

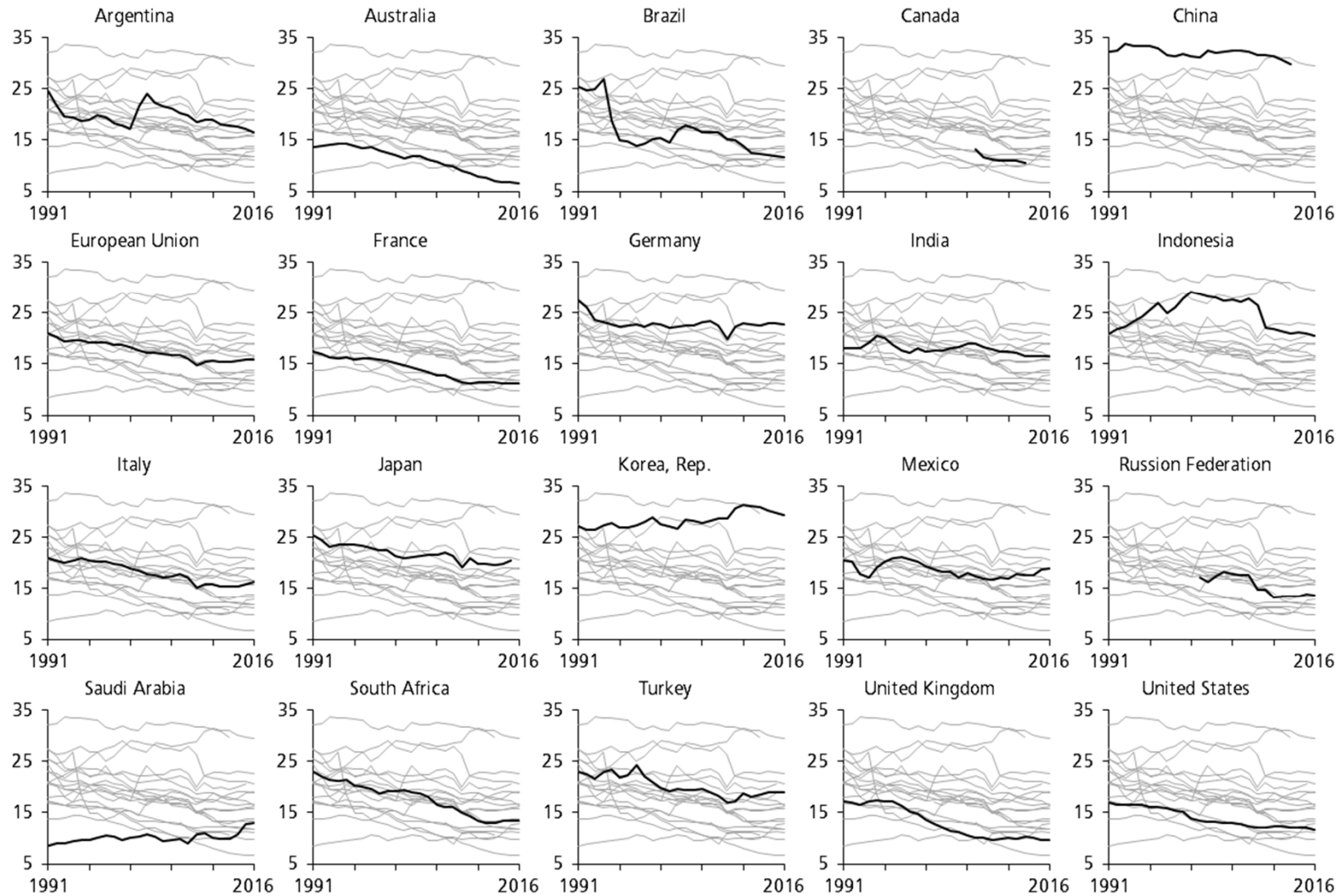
# Strategien und Geschäftsmodelle für die digitale Transformation

Tag der Innovation

Bozen, 13. November 2018

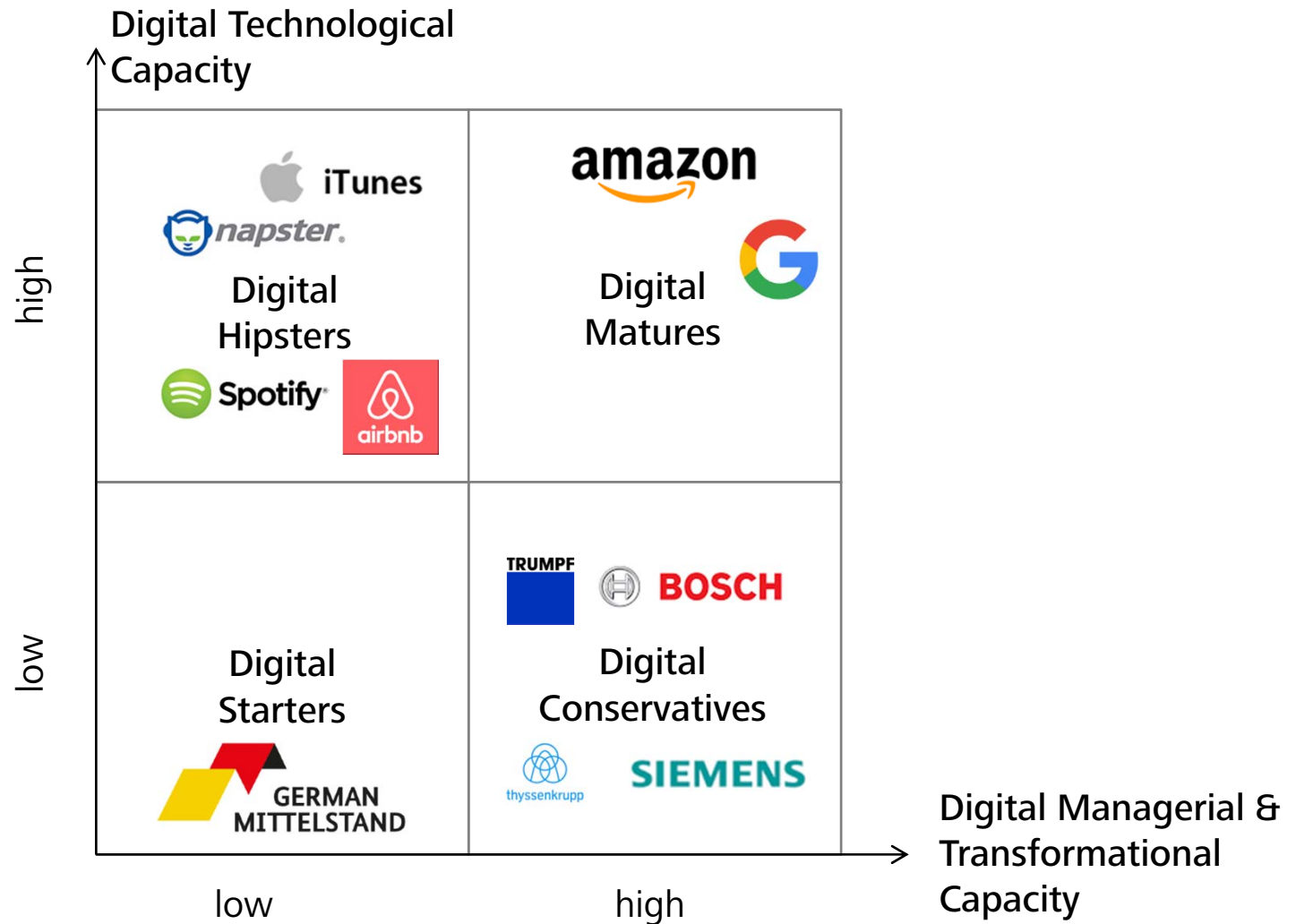
Professor Dr. Robert Obermaier

## G20: Share Manufacturing/GDP

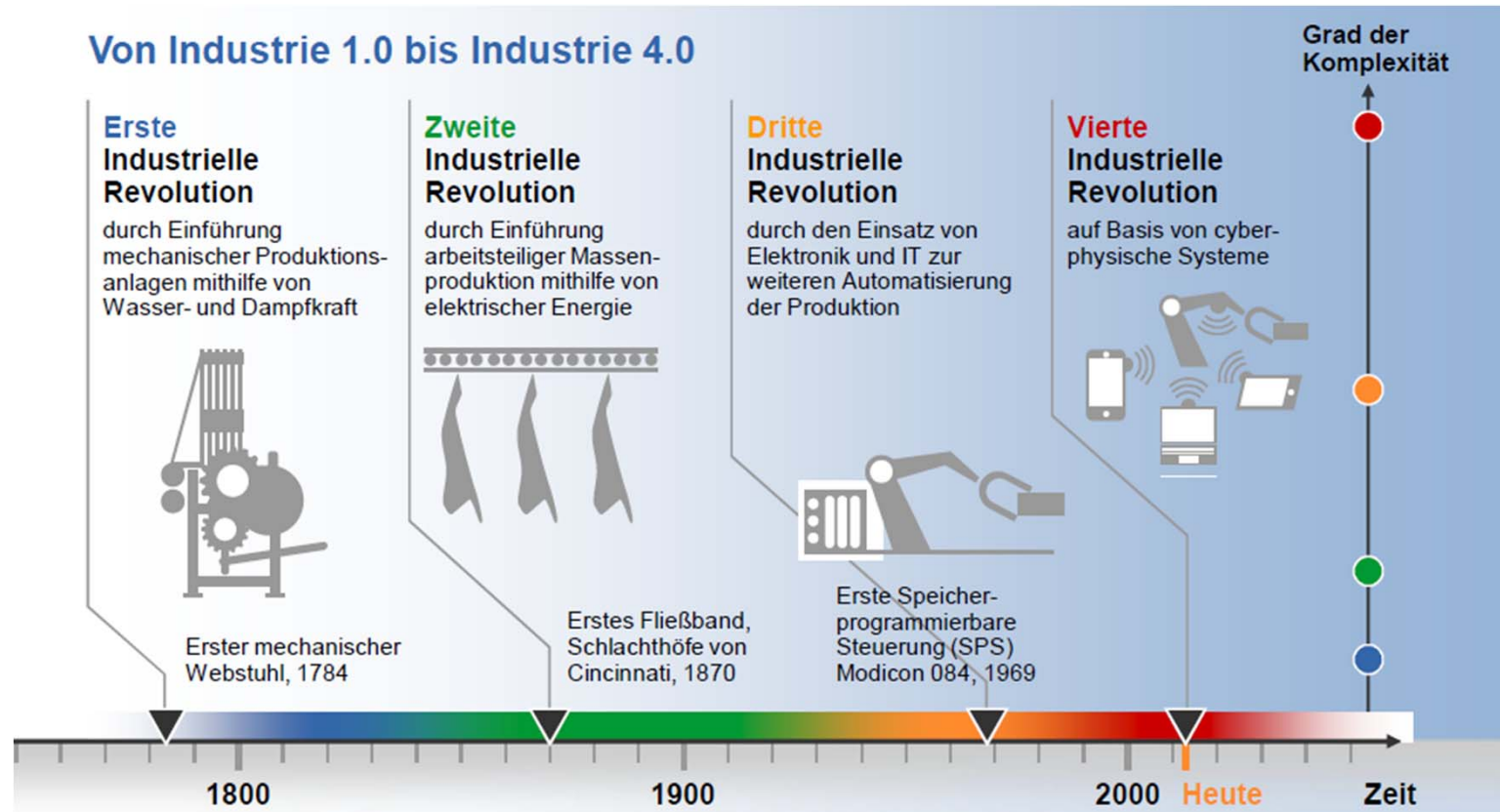


Obermaier (2017)

## Der „deutsche“ Ansatz: Industrie 4.0






## Industrielle Revolutionen ...



Quelle: DFKI (2011)

... haben die industrielle Wertschöpfung stets grundlegend verändert.

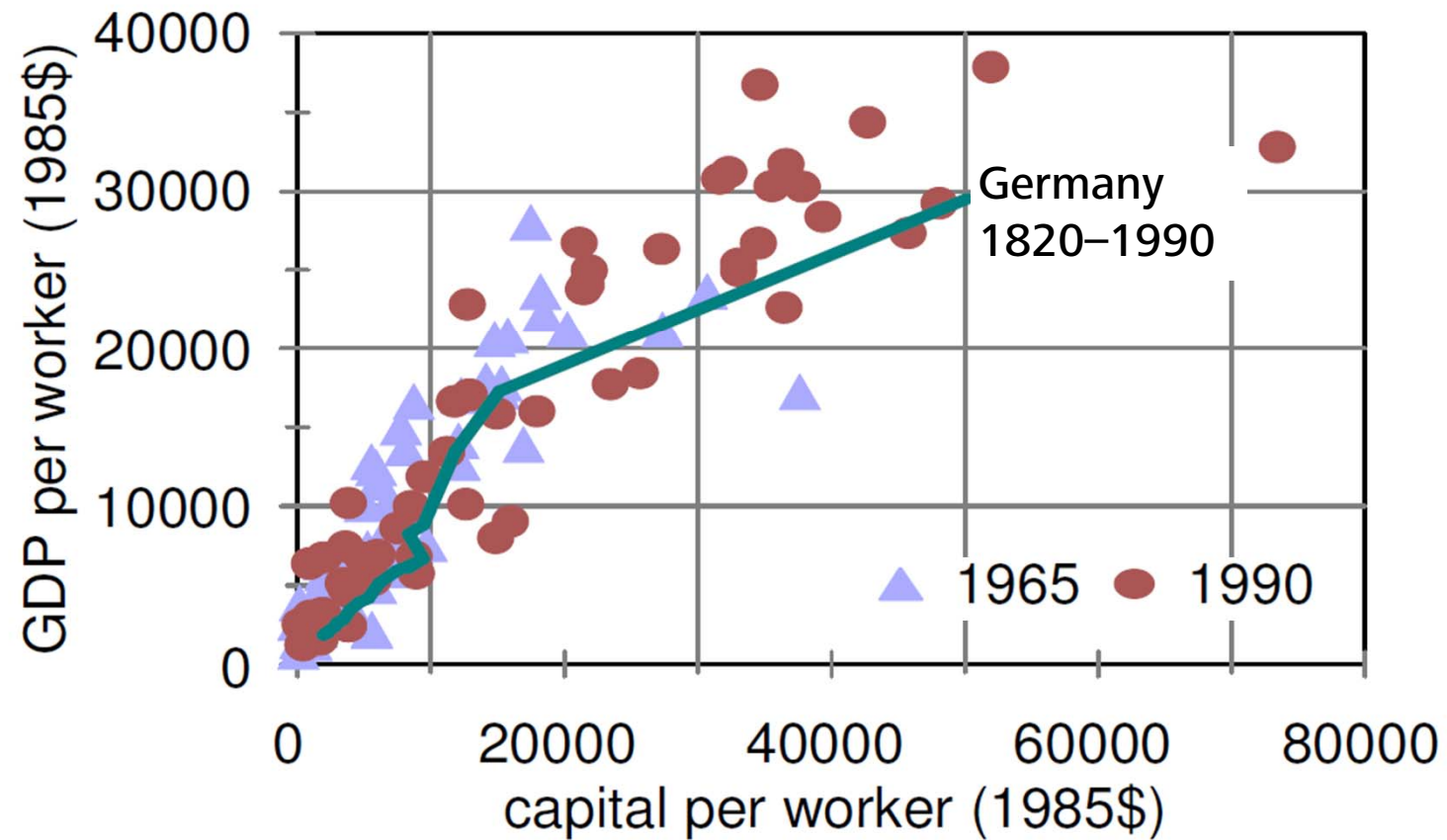
## National and International Organizations

Country	Name of the initiative	Responsible Organizations
Germany		Plattform Industrie 4.0 (Federal Ministry of Economic Affairs, acatech, several industry associations)
USA		Industrial Internet Consortium (founded by AT&T, Cisco, General Electric, IBM, and Intel)
Japan		30 Japanese companies

## National and International Organizations

Country	Name of the initiative	Responsible Organizations
China		<ul style="list-style-type: none"> <li>Ministry of Industry and Information Technology</li> <li>China Academy of Engineering.</li> </ul>
South Korea		Intree 4.0 Forum (several professors)
Sweden		The Association of Swedish Engineering Industries

## World Production Function



Quelle: Allen (2011)





## Technologies

1. Internet & communication technology

2. Advanced manufacturing technology, Robots

3. Sensors, Aktors

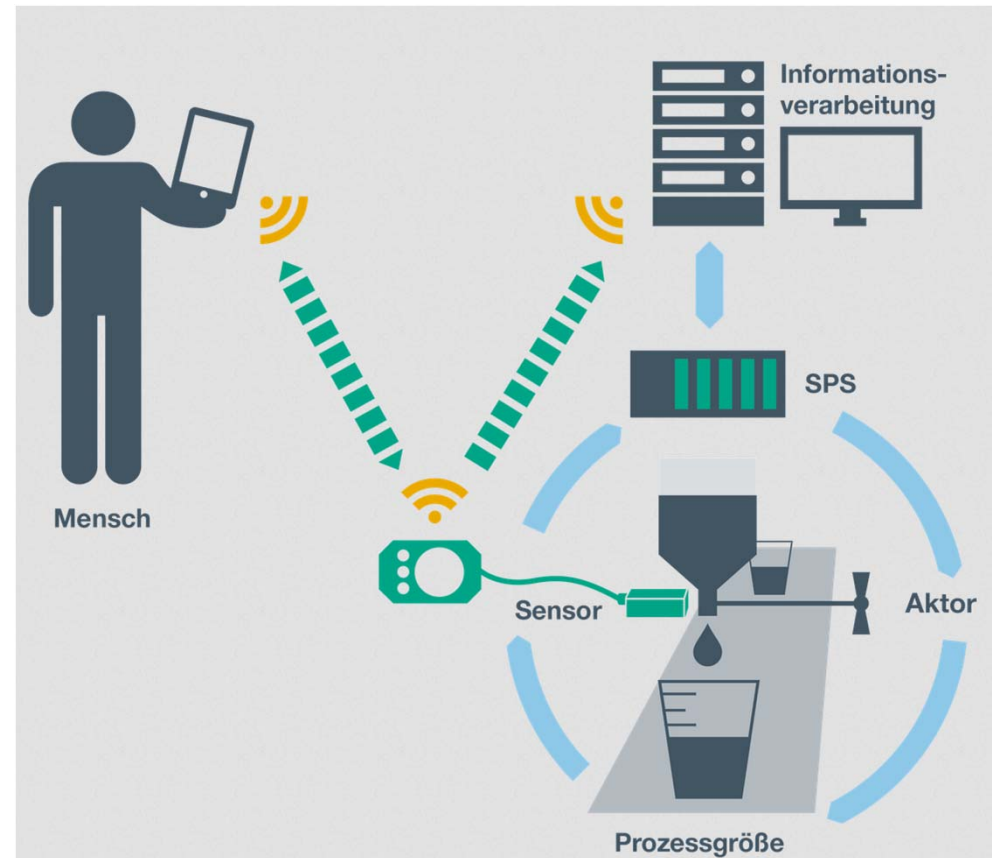
4. Embedded Systems, Software, Analytics

5. Human Machine Interface



## Technologies

1. Internet & communication technology
2. Advanced manufacturing technology, Robots
3. Sensors, Actors
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5. Human Machine Interface





## Technologies

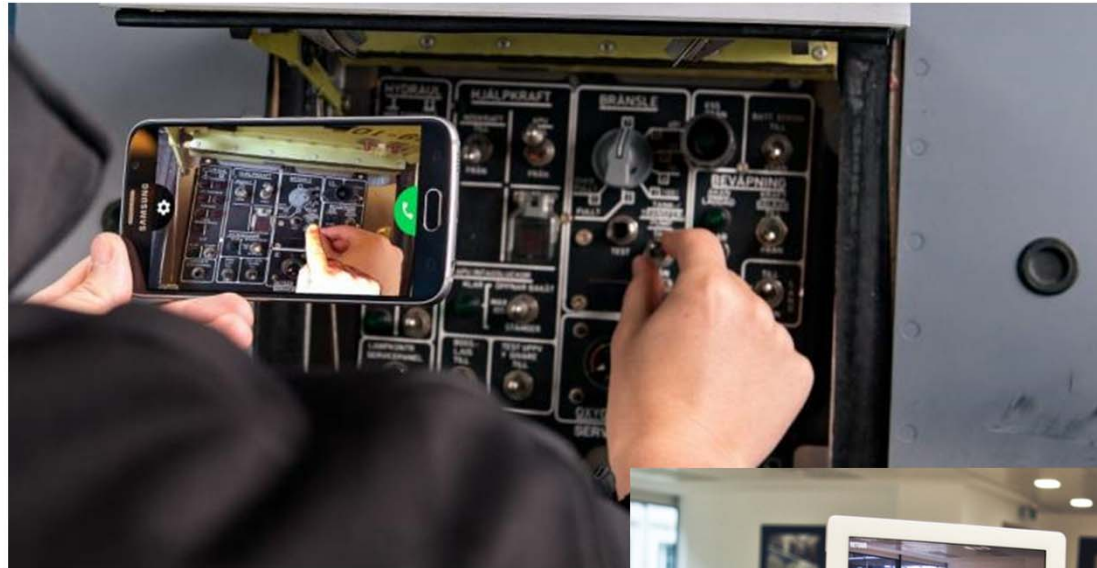
1. Internet & communication technology

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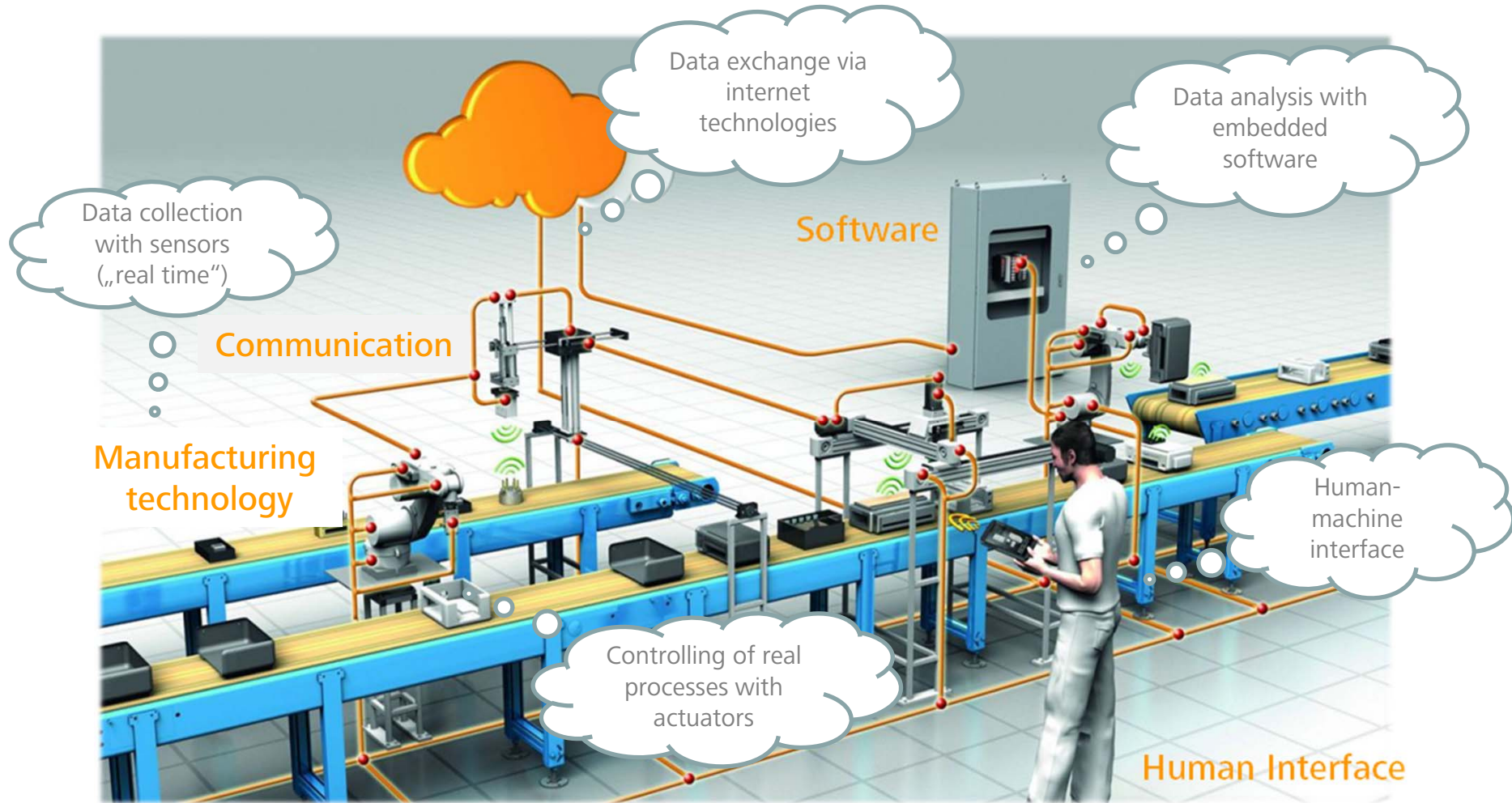
3. Sensors, Aktors

4. Embedded Systems, Software, Analytics

5. Human Machine Interface



## Cyber Physical Systems (CPS) und Smart Factory



Eine betriebswirtschaftliche Definition von „Industrie 4.0“

„Industrie 4.0“ beschreibt eine Form der Wertschöpfung, die durch

- Automatisierung,
- Digitalisierung sowie
- Vernetzung aller Akteure

charakterisiert ist und auf

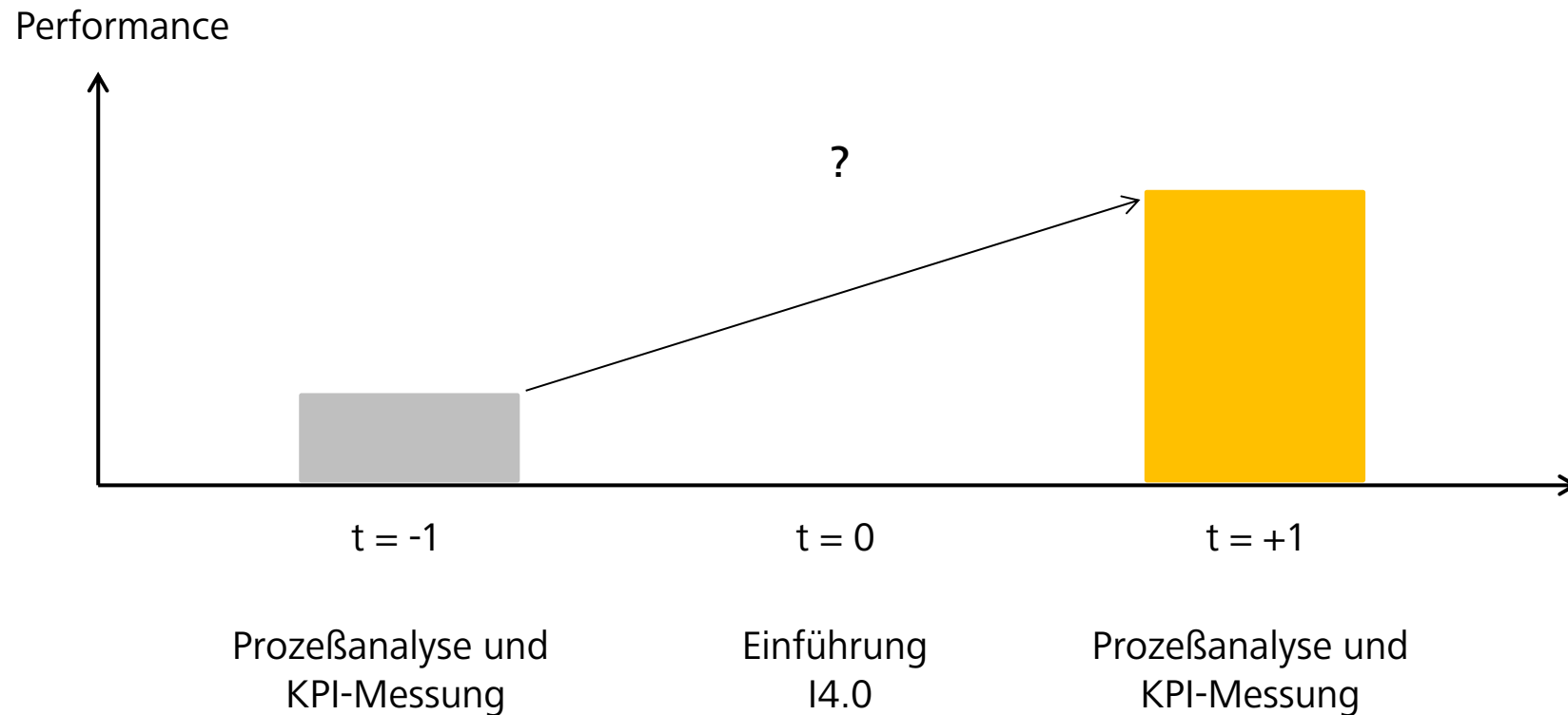
- Prozesse,
- Produkte oder
- Geschäftsmodelle

von Unternehmen einwirkt.



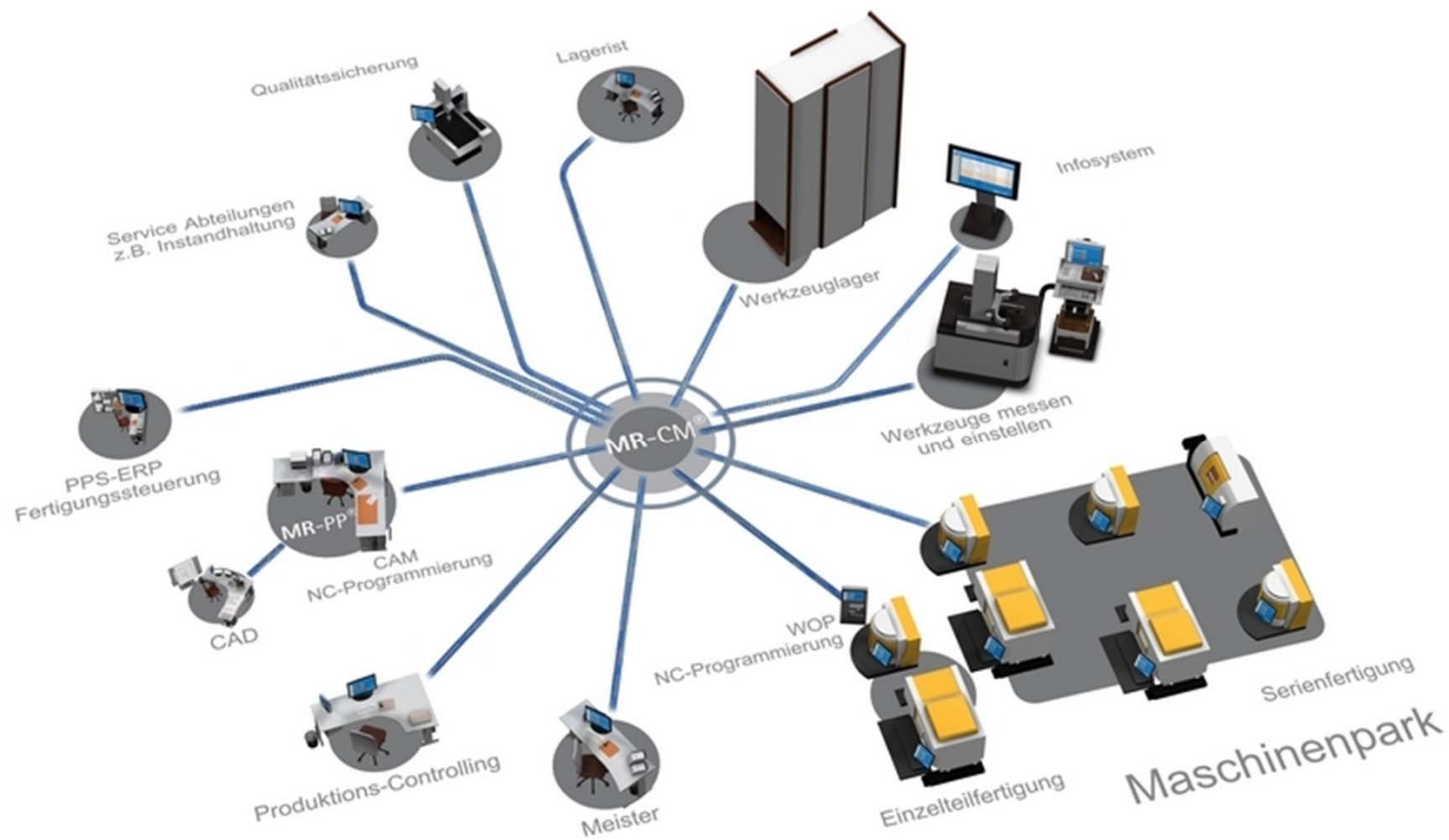
Quelle: Obermaier (2016)

Welche Effekte hat die Einführung einer Industrie 4.0-Technologie?



Quelle: Obermaier et al. (2015)

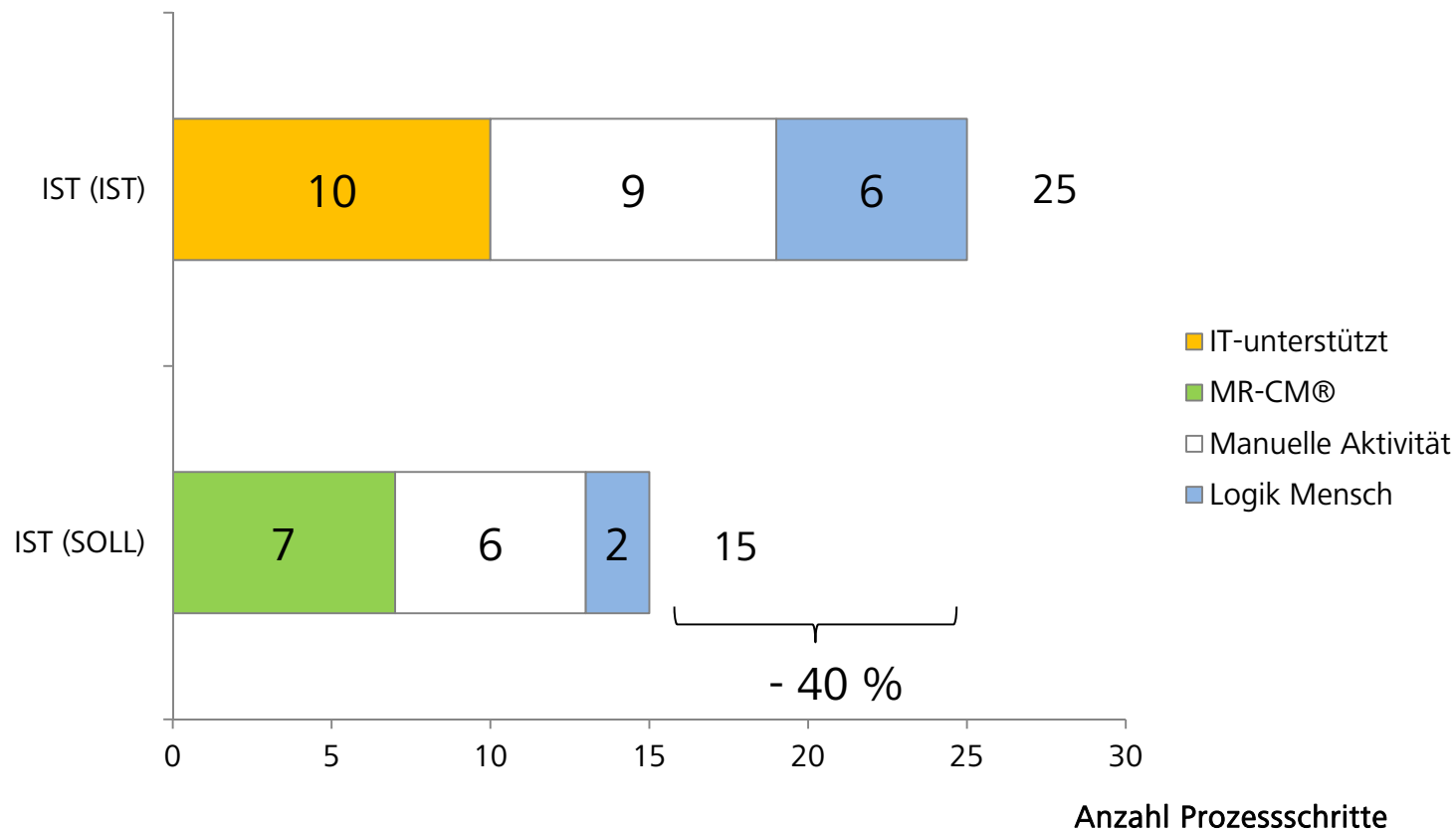
## Smarte, vernetzte Prozesse: Manufacturing Execution Systems (MES)



Maschinenfabrik Reinhausen (2015)

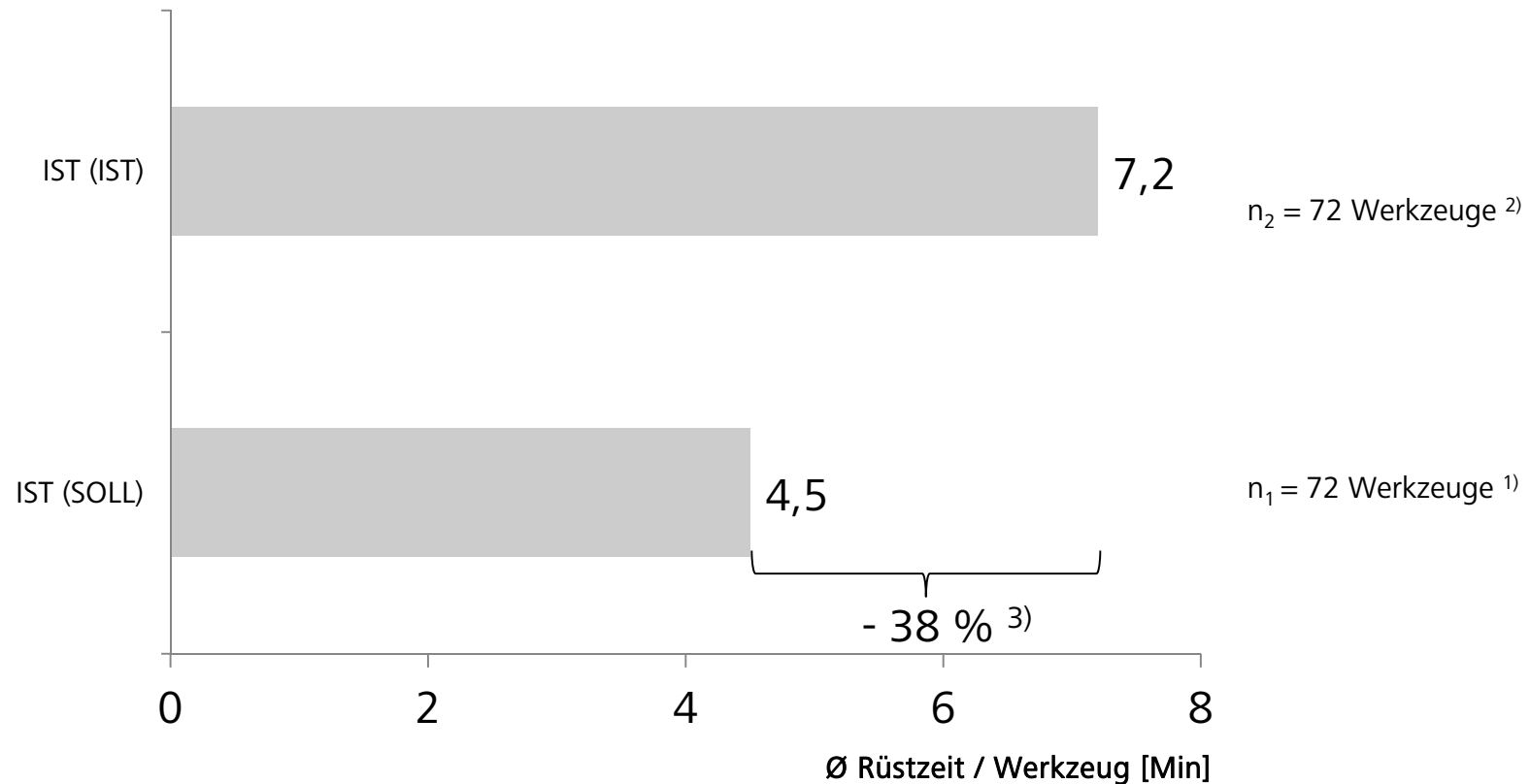


## Smarte, vernetzte Prozesse: Potential- und Prozeßanalyse (ex post)



Quelle: Obermaier et al. (2015)

## Smarte, vernetzte Prozesse: Potential- und Prozeßanalyse (ex post)



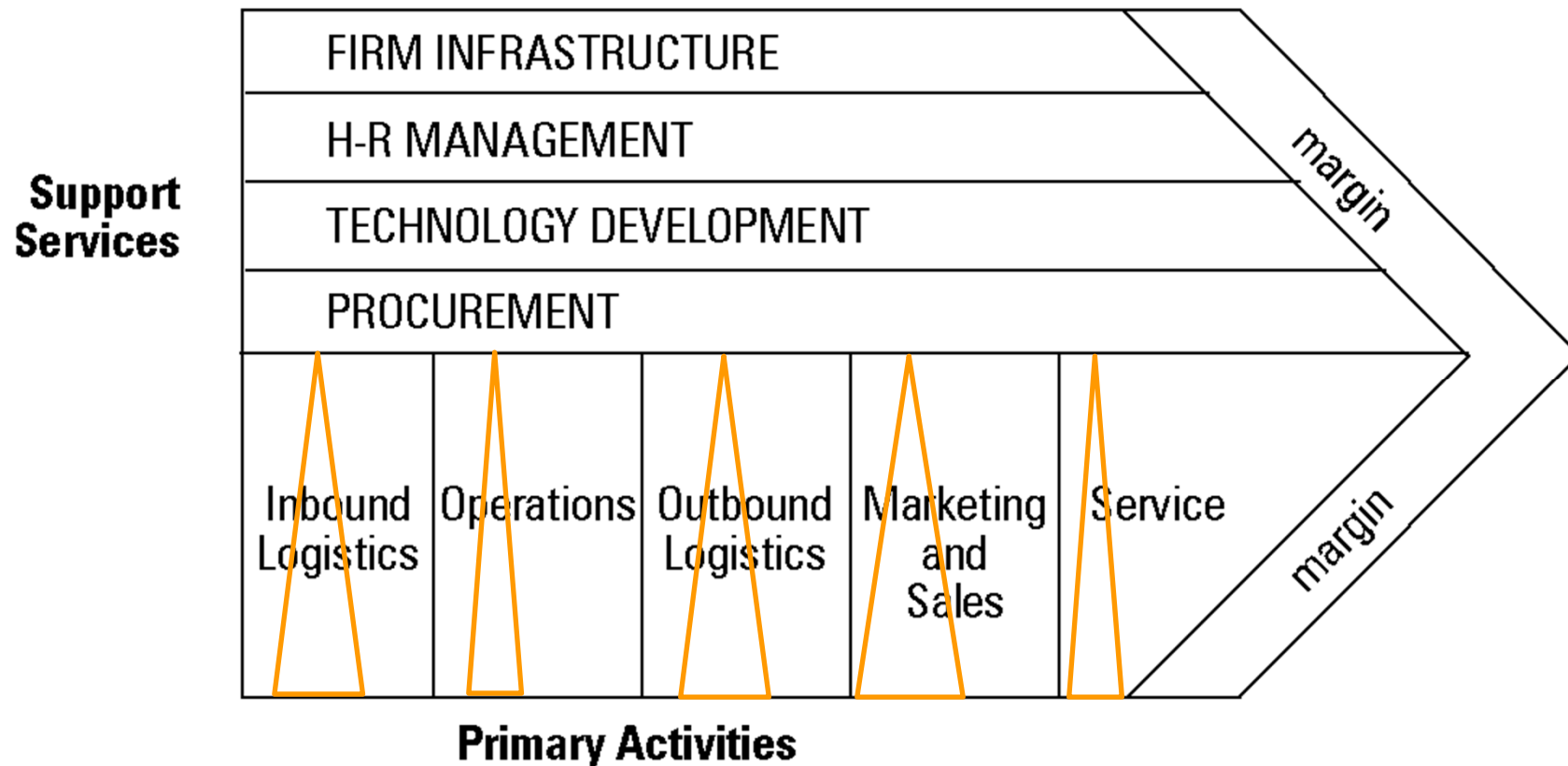
1) Basis: 29 Einstellaufträge

2) Basis: 19 Einstellaufträge

3) stat. signifikant,  $p = 0,0001$

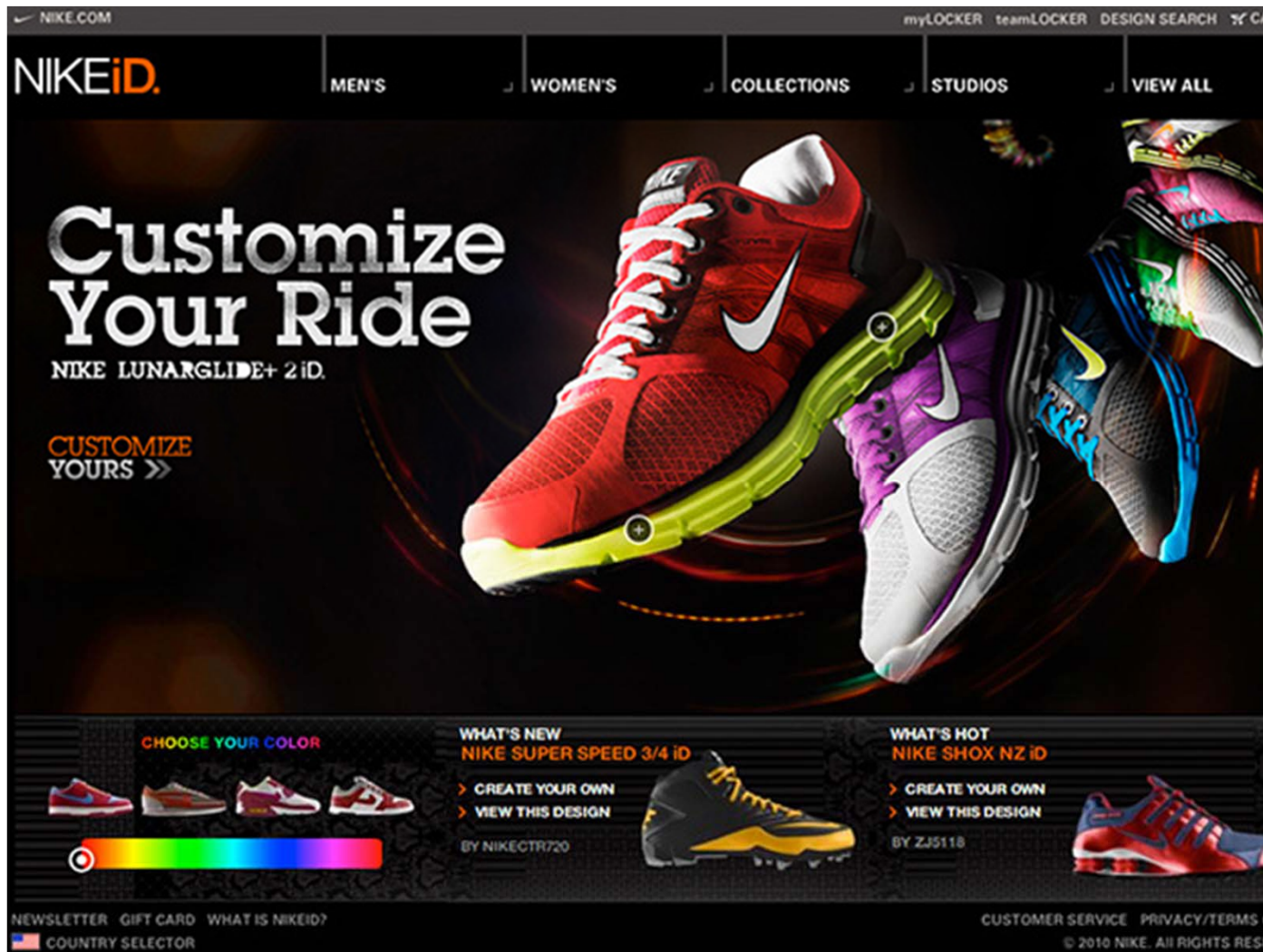
Quelle: Obermaier et al. (2015)

Smarte, vernetzte Produktionsprozesse: "Weak Links" der Wertschöpfung



Quelle: Porter (1985)

Smarte, vernetzte Produktionsprozesse: NIKEiD. for „producers“



## Smarte, vernetzte Prozesse: myMuesli



MyMüsli (2016)

## Smarte, vernetzte Prozesse: eMachineShop



The screenshot shows the eMachineShop website homepage. At the top left is the eMachineShop logo. To its right is a search bar with the placeholder text "Enter search text" and a "Search" button. Below the logo and search bar is a navigation menu with links: Home, About Us, Machining, Capabilities, Software, Pricing, Engineering, Resources, and Contact. The main content area features a three-step process: 1. Download (Get our free easy-to-use CAD software), 2. Design (Use our software to design your custom part), and 3. Order (Get an instant price and click to order). Below this is a "MACHINED EXAMPLES & PHOTO GALLERY" section with a row of small images showing various machined parts.

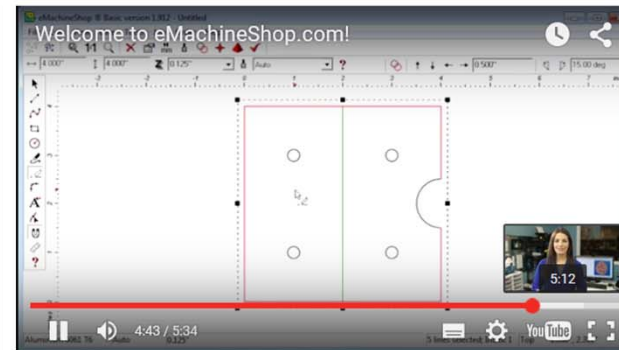
### What is eMachineShop?

eMachineShop is the remarkable online machine shop where you create custom metal and plastic parts quickly and easily.



We'll [quote](#) your job from CAD files or you can download the [free CAD software](#).

Use the [easy](#) drawing features to design your part and get [instant expert](#) design feedback. Make 2D parts cut from sheet metal or 3D machined parts.



### What we can do for you

eMachineShop makes parts for:

[Cars](#) ... [Motorcycles](#) ... [Scooters](#) ... [Drones](#) ... [Robots](#) ... [Electronic devices](#) ...  
[Jewelry](#) ... [Sporting equipment](#) ... [Watercraft](#) ... [Aircraft](#) ... [Musical instruments](#) ...



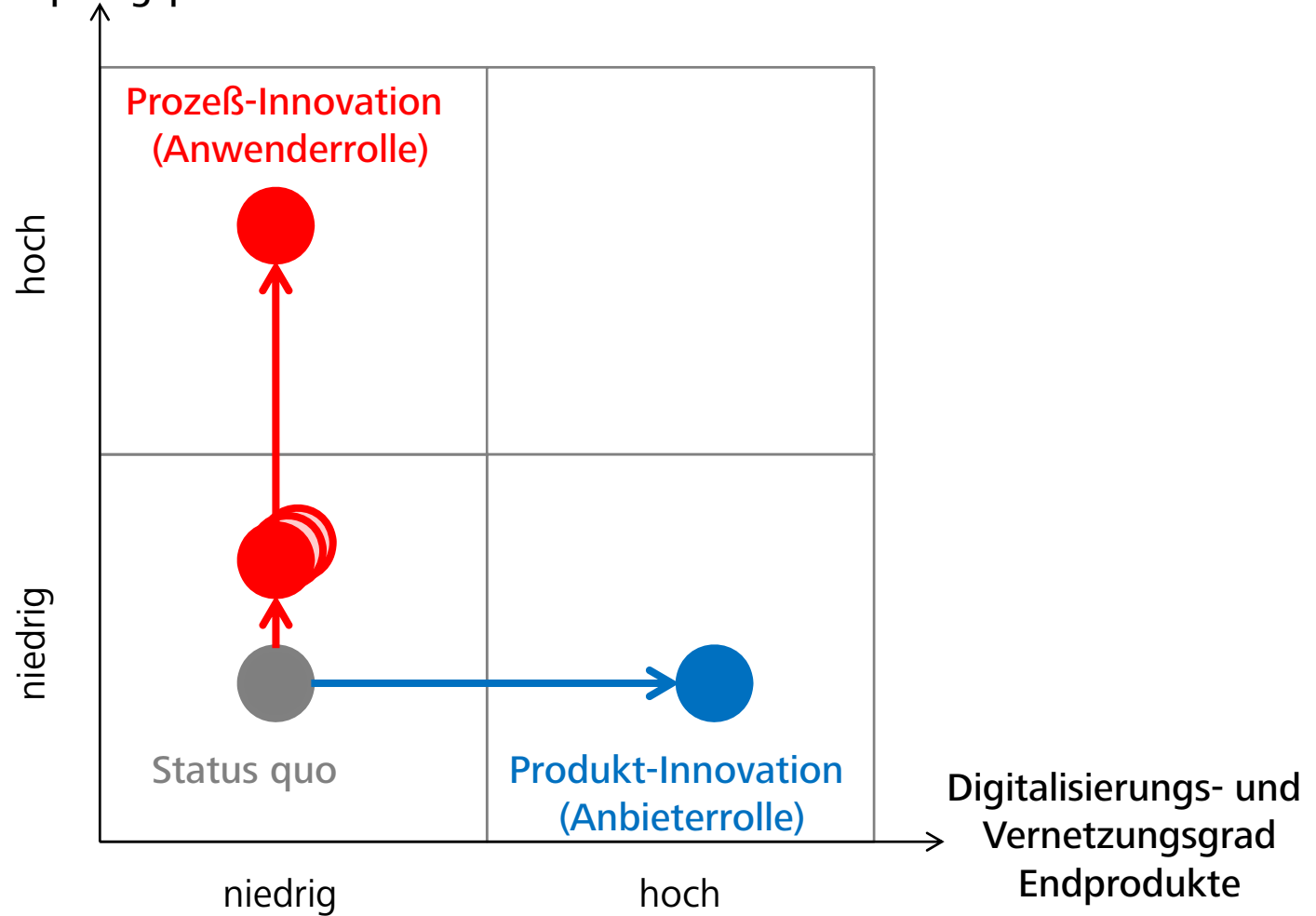
[Get Our FREE CAD Software](#)

Easy to use. Expert feedback.  
Real-time pricing.

[Request a Quote](#)

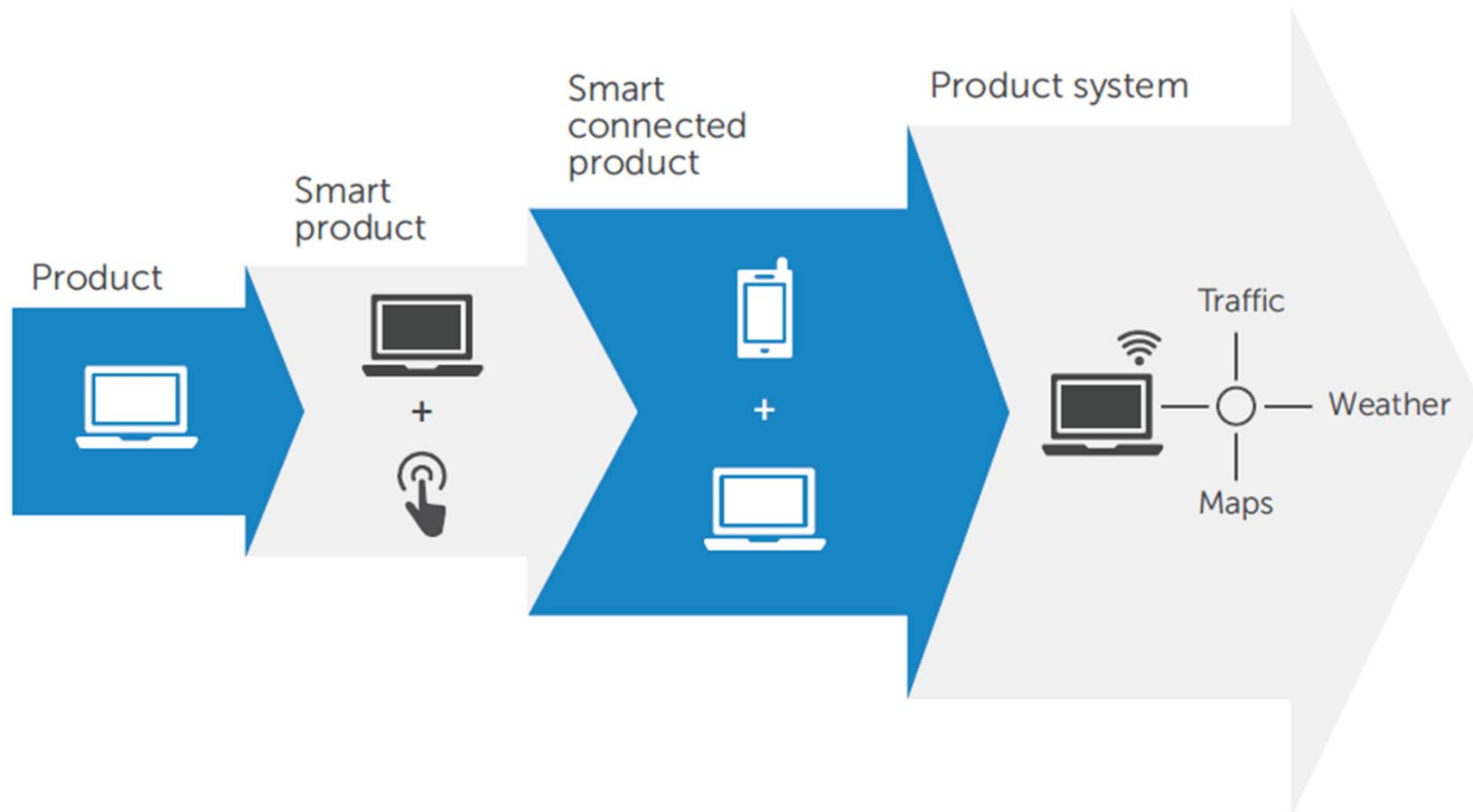
Send us your file for a quote.

Digitalisierungs- und  
Vernetzungsgrad  
Wertschöpfungsprozesse



Quelle: Obermaier (2016)

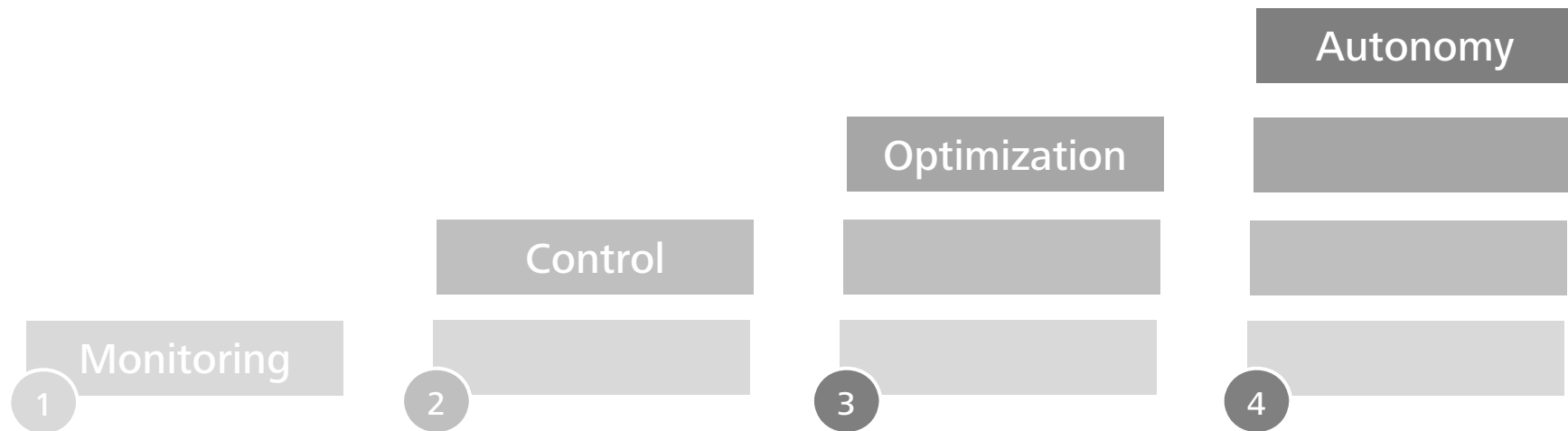
## Smarte vernetzte Produkte und Produktsysteme



Porter / Heppelman (2014)

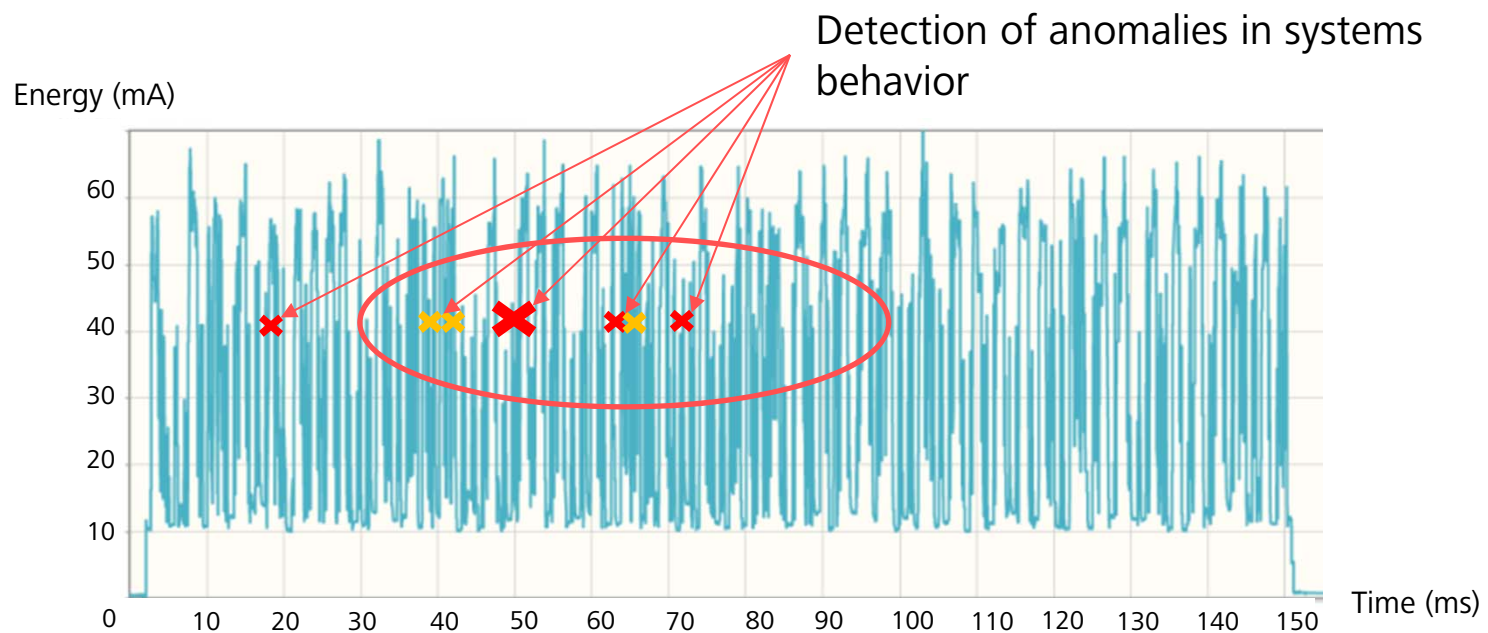


## Smarte vernetzte Produkte: Smart Services

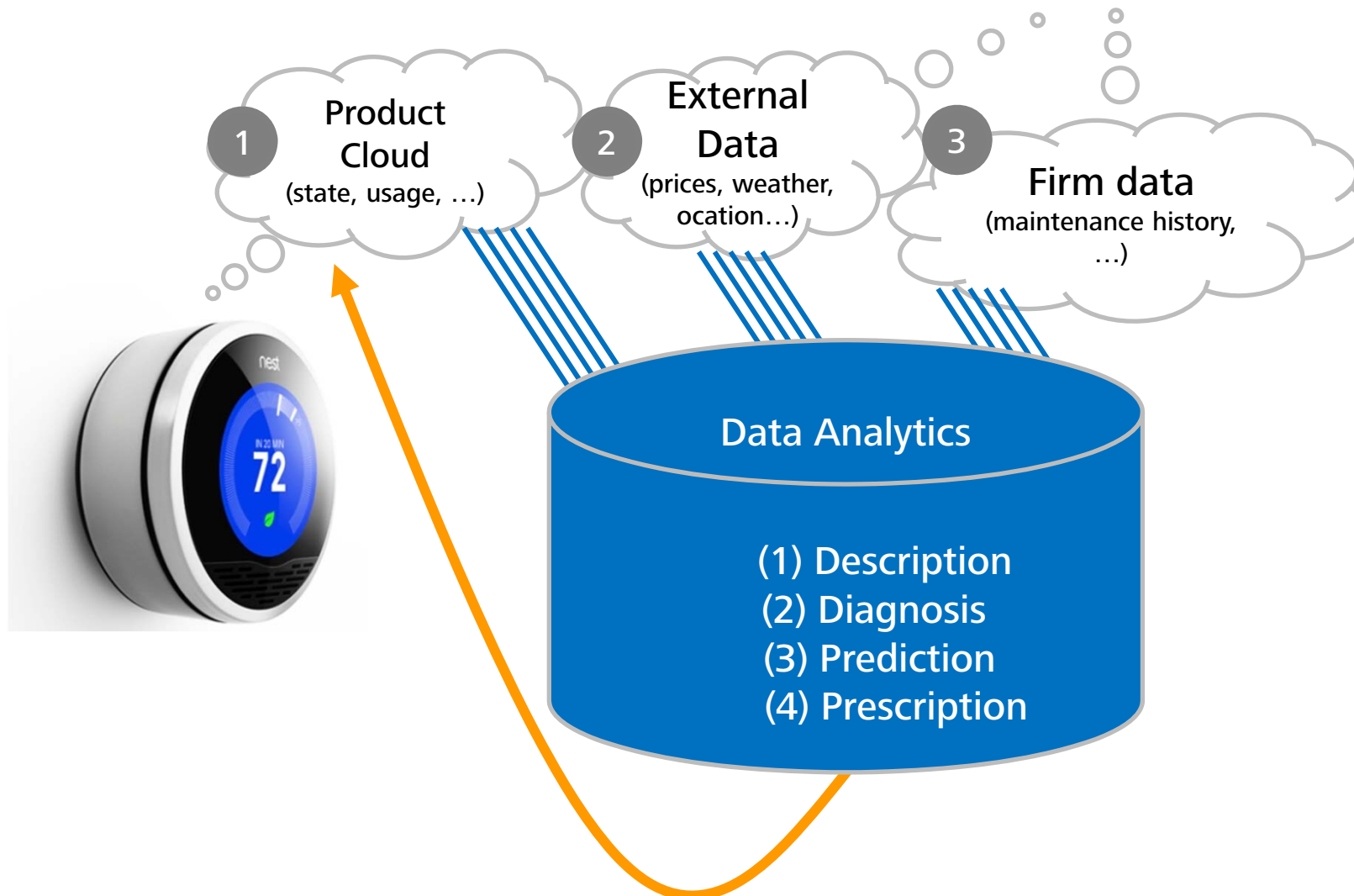


Porter / Heppelman (2014)

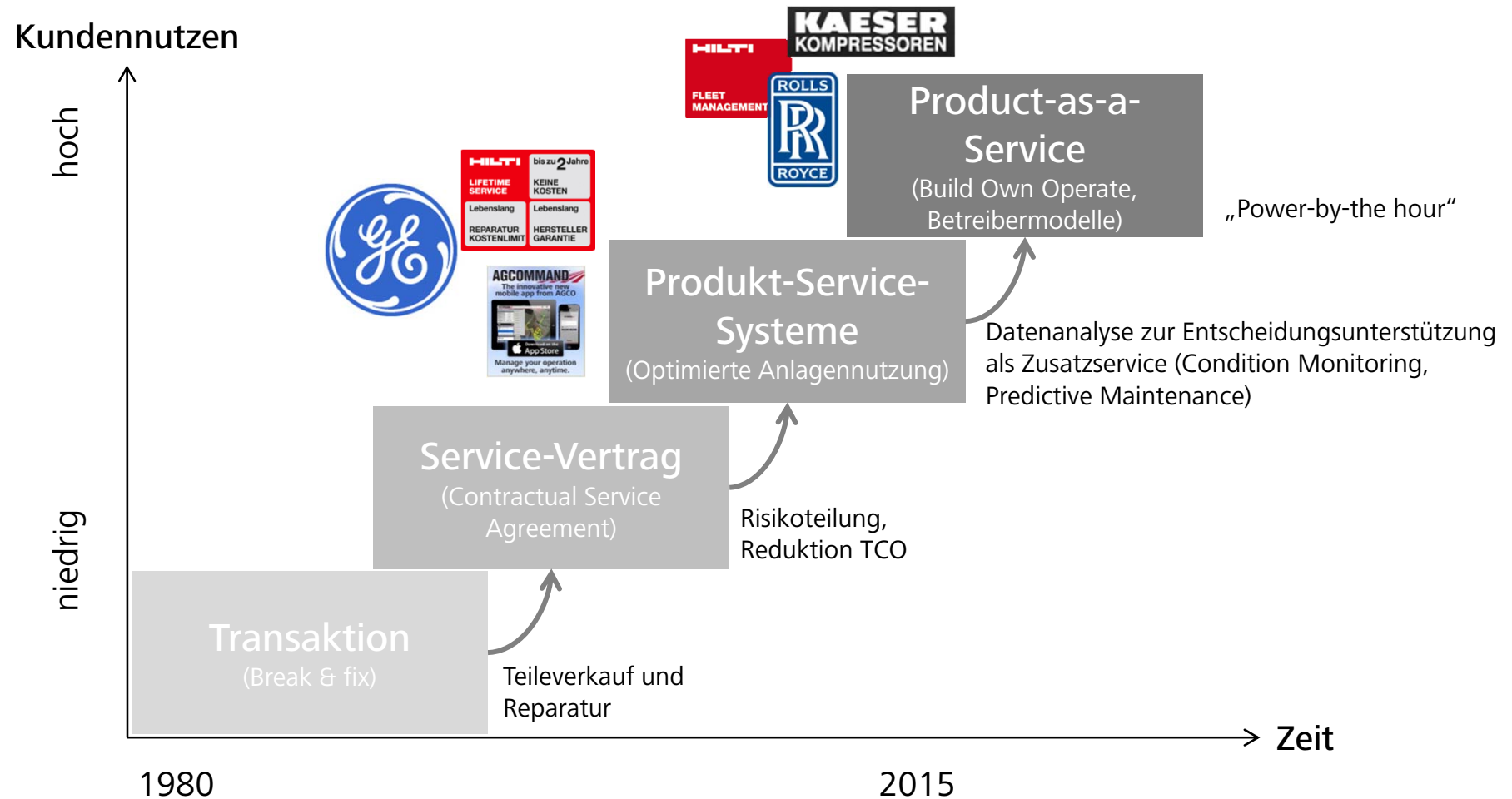
## Smarte vernetzte Produkte: Condition Monitoring & Predictive Maintenance



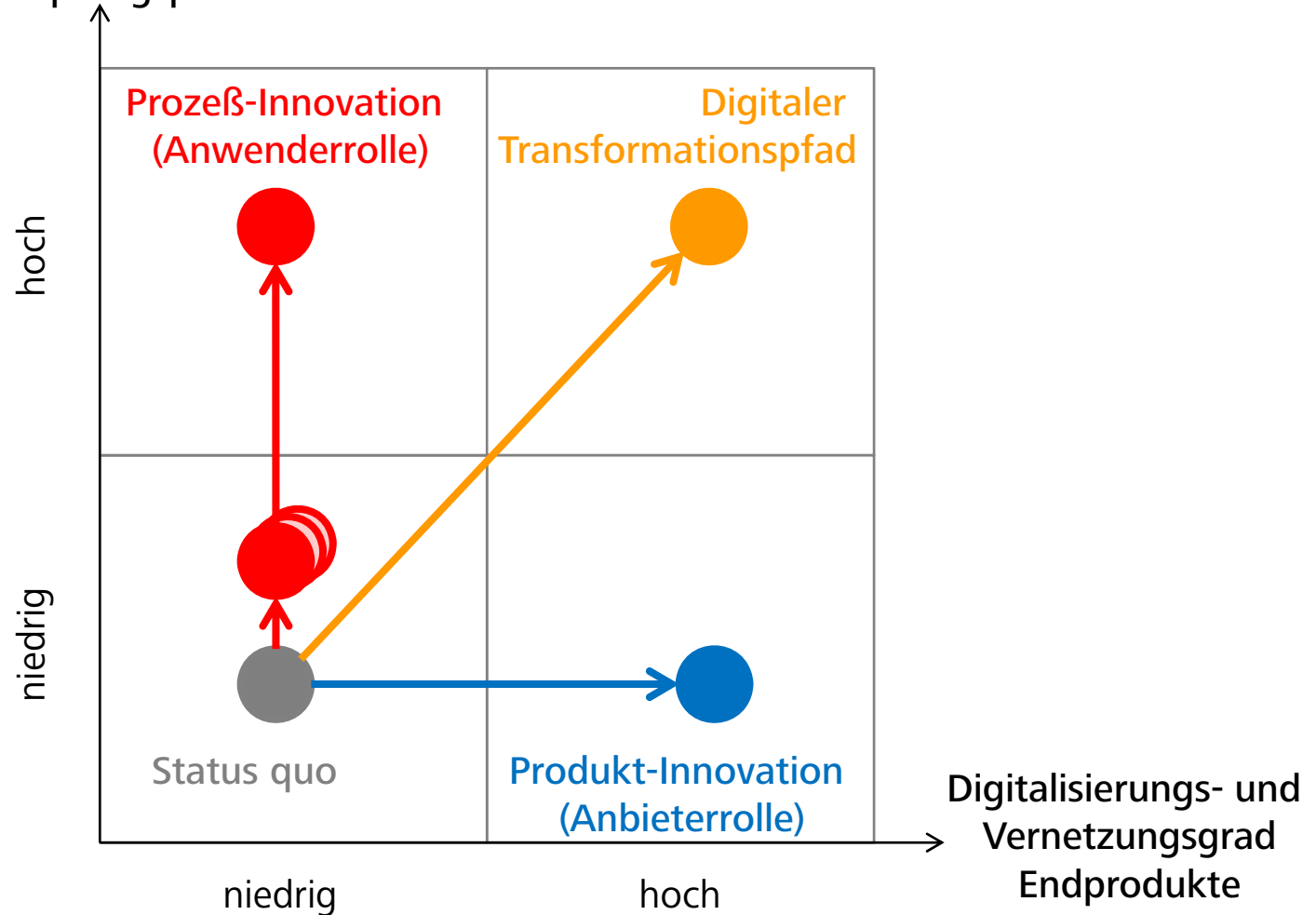
## Smarte vernetzte Produkte: Daten-Infrastruktur und Data Analytics



## Smarte vernetzte Produkte: Trend zur Servitization



Digitalisierungs- und  
Vernetzungsgrad  
Wertschöpfungsprozesse



Quelle: Obermaier (2016)

# Vielen Dank für Ihre Aufmerksamkeit!

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