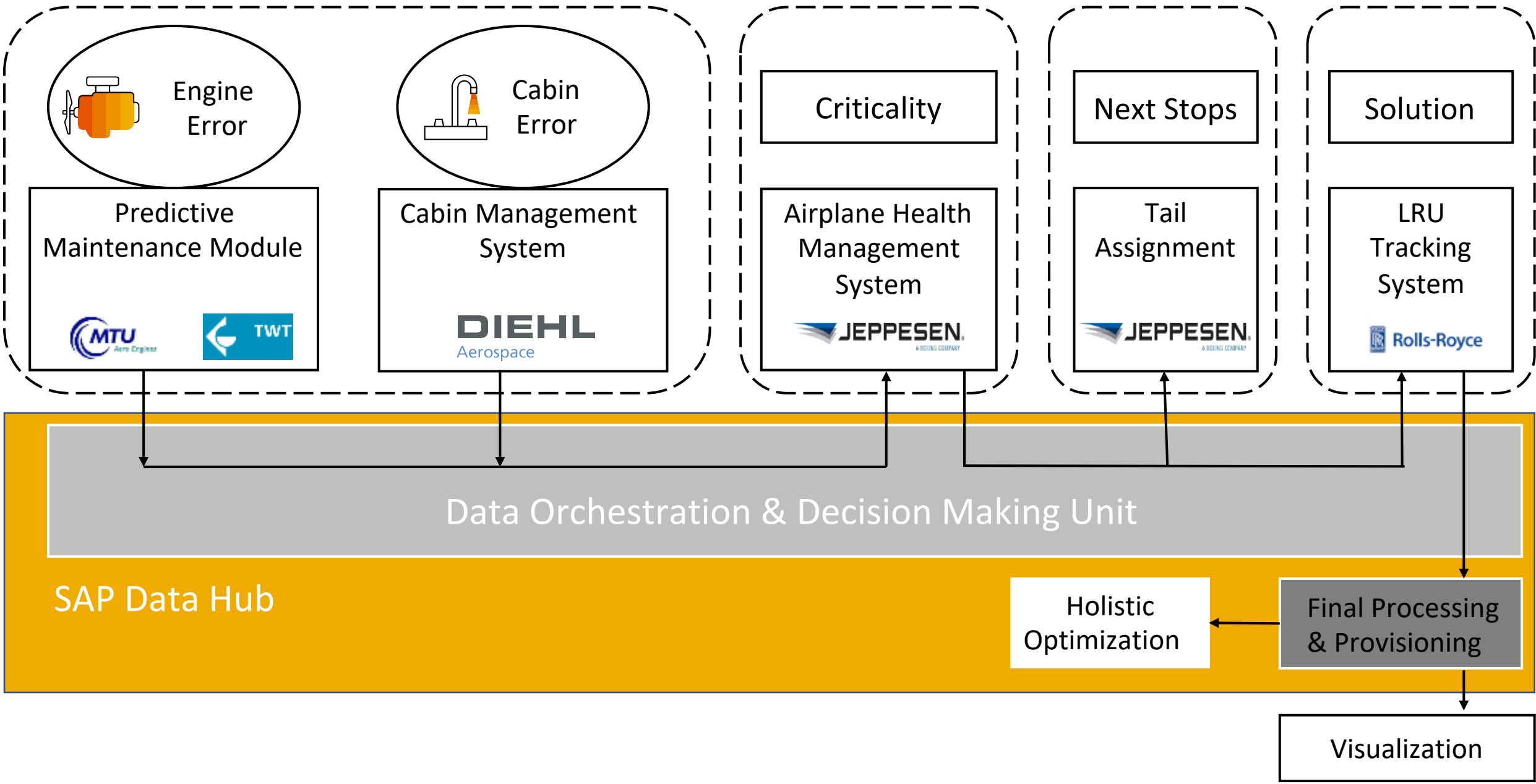
- Re-usable graphs, operators
- Tag-based runtime specification
- Contains container descriptions

Image Composer

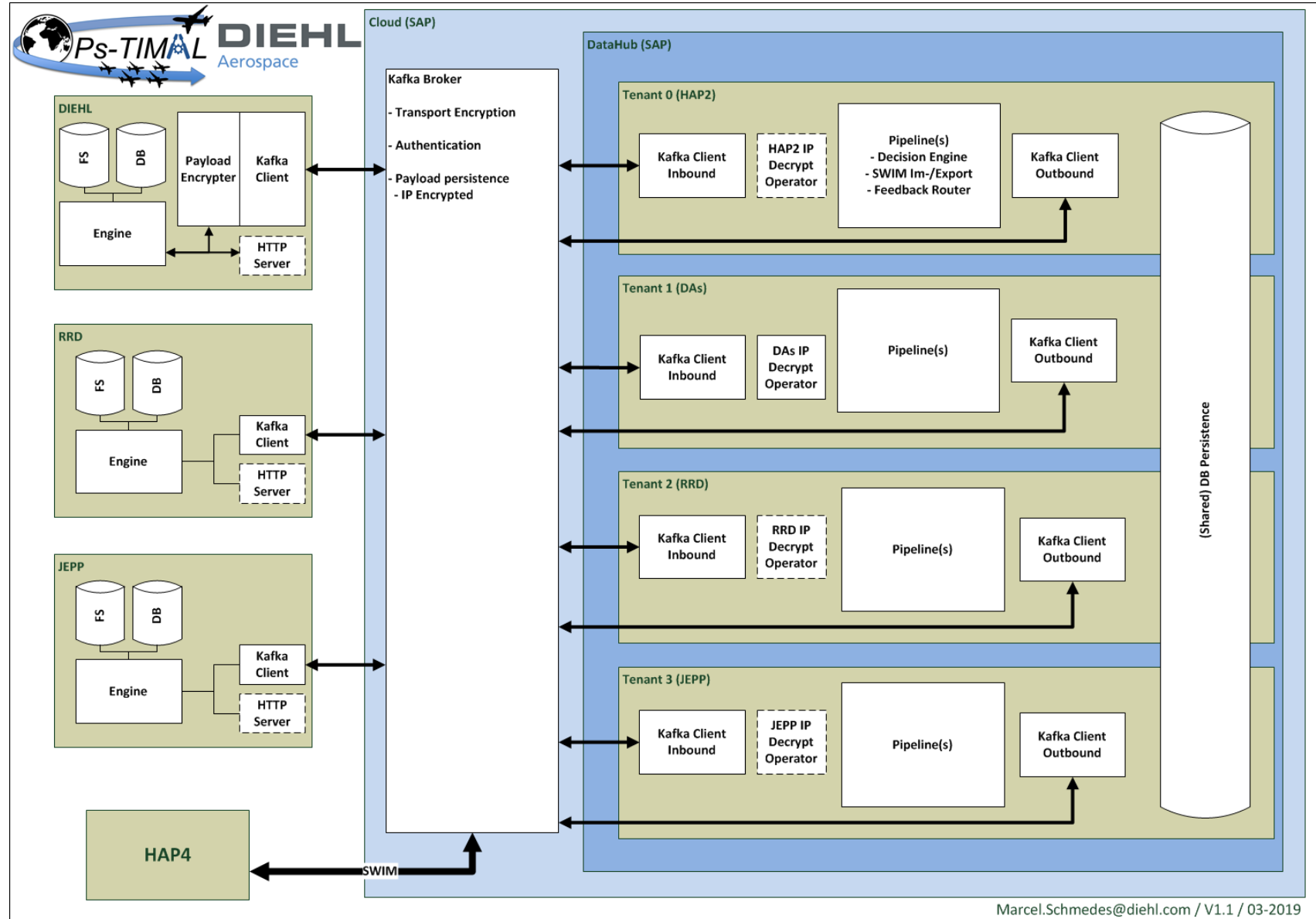
- Chooses containers based on operator tags
- Builds images on demand
- Deploy it on Kubernetes cluster



OPs-TIMAL Repair and Maintenance PoC

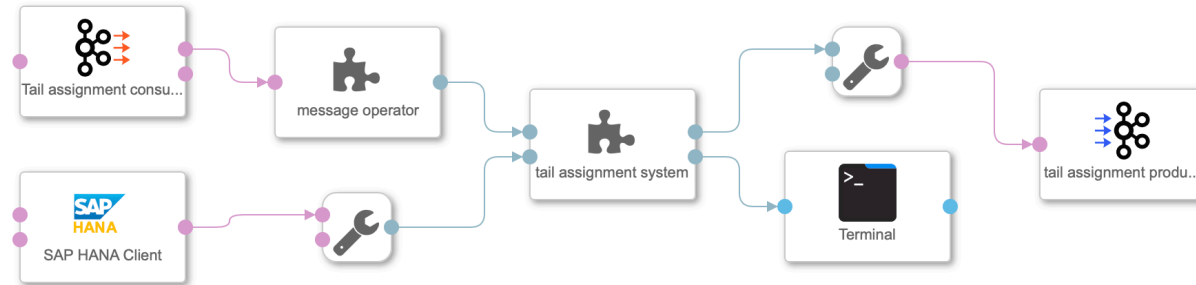


OPs-TIMAL PoC specific architecture for a Distributed Data Landscape with SAP Data Hub

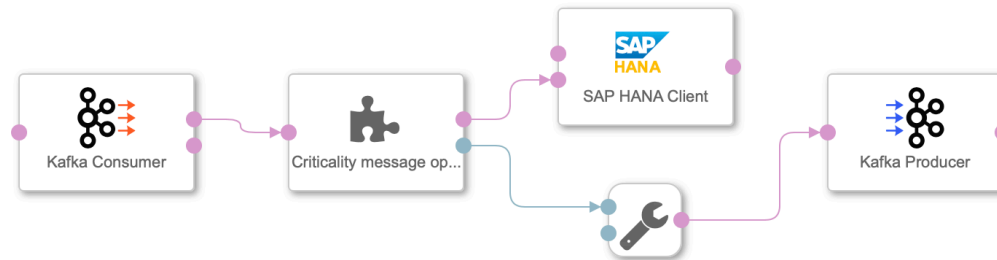


OPs-TIMAL data hub pipelines

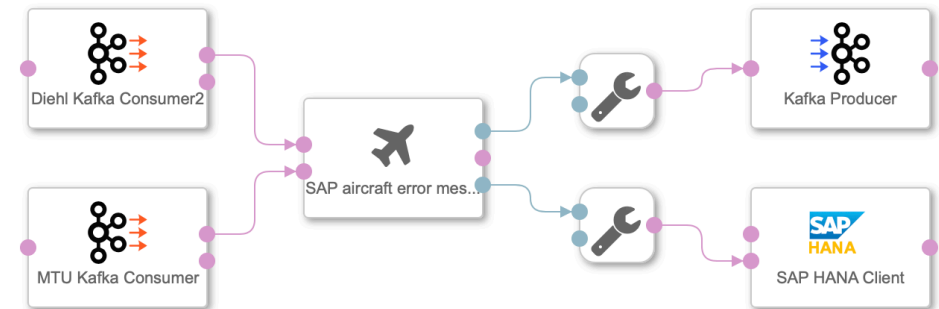
Tail Assignment



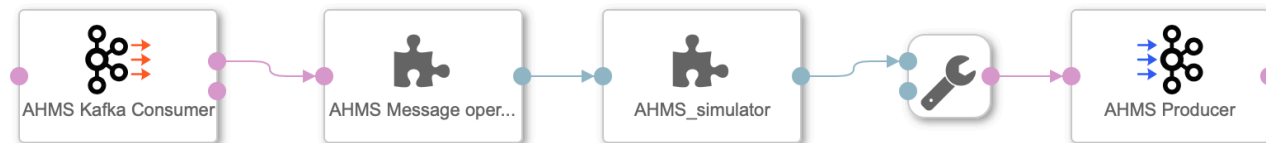
Criticality Conversion



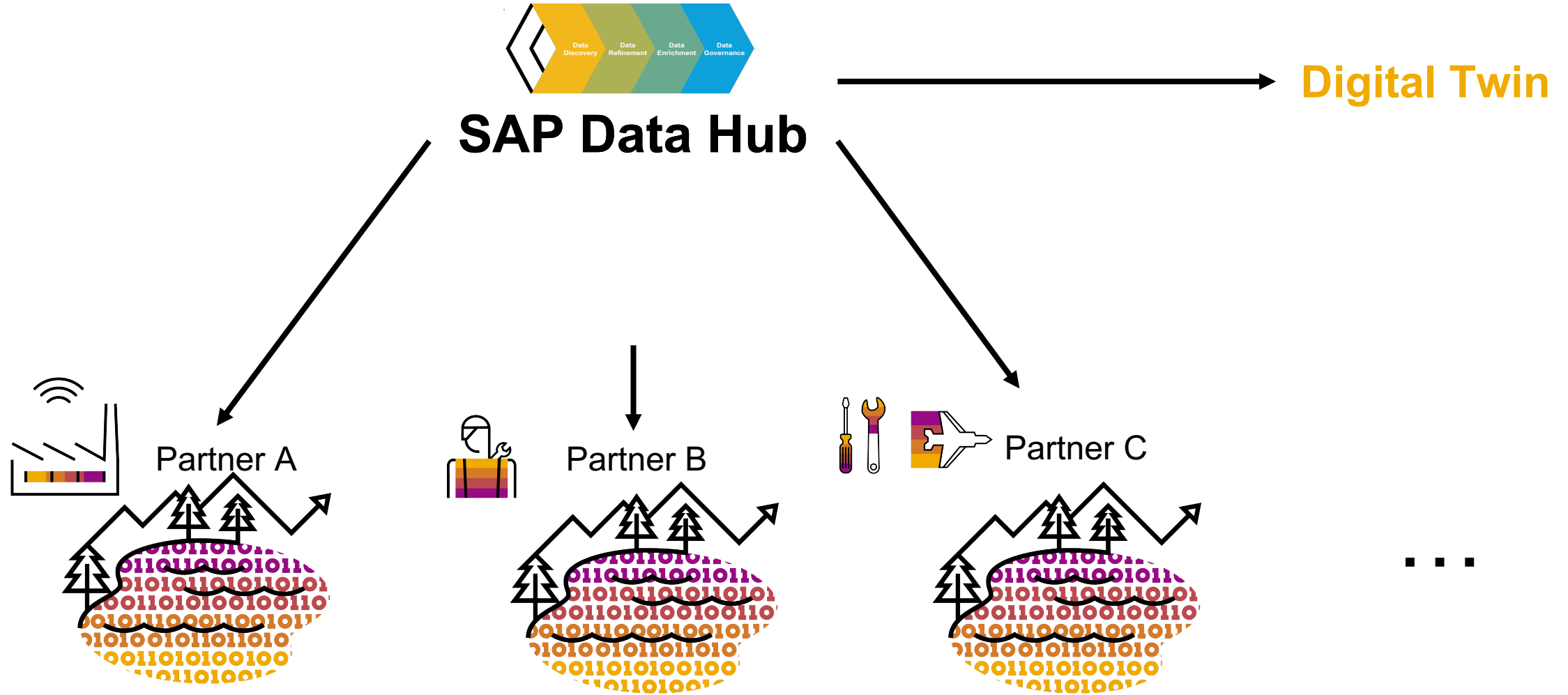
Message Cleansing



Criticality Calculation



Creating the **Digital Twin** in OPs-TIMAL with SAP Data Hub



Thank you. Questions?

#Together, we make it happen.

Contact information:

René Penkert

Support Engineer

CoE EMEA Tech Integration

SAP SE

E rene.penkert@sap.com

Dr. Katharina Schäfer

Solution Management

Aerospace and Defense Industry

SAP SE

E katharina.schaefer@sap.com