



SAP Manufacturing and Industry 4.0

Frank Soudan
Head of Center of Excellence Digital Supply Chain

What is the Future of Manufacturing?

Growth **DECLINE**

GDP Growth %

10

5

0

World

US

Germany

Japan

1960

1970

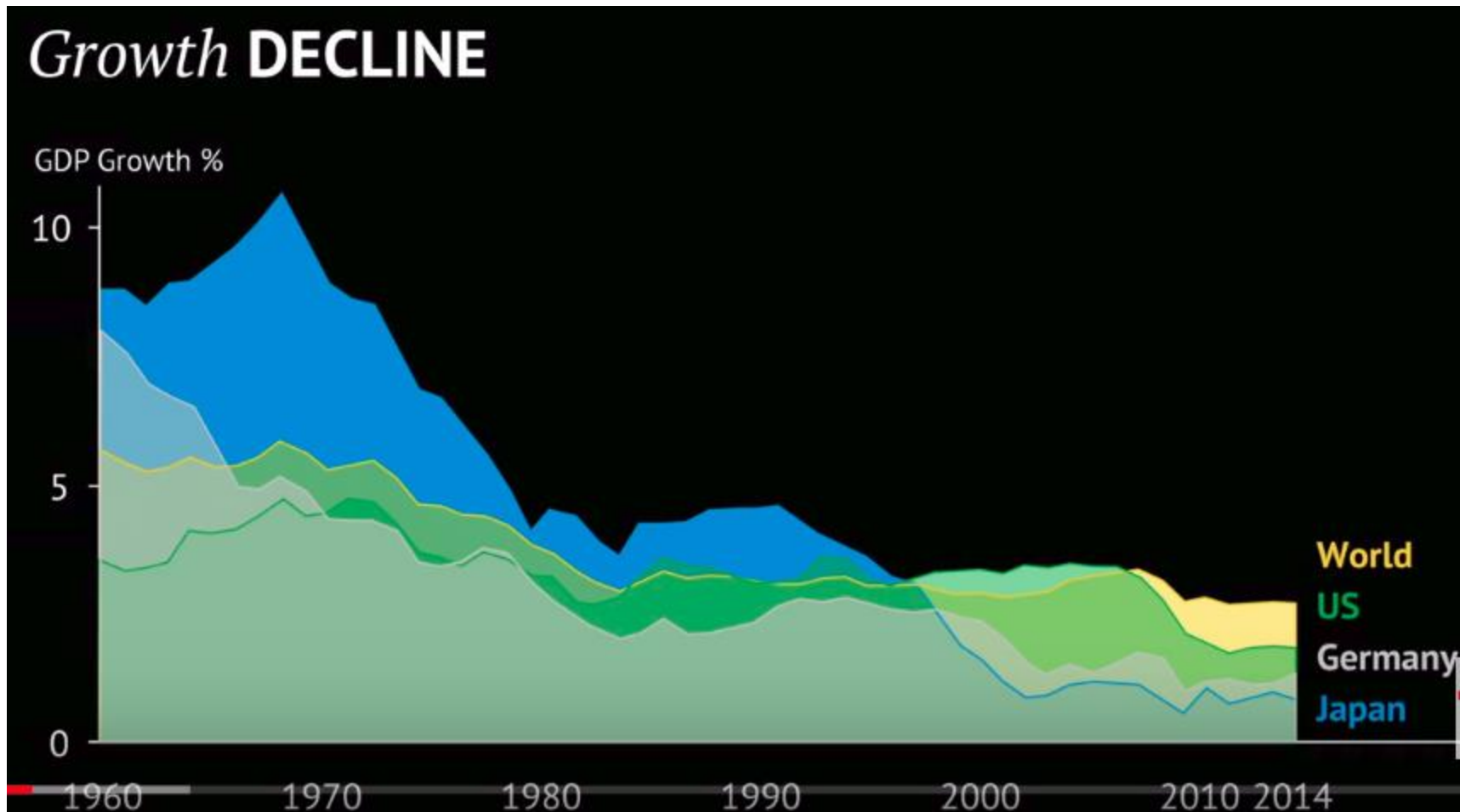
1980

1990

2000

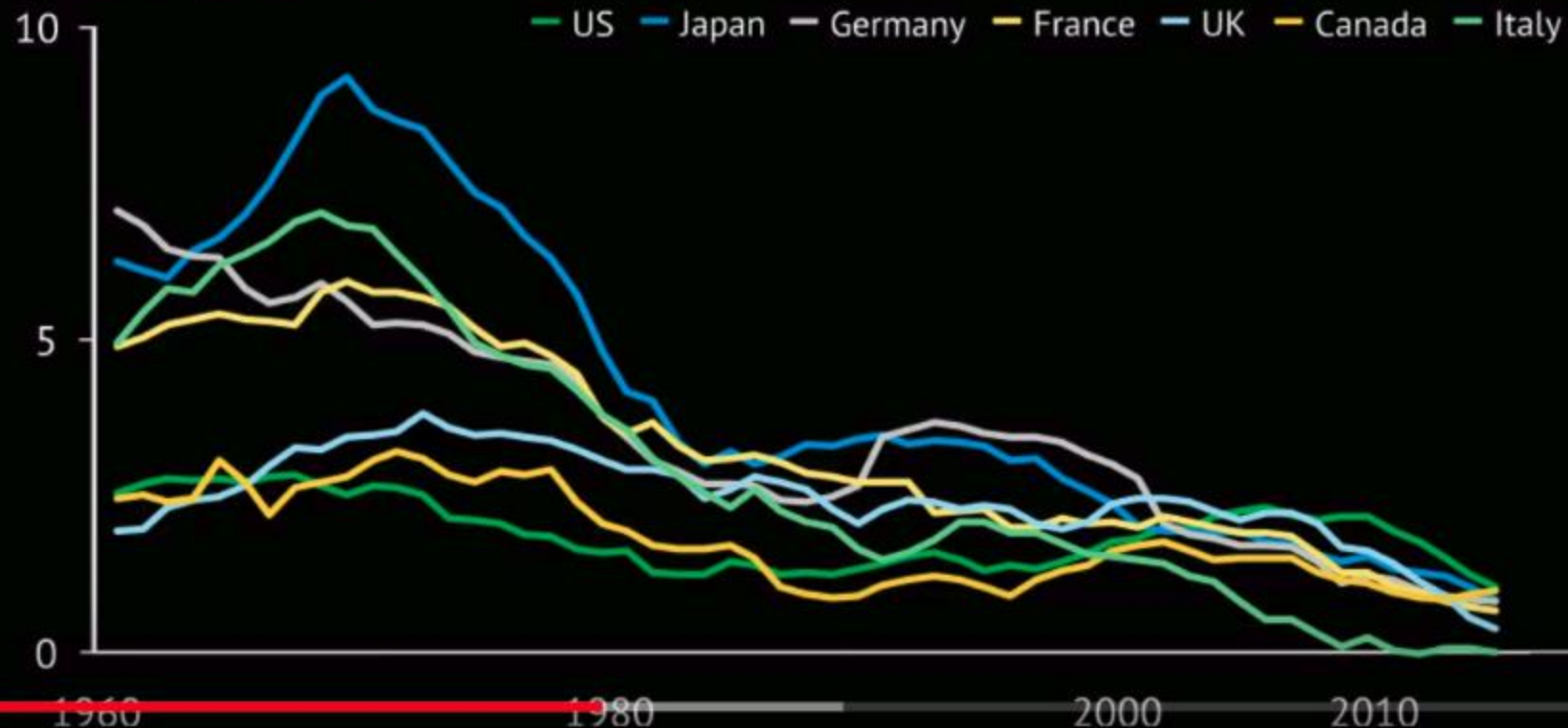
2010

2014



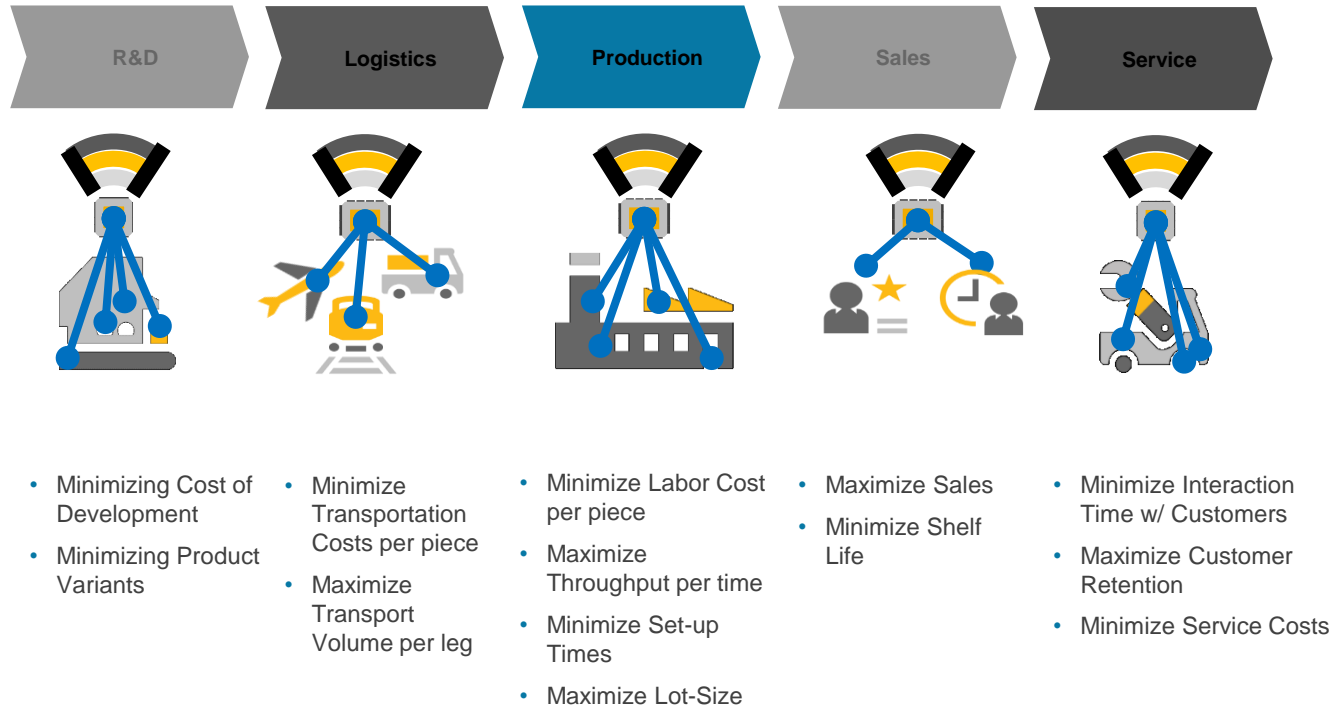
Productivity **DECLINE**

Productivity Growth %

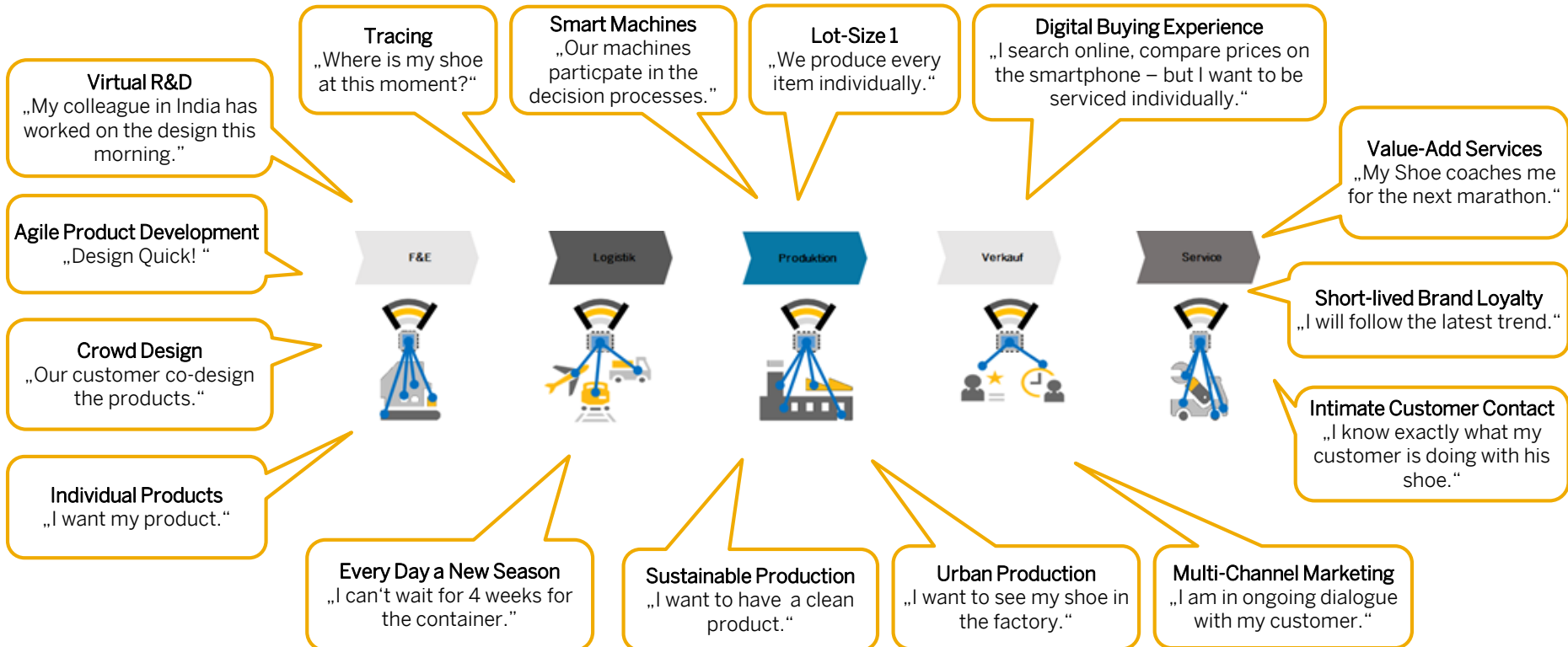


Business Megatrends

Today's Global Industrial Value Generation is centered around productivity and optimizing high throughput

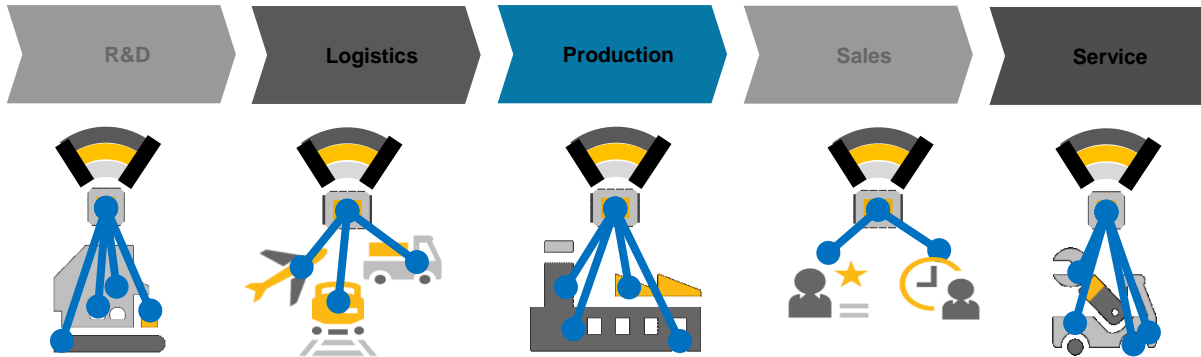


A whole set of Driving Forces will dissolve the current state...



...which will fundamentally change Value Creation

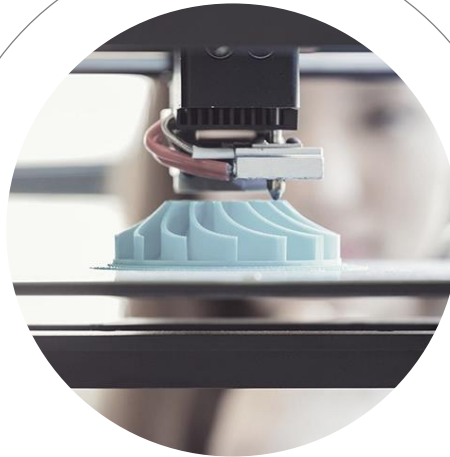
- Maximizing the Product Variants
- Individualization of Global Designs
- Minimizing Distance to End-Customers
- Minimize Transport Distances to Customers
- Optimize Throughput for Fluctuations
- Minimize Resource Consumption
- Maximize Factory Flexibility
- Minimize Lot-Sizes towards Lot-Size 1
- Maximize Sales
- Maximize Customer Interaction
- Optimize Buying Experience
- Maximize Customer Interaction Time
- Maximize Customer Satisfaction



Digital Manufacturing Business Megatrends

Networks

Distributed Manufacturing
Logistics and Manufacturing Networks
Agile Supplier Networks



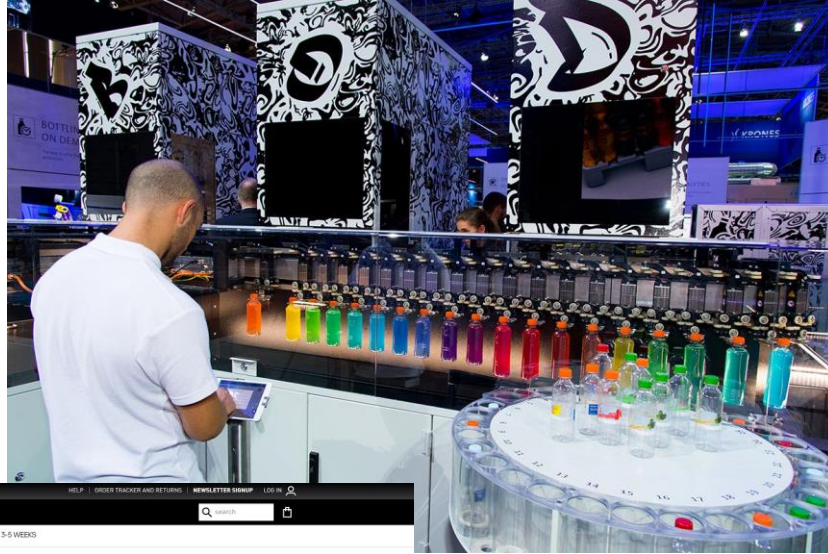
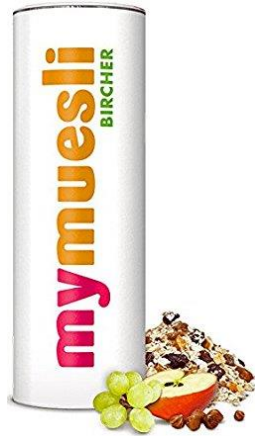
Consumerization

Product personalization – lot size one
Consumer experience
Fast demand cycles

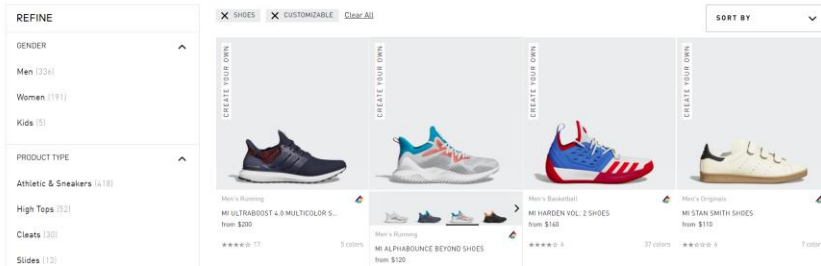
Digitization

Real time visibility
Data-driven business models
Everything as a service

From Mass Production to Mass Customization



Back Home / Shoes / Customizable
CUSTOMIZABLE SHOES 1517 products



Major shifts in manufacturing capabilities is accelerating business transformation with **Industry 4.0**

Industry 4.0 is the current trend of automation and data exchange in manufacturing technologies. It includes **cyber-physical systems**, the **Internet of things** and **cloud computing**. Industry 4.0 creates what has been called a "smart factory".

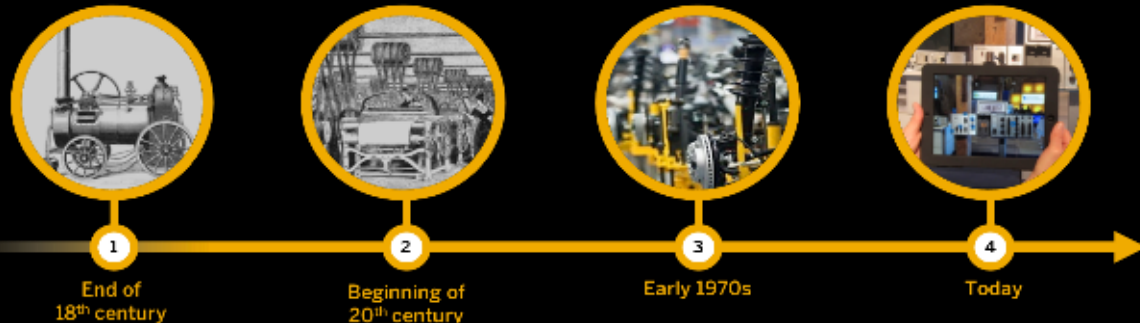


The **Industry 4.0** Revolution

Design Principles

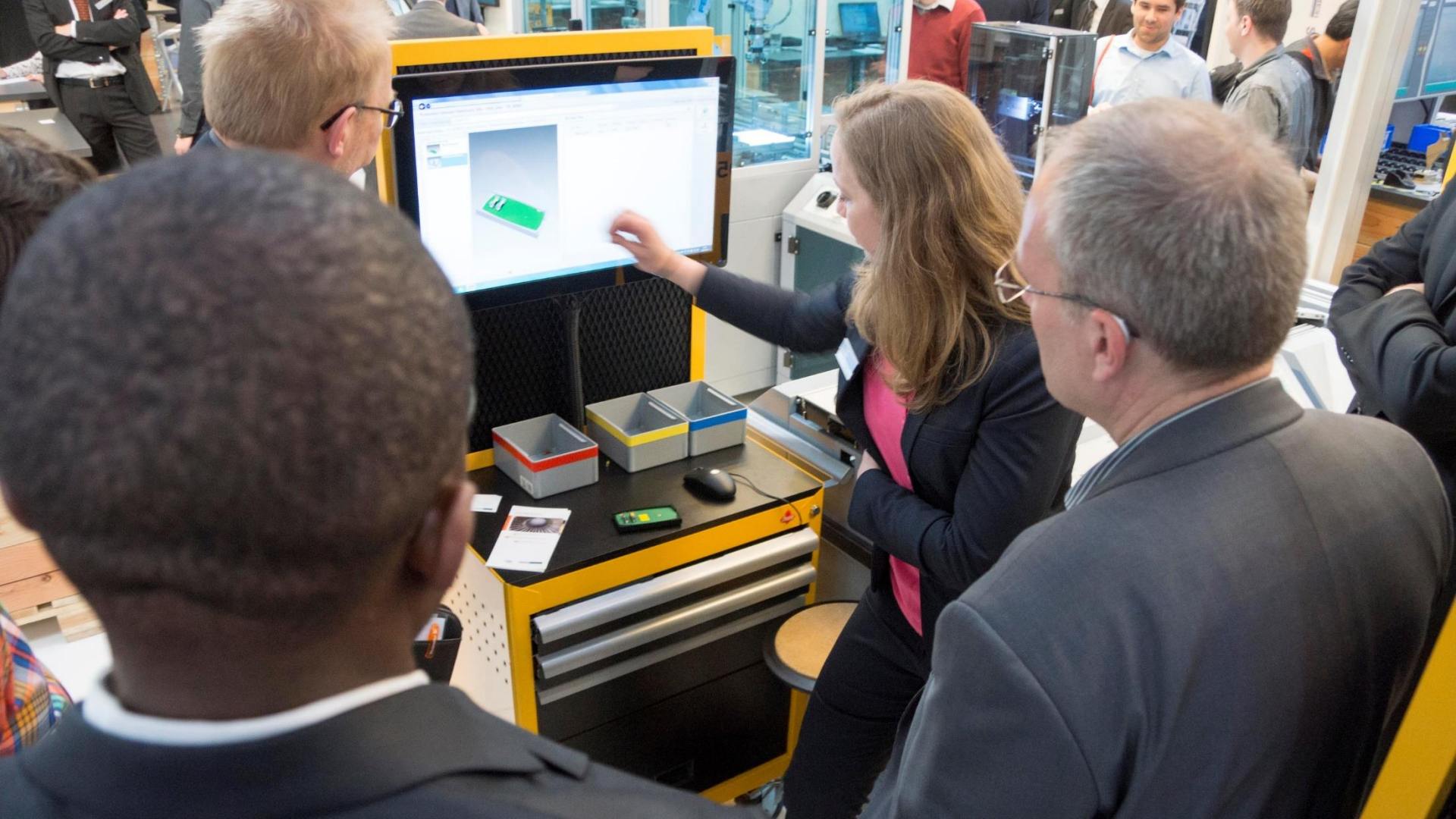
- Interoperability
- Information transparency
- Technical assistance
- Decentralized decisions

Disruptive **innovations** applied in manufacturing promise to trigger a new industrial revolution











SAP

Cust. Order 7094



SAP

Cust. Order 7091



SAP

Cust. Order 7090

JANAM

vanwij731.pro.coil.50000.rpzmefu

1000009102

Goods Receipt

11:56 AM

SAP

OK

?123



DSC®
Innovation with Integration

Rexroth
Bosch Group



SAP



Simply
Connected.



STEMA

endia

Rexroth
Bosch Group

04

Prüfen

Verpa
Packin

Production meets Logistics

- Integrating manufacturing with smart logistics
- Mobilizing manufacturing

SAP ME – Vormontage 10 / Prüfplatz 30


SAP ME – Endmontage 20

SPS/Anlagen-Emulation
für SAP ME/EWM



Vormontage 10 Prüfplatz

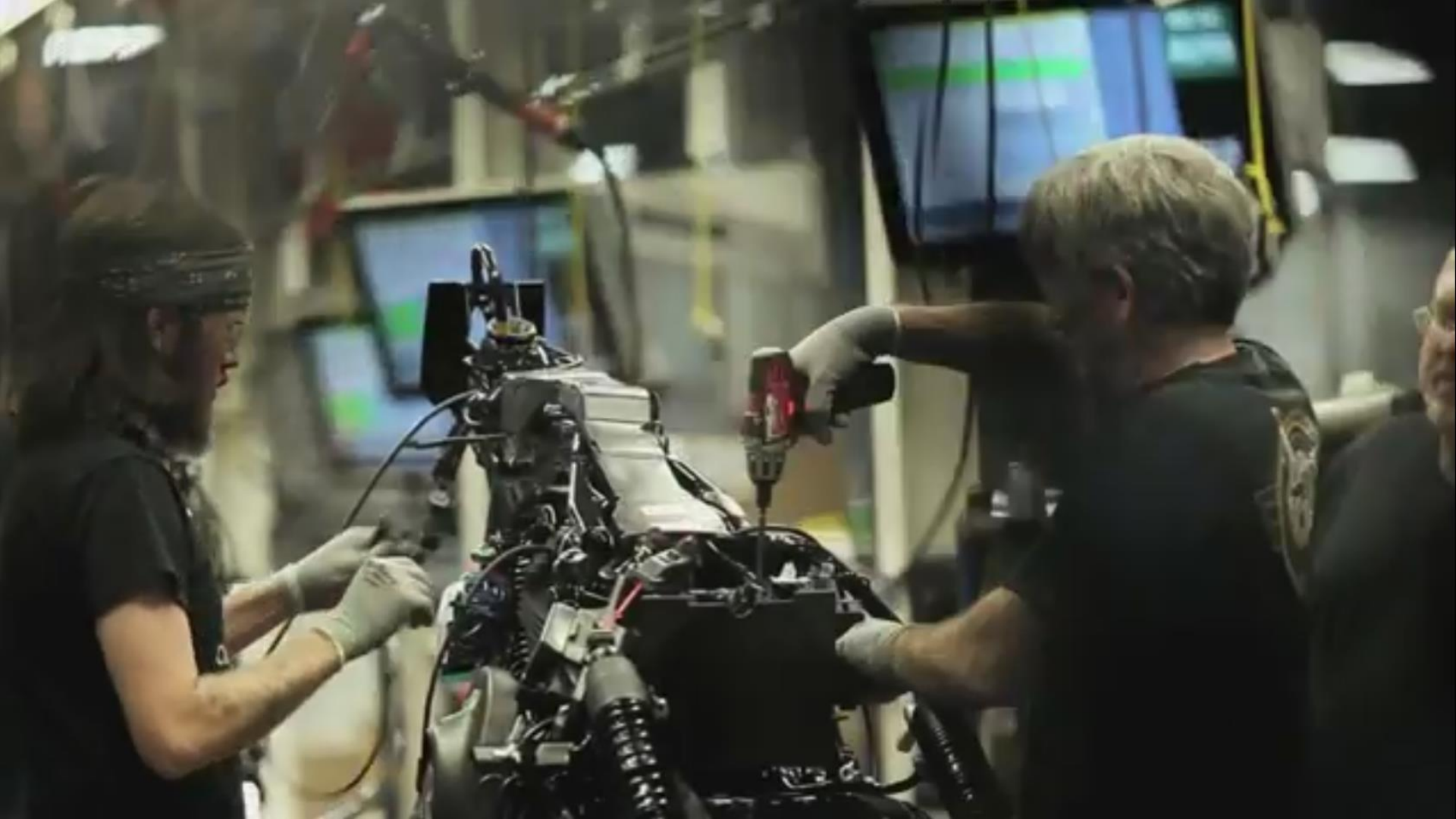
Endmontage 20

A row of orange industrial machines, likely automated guided vehicles (AGVs), is shown in a factory setting. The machines are arranged in a line, receding into the background. The machine in the foreground on the left has a white label with the text 'Y9800 C027'. The machine in the foreground on the right has a white label with the text 'Y9800 C083'. The background is slightly blurred, showing the industrial environment.

Y9800
C027

Y9800
C083













Is Industry 4.0 all about Manufacturing?

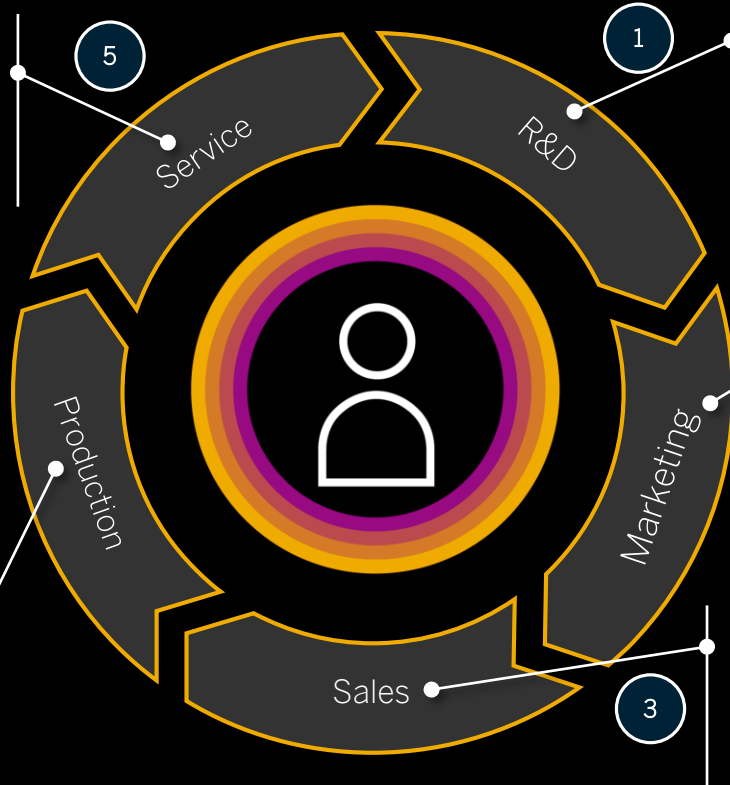


SAP's point of view

Serving the "Segment of One" involves the whole company and requires a digital framework

Individual and customized services

- Deliver personalized service and support
- Offer tailor-made and equipment-specific services
- Leverage IoT data for service optimization



Individual product development

- Extend the CTO and MTO portfolio
- Manage modular product concepts
- Integrate digital capabilities

Contextual omni-channel marketing

- Intelligently segment customers
- Run targeted campaigns
- Engage in a personalized way

Lot size 1 production:

- Produce individual products in a cost-effective way
- Run a smart, integrated and flexible factory
- Manage an adaptive and responsive supply chain

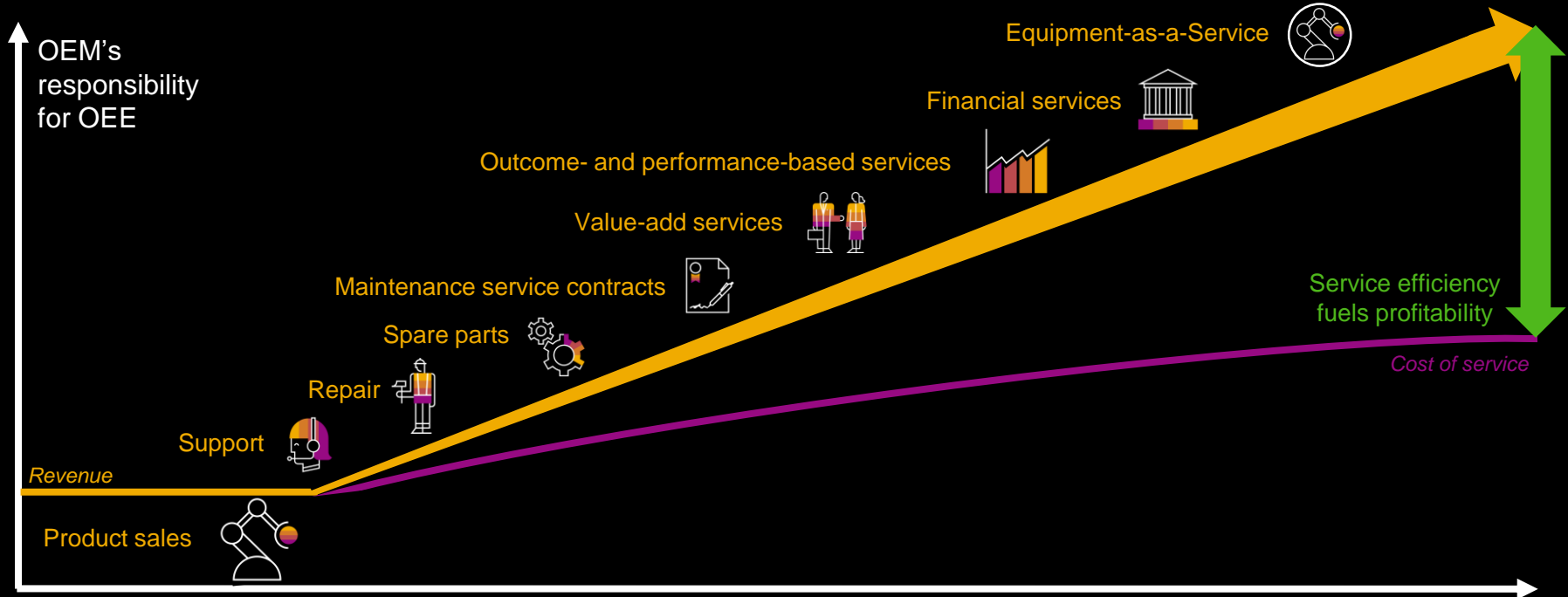
Personalized selling

- Convert individual needs into opportunities and orders
- Flexibly configure products and solutions
- Consistently leverage all sales channels



SAP's point of view

Servitization helps manufacturers to increase their share of equipment lifecycle costs



OEM's share of equipment lifecycle costs

Purchasing costs	Operating costs		
	Energy	Maintenance	Others



SAP Digital Supply Chain

Connect Digitally to Perfect Reality

INTERNAL

New Business Models Enabled by Digital Supply Chain

Industry boundaries are blurring



Digital supply chains drive **disruption**, **innovation**, and **profit**

Leading Companies Address These Key Business Needs



Customer Centricity

Plan and deliver to the customer segment of **ONE**



Total Visibility

Analyze and manage the supply chain of **ONE**

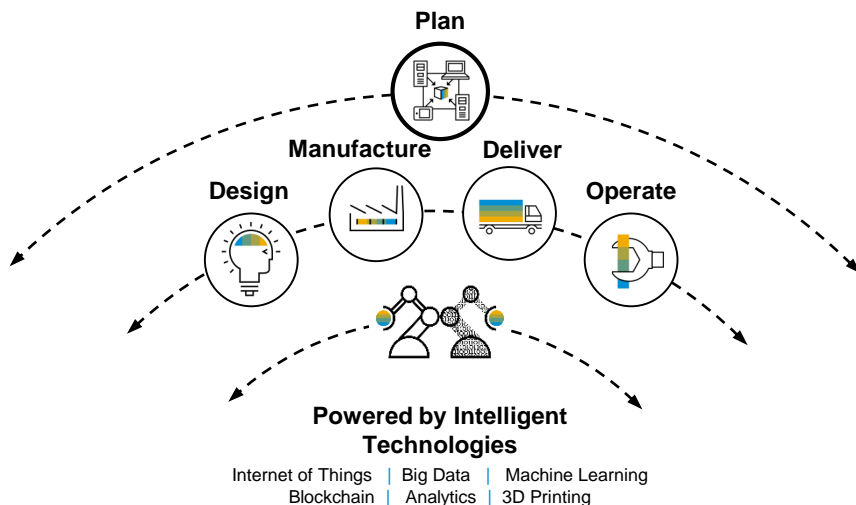


Business Innovation

Manufacture the lot size of **ONE**

Digital Supply Chain

From Design to Operate



Design

- Portfolio and Project Management
- Intelligent Product Design
- Engineering Control Center



Manufacture

- Manufacturing Execution
- Manufacturing Integration and Intelligence
- Digital Manufacturing Insights



Deliver

- Extended Warehouse Management
- Transportation Management
- Global Track and Trace



Operate

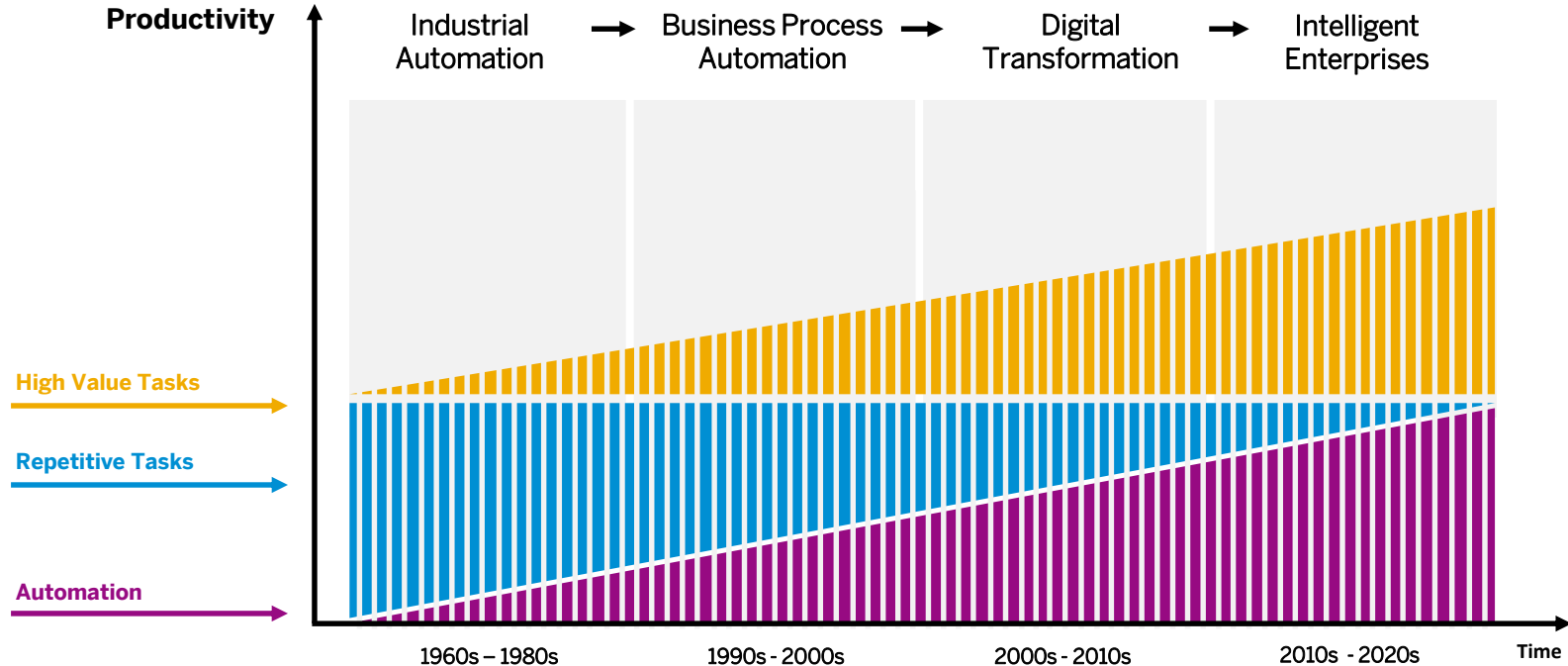
- Predictive Maintenance and Service
- Asset Intelligence Network
- Predictive Engineering Insights



Plan

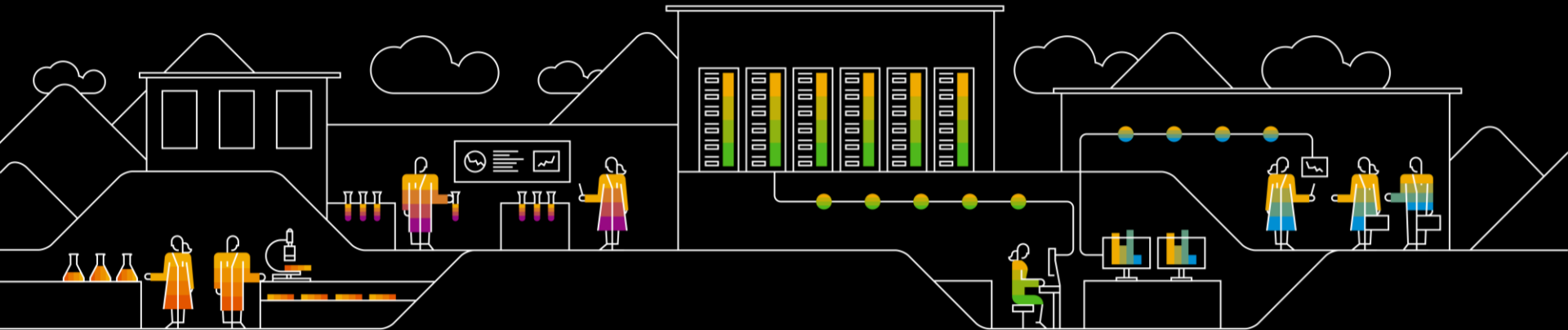
- Integrated Business Planning
- Supply Chain Collaboration
- Demand Signal Management

Intelligent Enterprises elevate employees to focus on higher-value tasks



Conclusion...

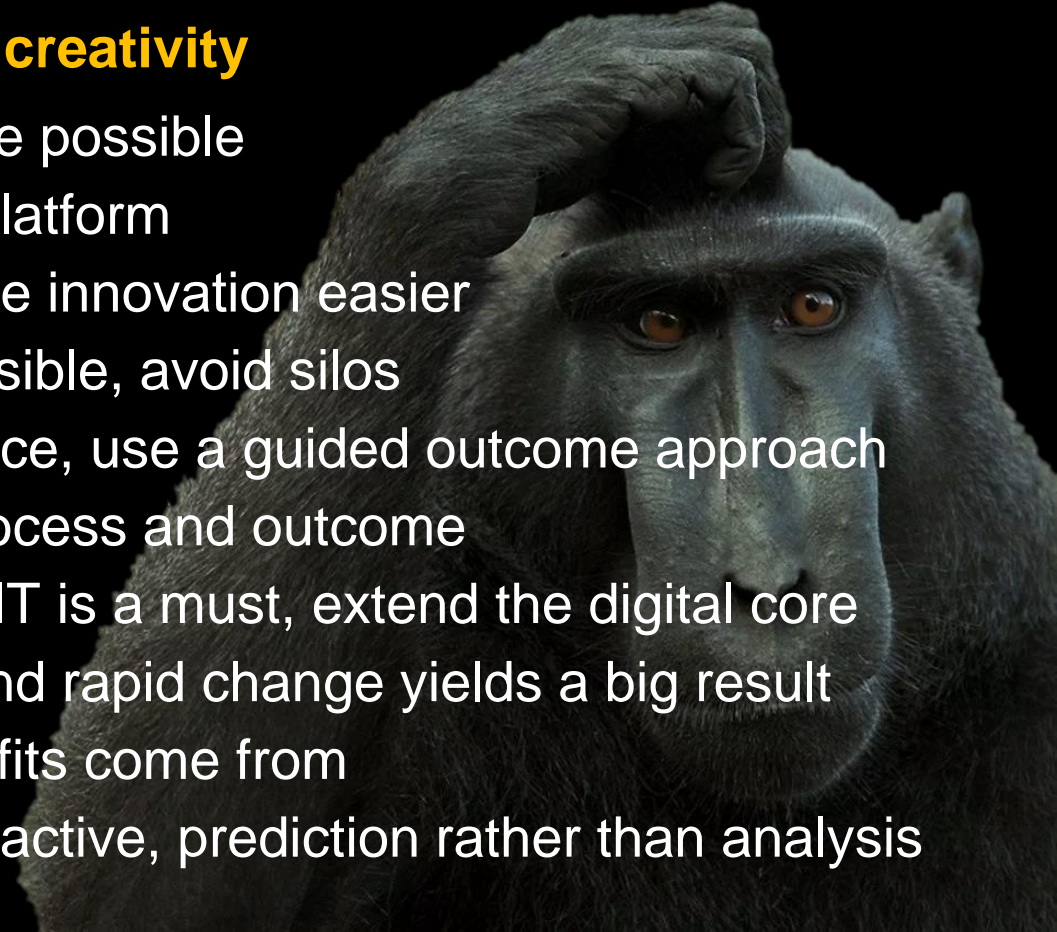
Summary of the benefits



What are good practices...

Innovation needs human creativity

- Use open standards where possible
- Micro-services require a platform
- Web Services / API's make innovation easier
- Automate data where possible, avoid silos
- Simplify the user experience, use a guided outcome approach
- Focus on the business process and outcome
- Bringing the OT closer to IT is a must, extend the digital core
- Kaizen approach, small and rapid change yields a big result
- Scaling is where the benefits come from
- Become pro-active not re-active, prediction rather than analysis



One last story

[Harley Davidson and SAP](#)

Thank you!

Contact information:

Frank Soudan
Head of Center of Excellence DSC
Frank.Soudan@sap.com
+34.608.940.791