

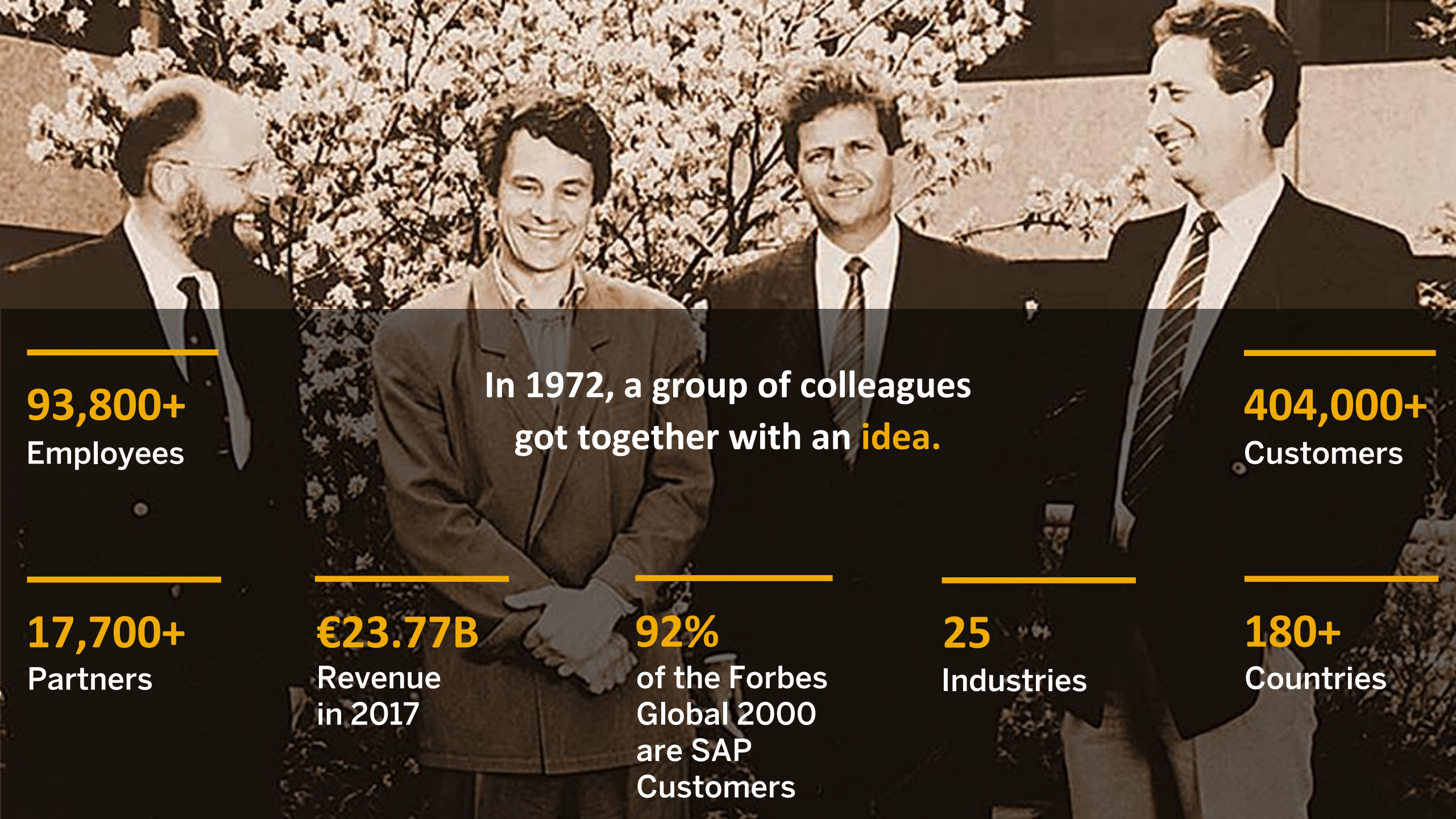


Der digitale Zwilling

Zwischen Realität und Vision

Dr. Katharina Schäfer, SAP
October 18, 2018

PUBLIC



93,800+
Employees

In 1972, a group of colleagues
got together with an **idea**.

404,000+
Customers

17,700+
Partners

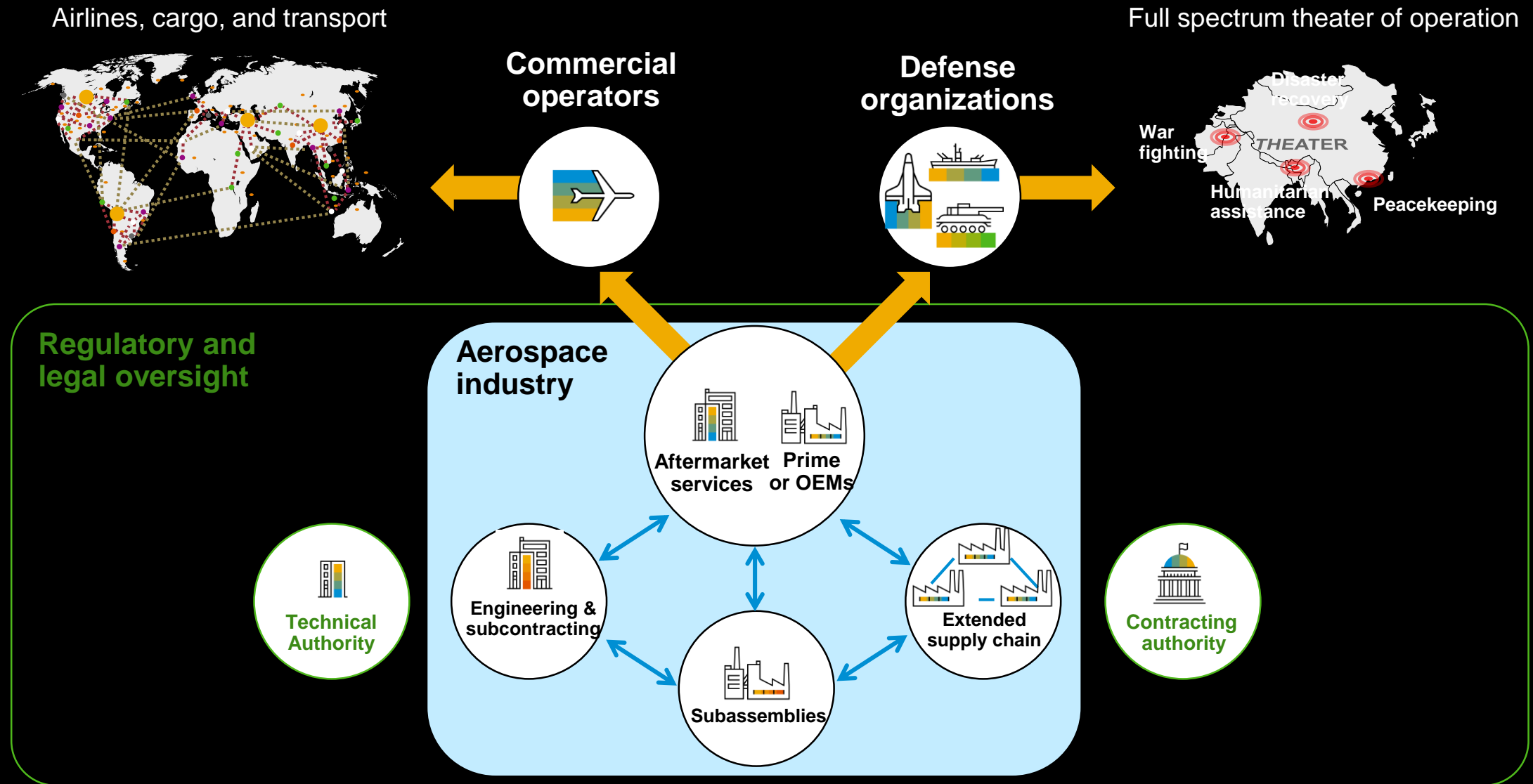
€23.77B
Revenue
in 2017

92%
of the Forbes
Global 2000
are SAP
Customers

25
Industries

180+
Countries

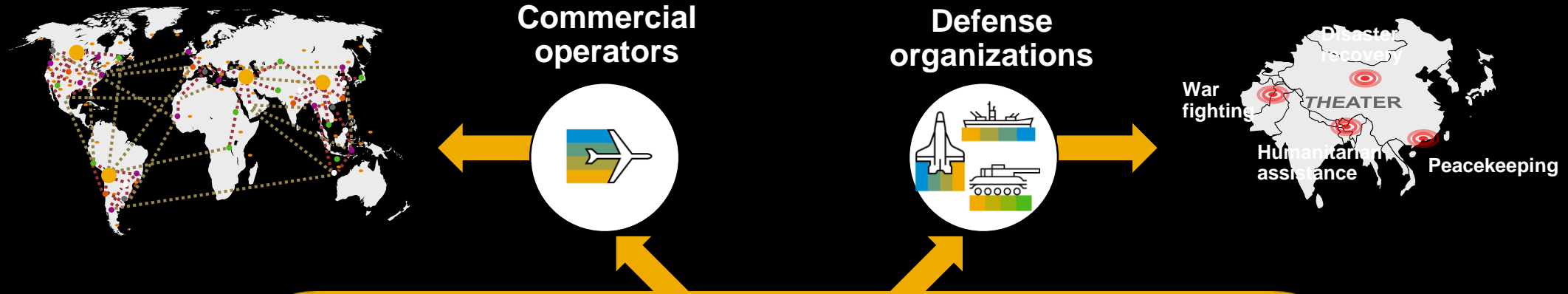
Complete coverage of the A&D ecosystem



Complete coverage of the A&D ecosystem

Airlines, cargo, and transport

Full spectrum theater of operation

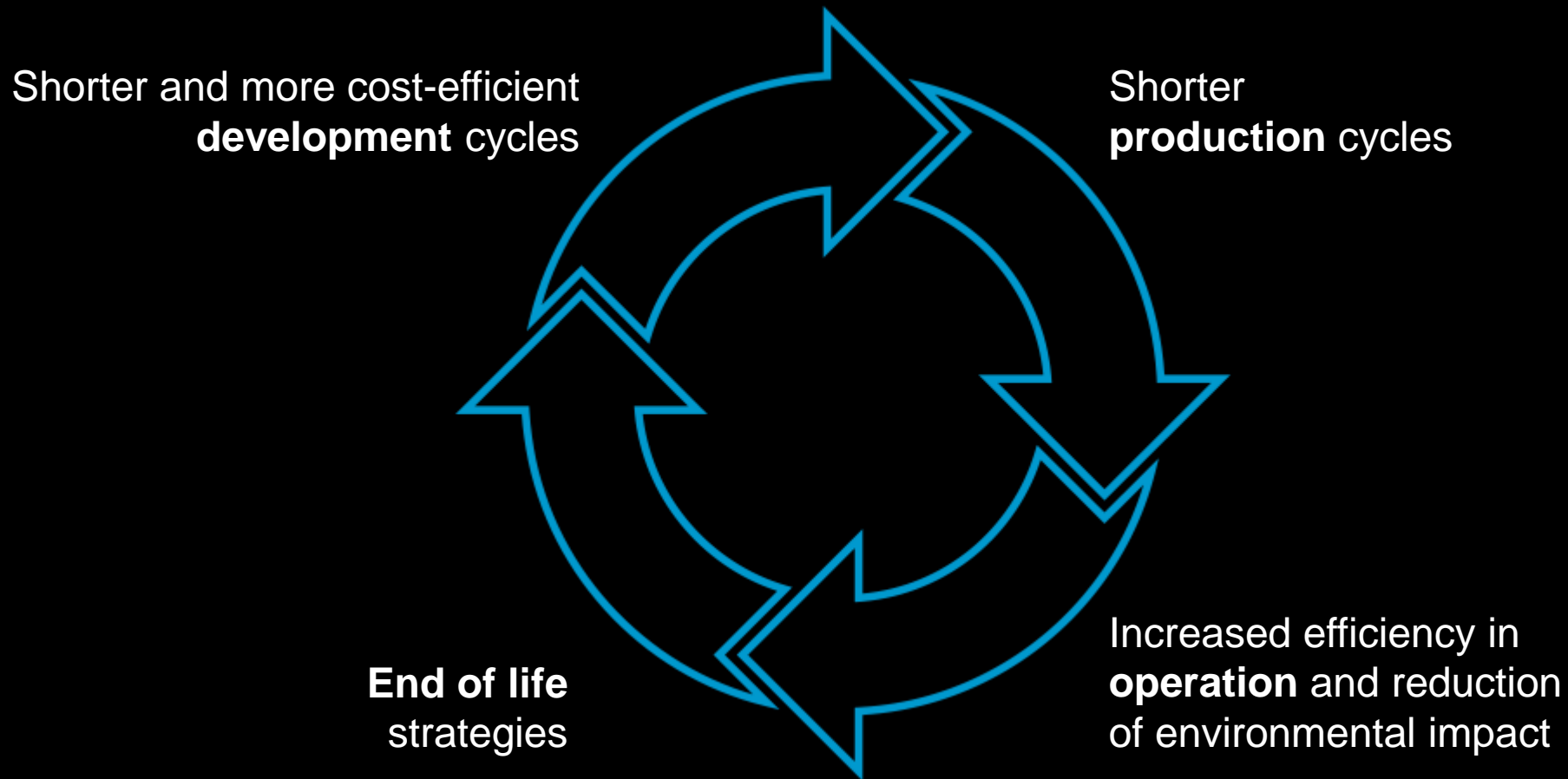


Global Aviation Market Trend

33.000

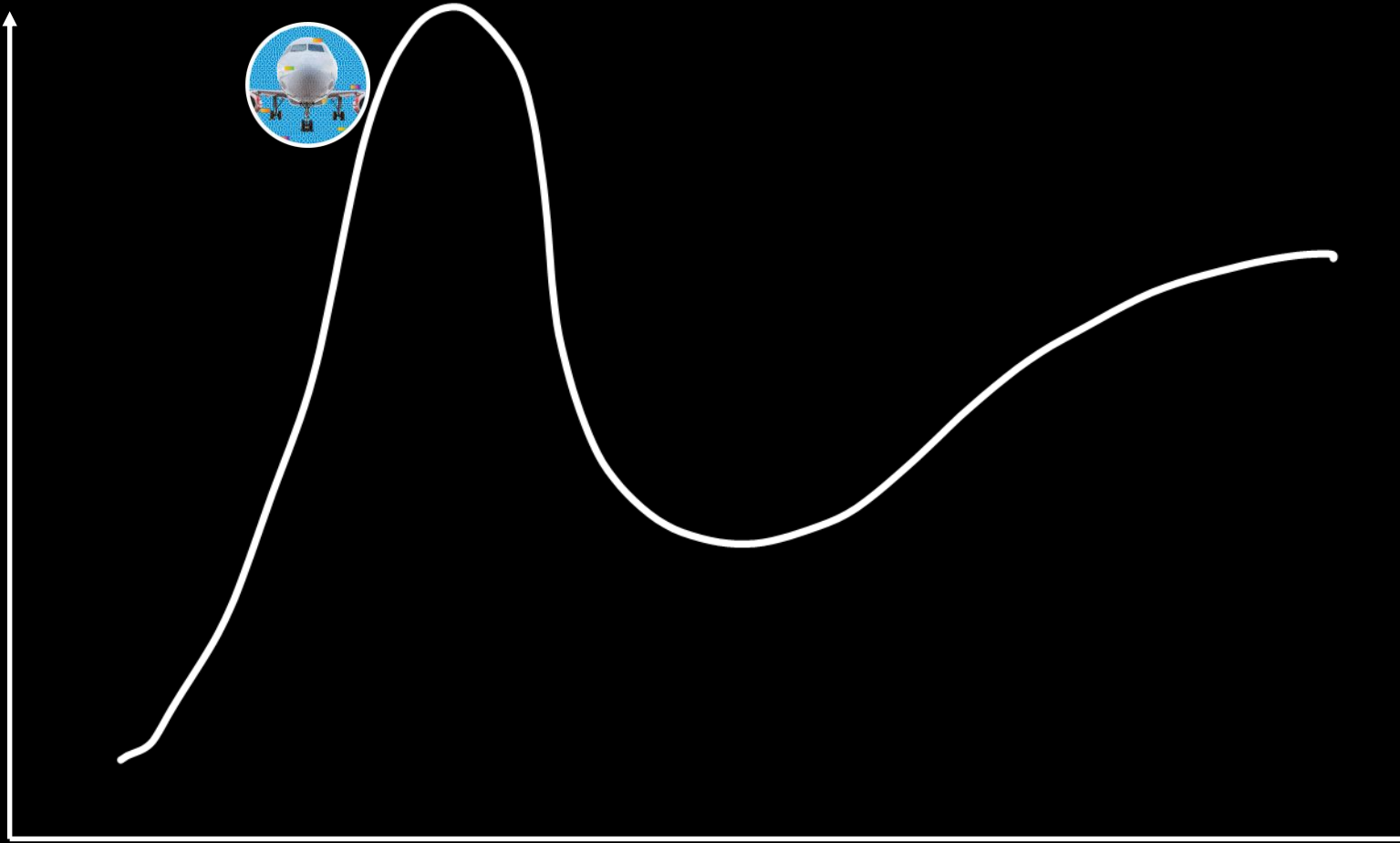
New aircraft required until 2035

Challenges in the aviation sector



Digital Twin reaching top of hype cycle

Expectations



Source: Gartner „Emerging Technologies Hype Cycle 2018“, Gartner, 2018.

© 2018 SAP SE or an SAP affiliate company. All rights reserved. | PUBLIC

Time

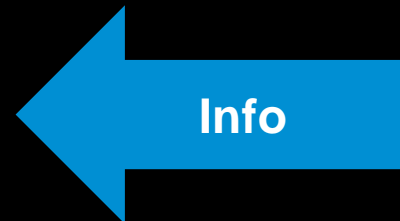
Original digital twin defined



Physical product in real space



01011
11010
10
01101

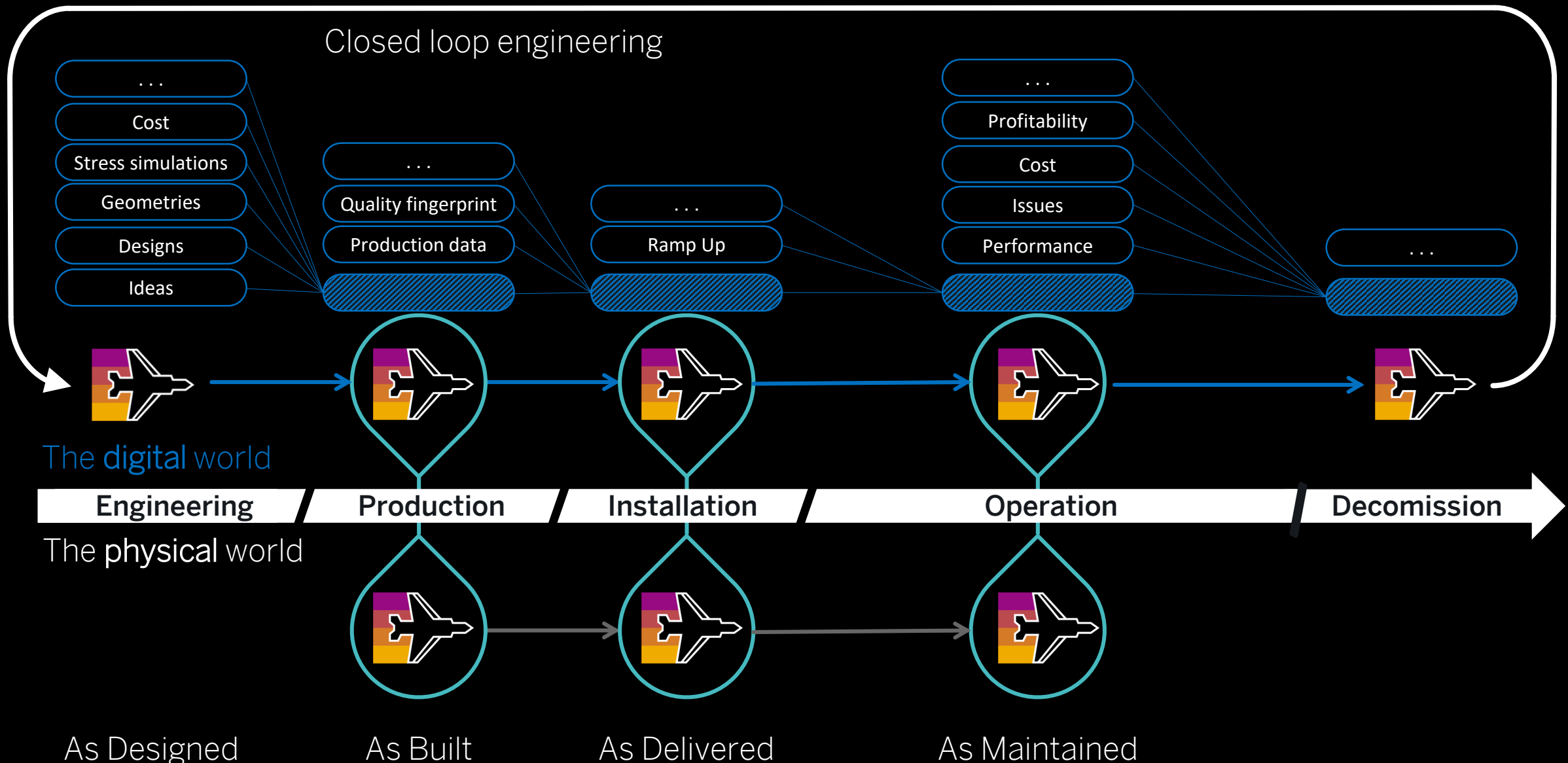


Digital twin



Virtual product in virtual space

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



Digital Twin in Aviation - Examples

AVIATAR

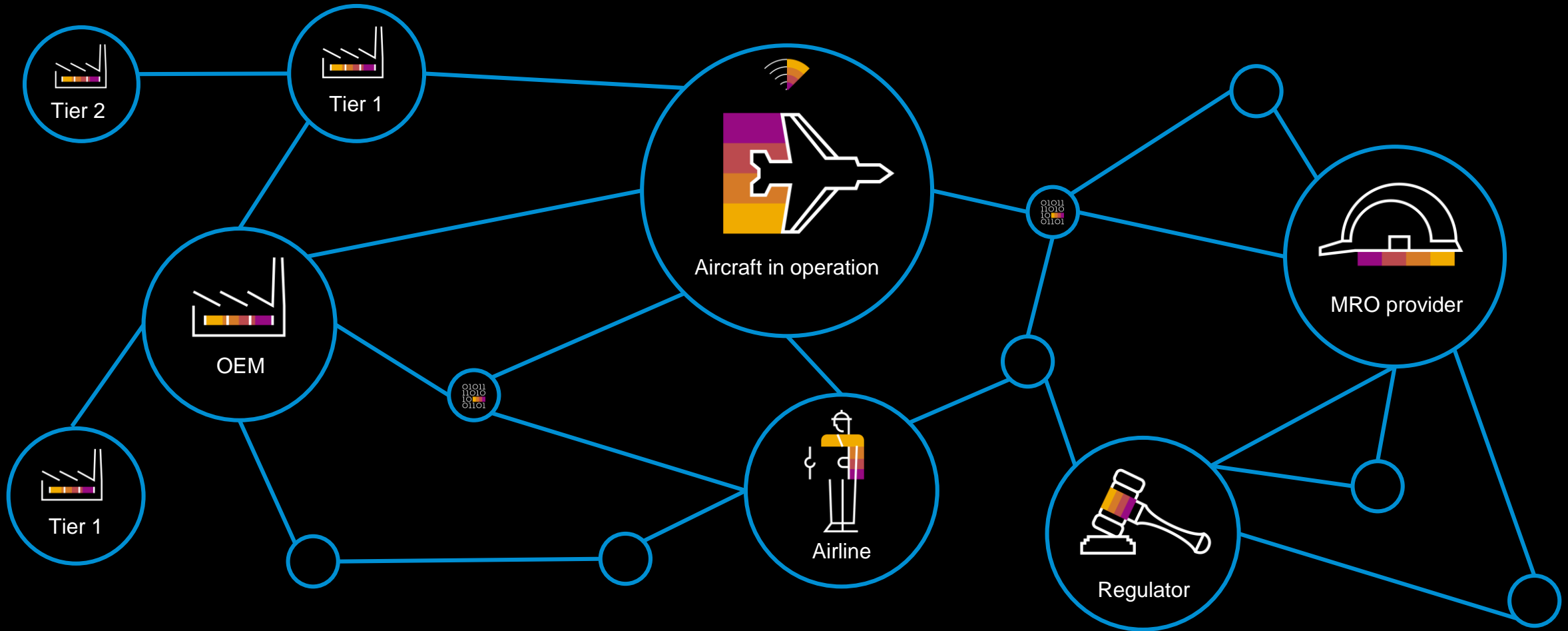
skywise

Boeing AnalytX

PREDIX



It's about sharing data



The Network of Digital Twins

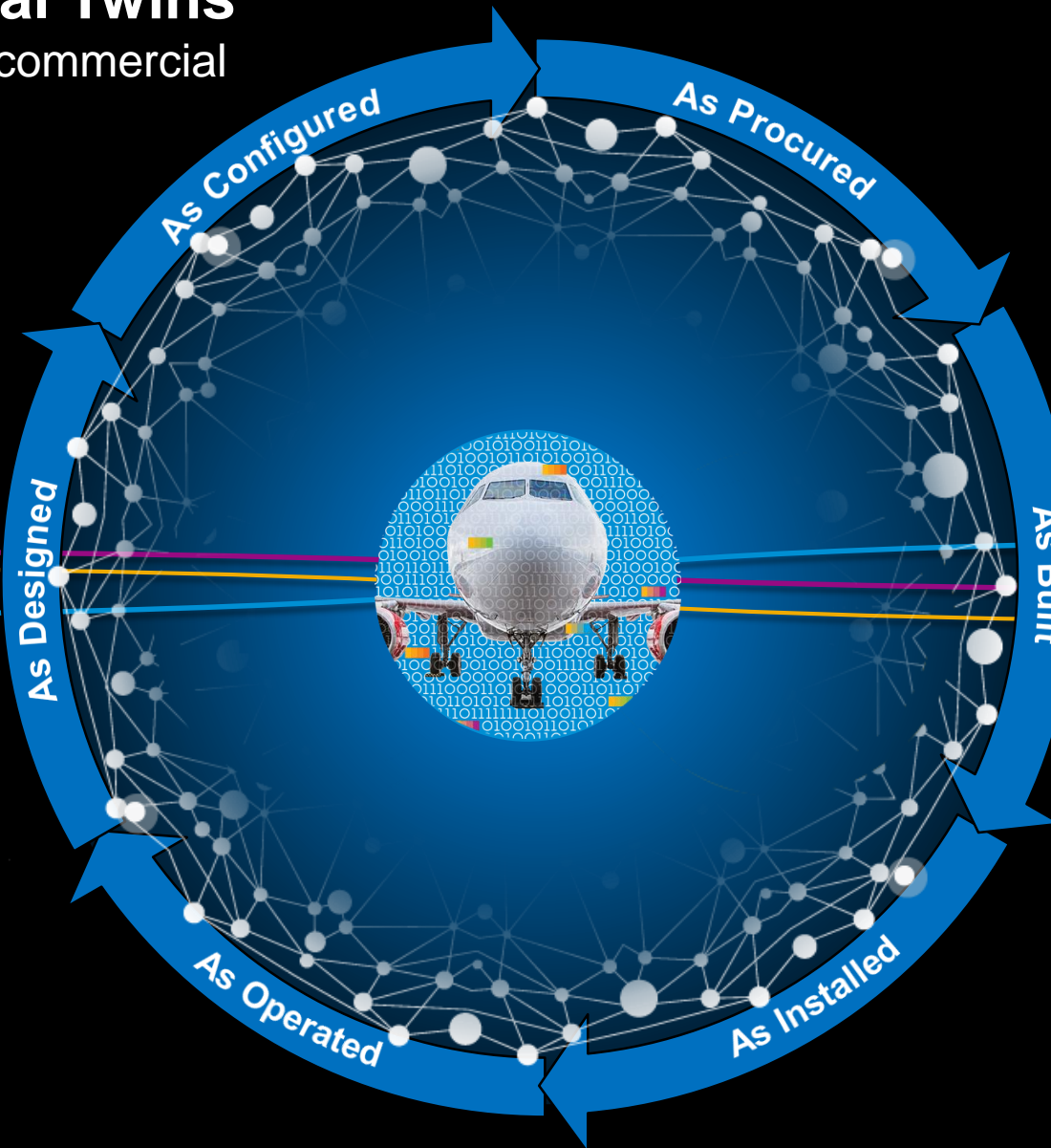
Digital, physical, conditional, commercial

Manufacturer

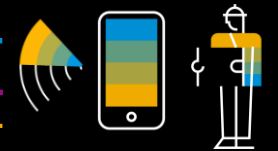


Product intelligence

Collaborative R&D, engineering and manufacturing



Operator



Asset intelligence

Asset Management, predictive maintenance and service

The Network of Digital Twins

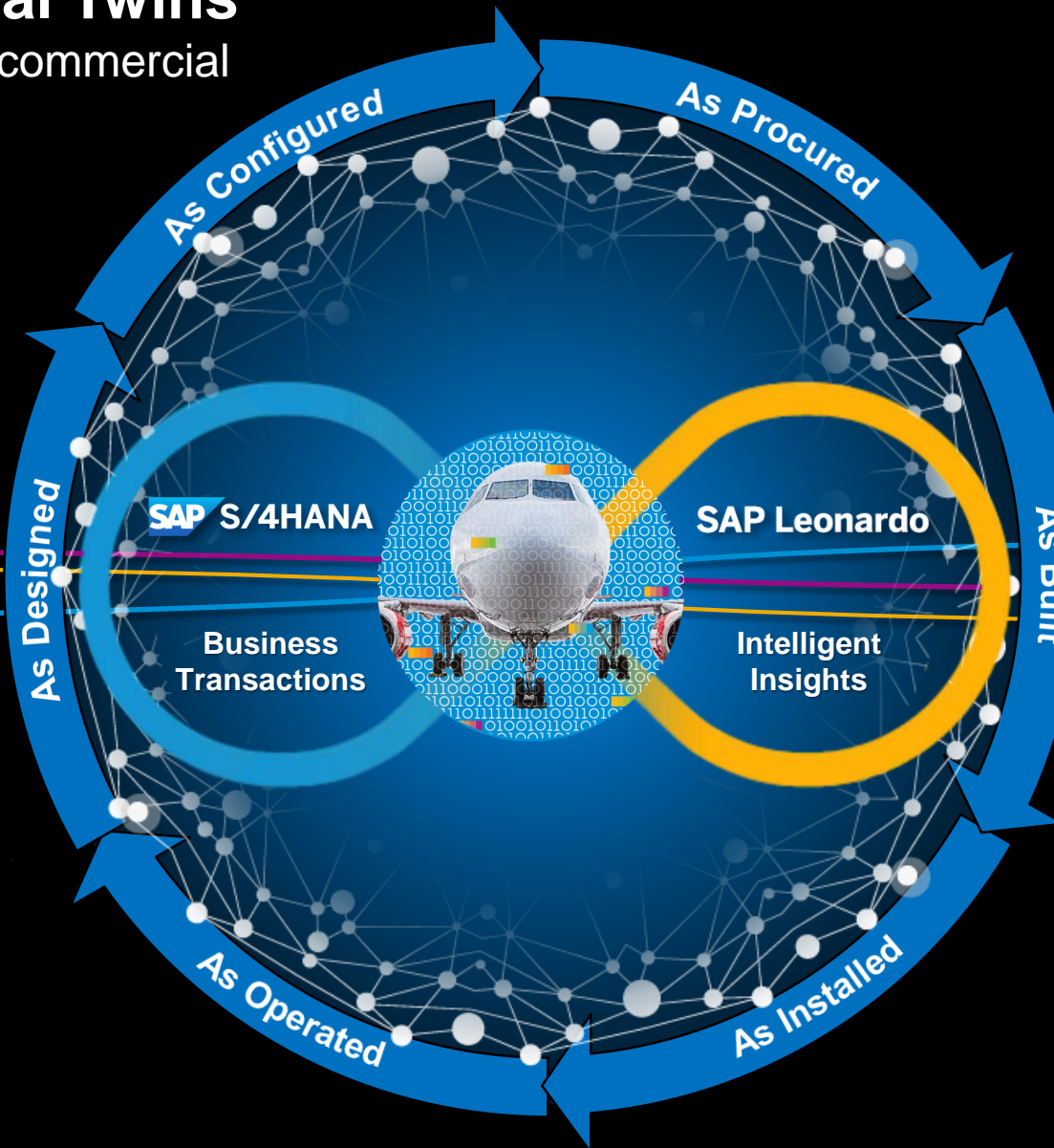
Digital, physical, conditional, commercial

Manufacturer

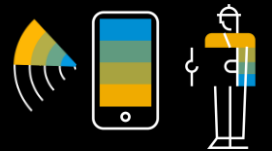


Product intelligence

Collaborative R&D, engineering and manufacturing



Operator



Asset intelligence

Asset Management, predictive maintenance and service

Product intelligence

The Digital Twin „as build“



Performance

Cost -7%

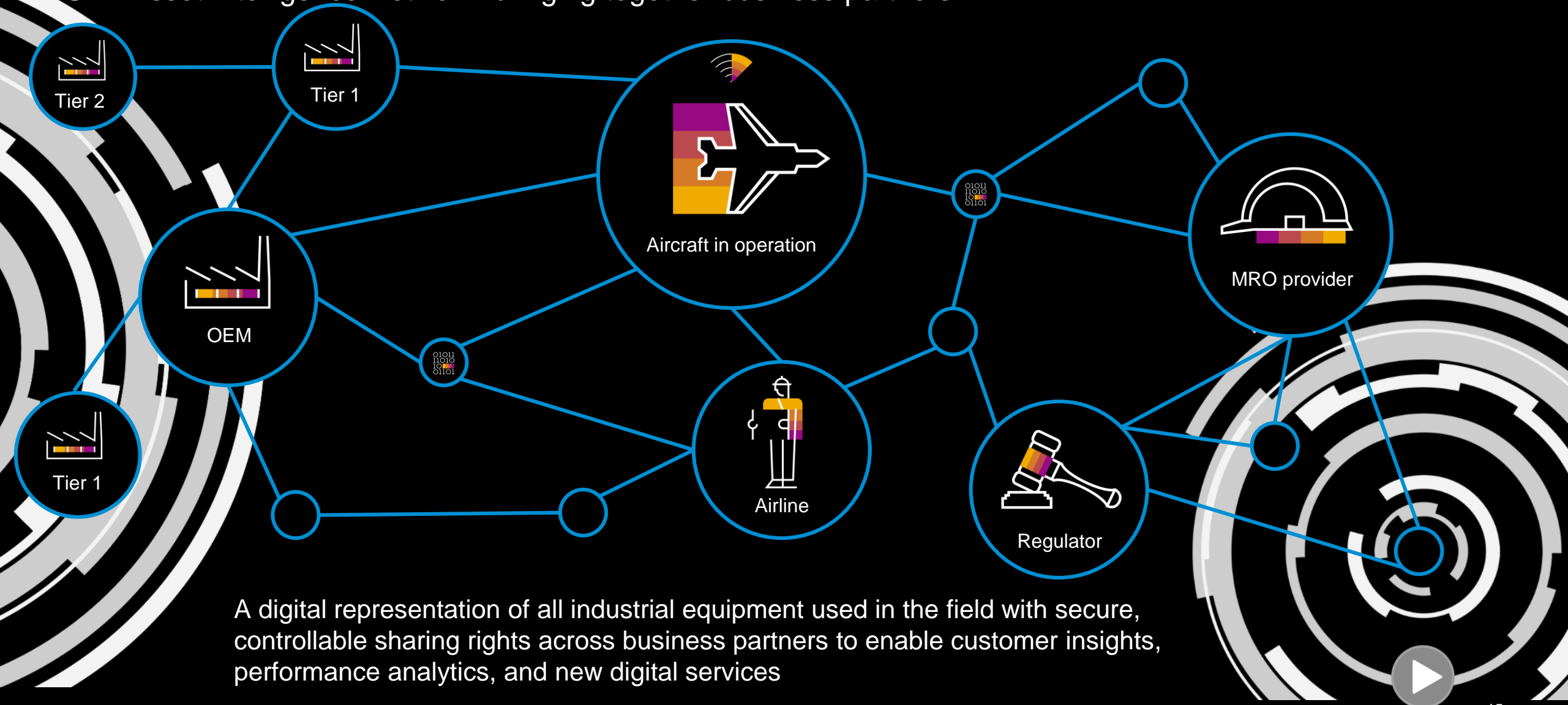
Net Margin + 19%

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

8:29 PM

Equipment

Flughafen Frankfurt (Flughafen Frankfurt)

Terminal 1 (Flughafen Frankfurt- Terminal 1)

AIRCRAFT / AERODYNE / A320-211-LH69-D-AIPA (Airbus 320 - 211 LH

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-Equipment -

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-Equipment -

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-FAN-Equi

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-LP-COMF

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-HP-COMF

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-COMB-Ci

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-HP-TURB

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-LP-TURB

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A-EXHAUST

AIRCRAFT / AIRPLANE / AEROSHELL_OIL_120_55_GALLON_I

AIRCRAFT / AIRPLANE / BMS3-11_SKYDROL_500B-4 (BMS3-1

AIRCRAFT / AIRPLANE / A320_CARBON_BRAKE (A320 Carbon

AIRCRAFT / AIRPLANE / TRONAIR-06-5022-6800_FLUID_SRV_

AIRCRAFT / AIRPLANE / A320_TIRE_FRAME (A320 Tire Frame)

Terminal 2 (Flughafen Frankfurt- Terminal 2)

Terminal 3 (Flughafen Frankfurt- Terminal 3)

MOTOR / ENGINE / A320-200-ATA72-CFM56-5A /

CFM56-5A Engine for A320-200 / RIGHT

A320-200-ATA72-CFM56-5A-Equipment - R

Manufacturer: SAP Manufacturer Location: Terminal 1 External IDs Phase: Planned

Shared With 1 Partners

Status: Published

INFORMATION STRUCTURE AND PARTS DOCUMENTATION MONITORING TIMELINE

Highlights

There are no cards available at the moment.

Data Sheet

All Attributes 20 Changed Values Compared to Default 0 Attributes Without Values 0

Aircraft engine c... Model

Aircraft type for engine Airbus A320...

Aircraft engine bypass ratio 6:1

Aircraft engine flat rated temp. (C/F) 30° / 86°

Aircraft engine N1 & N2 Dir. of rotation Clockwise (...)

Aircraft engine N1 Design Speed 100%

Aircraft engine TSFC, Take Off Max. 0,343 lbs/lbs...

CFM56-5A

8:28 PM

Equipment

AIRCRAFT / AERODYNE / A320_200 /

Airbus 320 - 211 LH69 D-AIPA Buxtehude A320-211-LH69-D-AIPA

INFORMATION STRUCTURE AND PARTS DOCUMENTATION MONITORING TIMELINE ASSESSMENT

Updates By Type

Status Changes 25

Field Changes 4

Spare Parts 2

Groups 2

Documents 1

Others 2

Time Range

2018-Q1 33 2018-Q2 4

Updates by Partner

SAP Operator 37

Updates on

Models 23

Filtered By: 10 Filters

Apr 3, 2018, 8:17:48 PM

Added to Group (1)

SAP Richard Feco

GR.OPER.60

A320 RC

Risk and Criticality

Comments Tags

Apr 3, 2018, 8:16:30 PM

Added to Group (1)

SAP Richard Feco

GR.OPER.59

A320 LH

Fleet

Comments Tags

Mar 26, 2018, 8:49:20 PM

Model Spare Parts Assigned (3)

SAP SAP Manufacturer

AEROSHELL_OIL_120_55_GALLON_DRUM

AeroShell-550041188

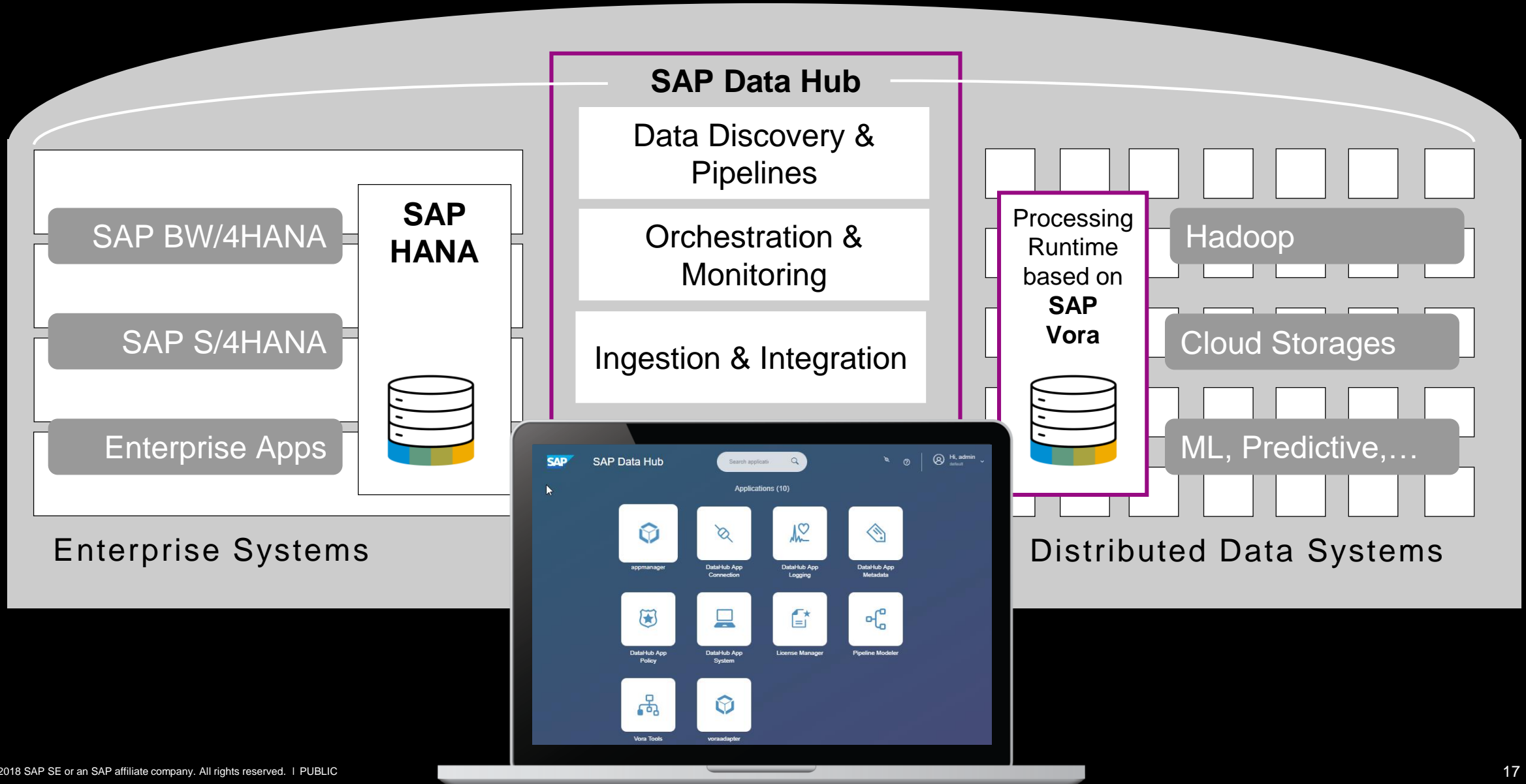
BMS3-11_SKYDROL_500B-4

BMS3-11-500B-4

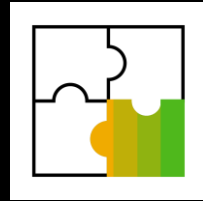
TRONAIR-06-5022-6800_FLUID_SRV_UNIT

Concept demo

SAP Data Hub for Connecting Data Silos



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



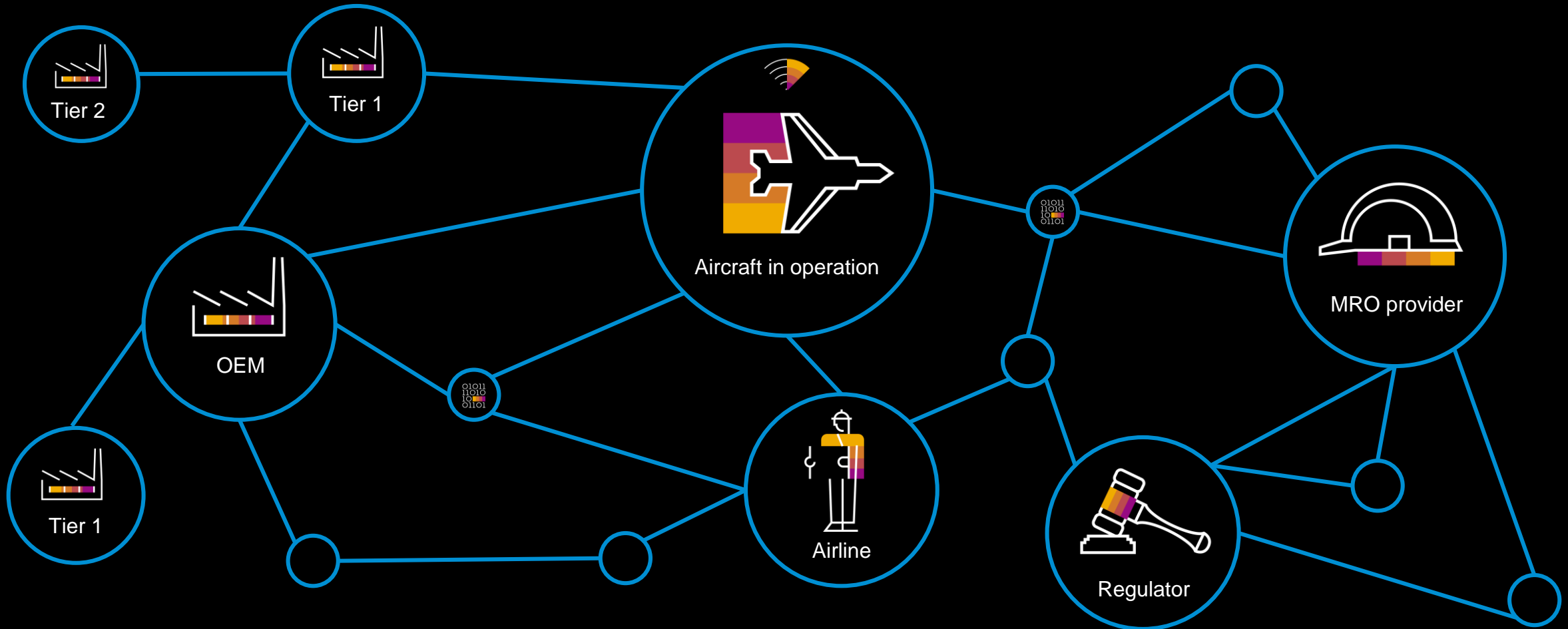
Data Compliance

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

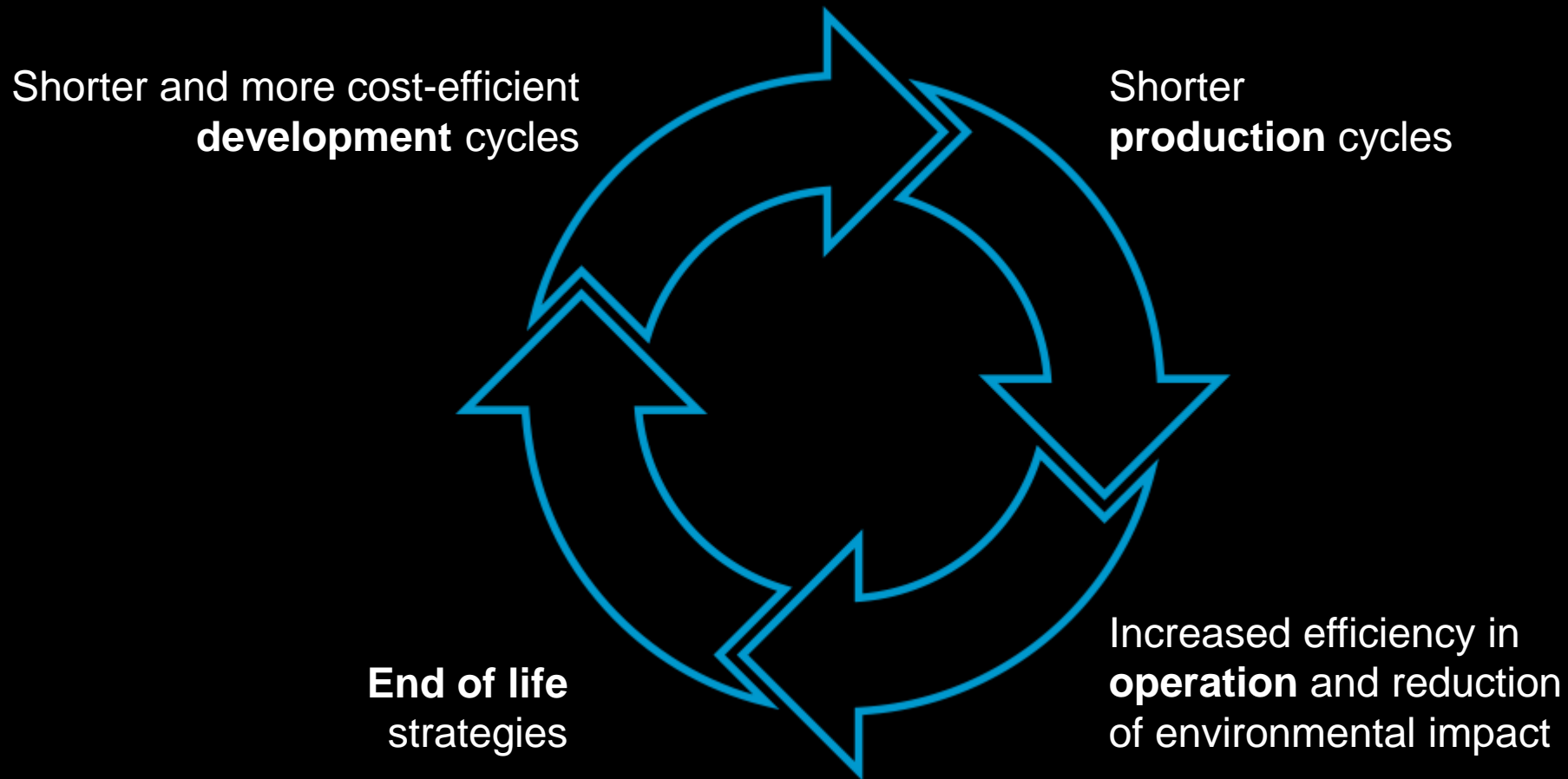
4%

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



Thank you.

Contact information:

Dr. Katharina Schäfer
Solution Management
Aerospace and Defense Industry
SAP SE
katharina.schaefer@sap.com

Follow me on Twitter  @aerokathi

Disclaimer

The information in this presentation is confidential and proprietary to SAP and may not be disclosed without the permission of SAP. Except for your obligation to protect confidential information, this presentation is not subject to your license agreement or any other service or subscription agreement with SAP. SAP has no obligation to pursue any course of business outlined in this presentation or any related document, or to develop or release any functionality mentioned therein.

This presentation, or any related document and SAP's strategy and possible future developments, products and or platforms directions and functionality are all subject to change and may be changed by SAP at any time for any reason without notice. The information in this presentation is not a commitment, promise or legal obligation to deliver any material, code or functionality. This presentation is provided without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. This presentation is for informational purposes and may not be incorporated into a contract. SAP assumes no responsibility for errors or omissions in this presentation, except if such damages were caused by SAP's intentional or gross negligence.

All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates, and they should not be relied upon in making purchasing decisions.