Der digitale Zwilling
Zwischen Realität und Vision

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In 1972, a group of colleagues got together with an idea.
Complete coverage of the A&D ecosystem

Aerospace industry

Aftermarket services or OEMs

Prime

Commercial operators

Defense organizations

Subassemblies

Extended supply chain

Engineering & subcontracting

Technical Authority

Contracting authority

Regulatory and legal oversight

Airlines, cargo, and transport

Full spectrum theater of operation

Defense organizations

Warfighting

Peacekeeping

Humanitarian assistance

Contracting authority

Aerospace industry

Prime or OEMs

Aftermarket services
Complete coverage of the A&D ecosystem

Airlines, cargo, and transport

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War fighting
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Aerospace industry

Prime or OEMs
Aftermarket services

Full spectrum theater of operation

Airlines, cargo, and transport
Global Aviation Market Trend

33,000

New aircraft required until 2035

Challenges in the aviation sector

- Shorter and more cost-efficient **development** cycles
- Shorter **production** cycles
- Increased efficiency in **operation** and reduction of environmental impact
- End of life strategies
Digital Twin reaching top of hype cycle

Expectations

Time

Original digital twin defined

Physical product in real space

Digital twin

Virtual product in virtual space
The **digital twin** needs to cover the entire life-cycle

The **digital** world

The **physical** world

- **Engineering**
  - As Designed

- **Production**
  - As Built

- **Installation**
  - As Delivered

- **Operation**
  - As Maintained

- **Decommission**

**Closed loop engineering**

- Cost
- Stress simulations
- Geometries
- Designs
- Ideas

- Quality fingerprint
- Production data
- Ramp Up

- Profitability
- Cost
- Issues
- Performance
Digital Twin in Aviation - Examples

AVIATAR

skywise

Boeing AnalytX

PREDIX
It’s about sharing data

Tier 2
Tier 1
OEM
Tier 1
Airline
MRO provider
Regulator

Aircraft in operation
The Network of Digital Twins
Digital, physical, conditional, commercial

Manufacturer
Product intelligence
Collaborative R&D, engineering and manufacturing

Operator
Asset intelligence
Asset Management, predictive maintenance and service
The Network of Digital Twins
Digital, physical, conditional, commercial

Manufacturer
Product intelligence
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Operator
Asset intelligence
Asset Management, predictive maintenance and service
Product intelligence
The Digital Twin "as build"

Performance
Cost -7%
Net Margin + 19%
Dividend +25%
From 21 day schedule to 6 hour
Asset intelligence

SAP Asset Intelligence Network: bringing together business partners

A digital representation of all industrial equipment used in the field with secure, controllable sharing rights across business partners to enable customer insights, performance analytics, and new digital services.
SAP Asset Intelligence Network
Concept Demo

Concept demo

Concept demo
SAP Data Hub for Connecting Data Silos

Enterprise Systems

- SAP BW/4HANA
- SAP S/4HANA
- Enterprise Apps

SAP HANA

SAP Data Hub

- Data Discovery & Pipelines
- Orchestration & Monitoring
- Ingestion & Integration

Processing Runtime based on SAP Vora

Distributed Data Systems

- Hadoop
- Cloud Storages
- ML, Predictive,…
 Enterprises are sitting on a **data treasure trove** which they can’t unlock

**Data Transparency**
Difficulties in managing and orchestrating data across distributed data landscapes

74% of enterprises say their data landscape is so complex that it limits agility

**Data Innovation**
Complexity in synthesizing data from distributed data landscapes for machine learning training, and IoT use cases

86% of enterprises claim that they are not getting the most out of their data

**Data Compliance**
Enforcing a multitude of corporate and regulatory data policies is becoming a burden and risk for enterprise IT

4% of annual turnover can be fined by the EU for violating GDPR regulations
It’s about creating a win-win situation to get more insights
Network of digital twins to drive business outcomes

- Shorter and more cost-efficient development cycles
- Shorter production cycles
- End of life strategies
- Increased efficiency in operation and reduction of environmental impact
Thank you.

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