# Digitalisierung – Was wird von Künstlicher Intelligenz erwartet?

München, 21. Juli 2018

Dr. Uwe Dumslaff, Executive Vice President & CTO

# Capgemini company overview

## Consulting Services

We use our extensive industry expertise to advise on strategy and help you to transform your business and technology landscape

Capgemini Consulting

## Application Services

We provide a next-generation approach to application development, system integration, and maintenance

Capgemini

## Technology & Engineering Services

We deliver technology services to suit local requirements for infrastructure, applications, engineering, testing and operations

SOGETI

## Other Managed Services

We integrate, manage, (co-)develop your IT infrastructure systems, transaction and on demand services and/or business activities

Capgemini

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## Moving to the digital age

**Digital strategy, Innovation & Transformation Consulting**

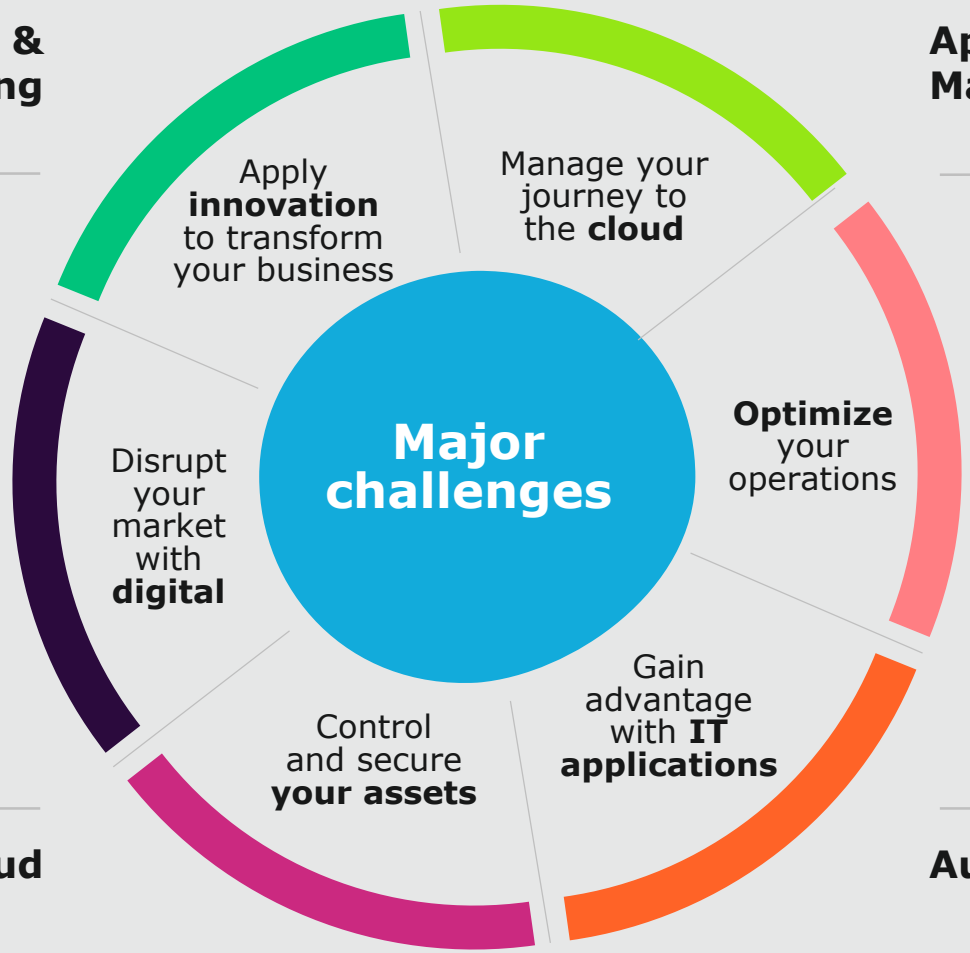
**Digital Customer Engagement**

**Engineering Services**

**Digital Manufacturing**

**Applied Insight**

**Cloud**




**Application Development & Maintenance**

**Infrastructure**

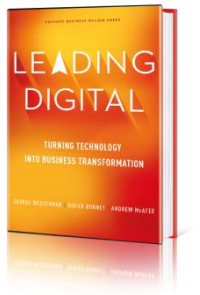
**Business and Platform Services**

**Cybersecurity**

**Testing**

**Automation**

# Digital Framework

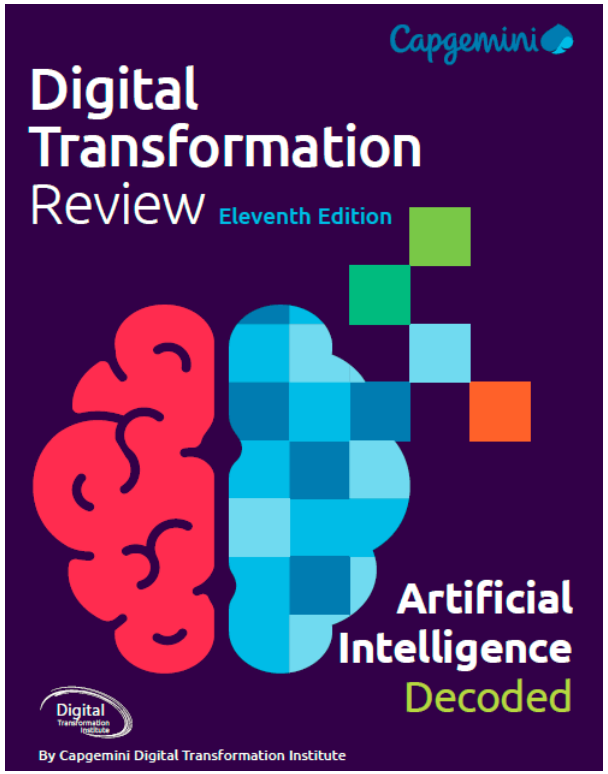



| CUSTOMER EXPERIENCE | OPERATIONS | BUSINESS MODEL |
|---|---|---|
| Customer Understanding | Process digitization | Digitally-modified business |
| Top Line Growth | Worker enablement | New digital business |
| Customer Touch Points | Performance management | Digital globalisation |
| Digital has informed and amplified customer expectations | Digital is removing traditional constraints in operations | Digital business models can reorder value chains and create new opportunities |

# The Digital Transformation Review features executives, academics, tech leaders, VCs and startups

https://www.capgemini.com/service/digital-transformation-review-11-artificial-intelligence-decoded/




**Global Organizations**
*Interviews with large global organizations*

VOLVO

PRUDENTIAL

**Tech Leaders**
*Key executives in large tech corporations*

IBM Watson

cloudera

Microsoft

**Digital Transformation Review #11**

**Academia**
*Interviews with leading researchers*

UNIVERSITY OF OXFORD

**The Valley**
*Insights from Silicon Valley*

Google

ANDREESSEN HOROWITZ

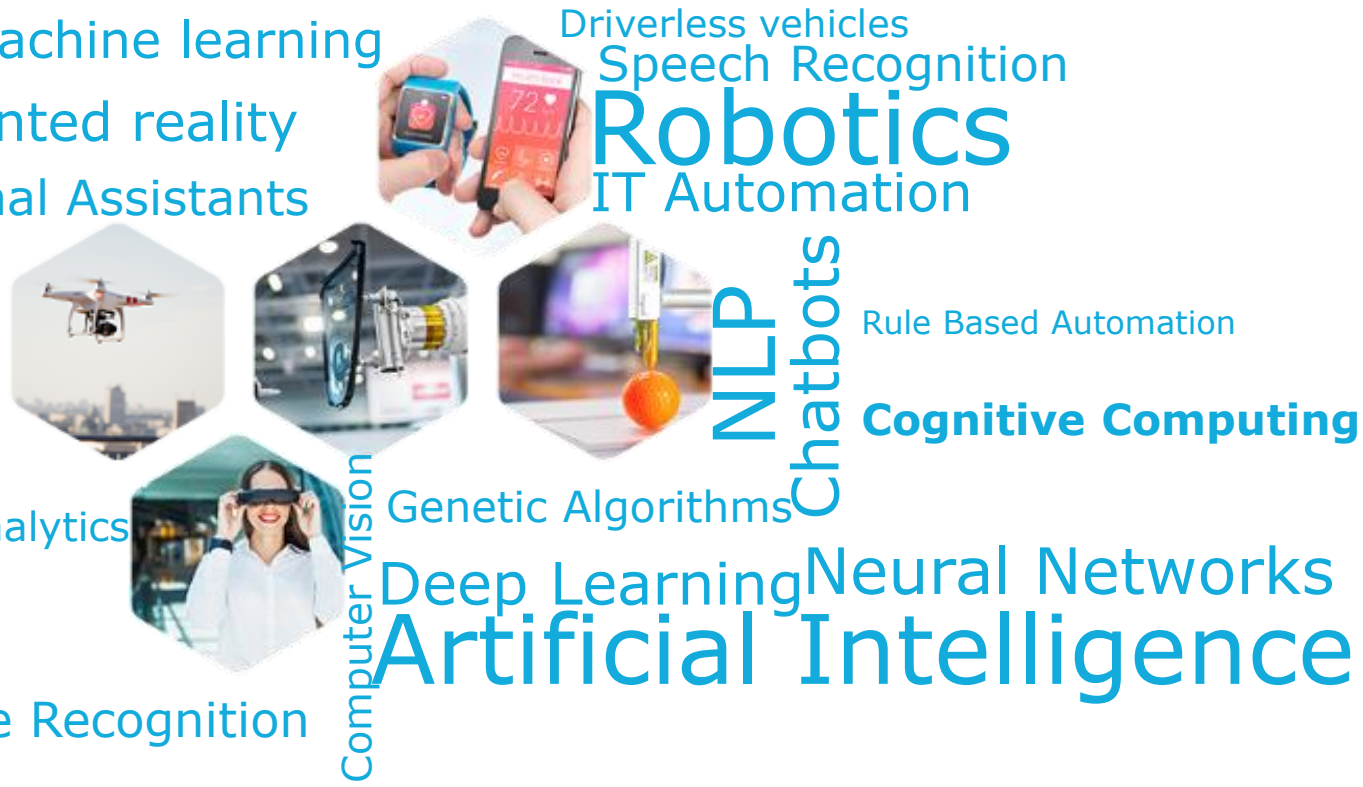
sentient

Digital Transformation Institute

# AI Everywhere

# AI as a topic is pretty vast…

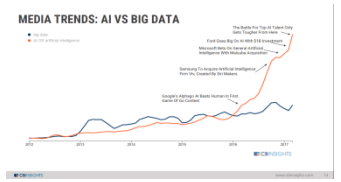



No common industry-wide definition or understanding of what is AI
*(and what it is not!)*

Applying machine intelligence to augment human capabilities and improve *human performance, man-machine collaboration* and *business results* .

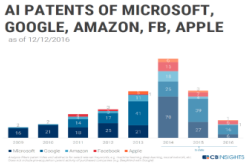
# But, AI is hot and it’s all happening now…

**1** Globally Trending Topic
AI grew rapidly on search terms




**2** Hotbed of Applied Innovation
Startups, M&A


**1** Constantly Pushing Boundaries
Research & Patents




**1** Tremendous Disruptive Potential
Reshape entire Industries


**DTI Research**

| | |
|---|---|
| AI is Now | One in three Implementers Launching AI at Scale |
| Right Use Cases | Right AI Use cases key to success |
| Critical Success Factors | Governance, Leadership, People and Culture |

Source: Capgemini: Turning AI into concrete value: the successful implementers’ toolkit, Survey, N=993 companies that are implementing AI, Sept 2017

Natural Language

1 Chat bots or Voice bots

2 Speech Recognition

3 Natural Language Generation

4 Semantic Technology

Computer Vision and Biometrics Intelligence

5 Biometrics

6 Image and Video analysis

Technology Foundations

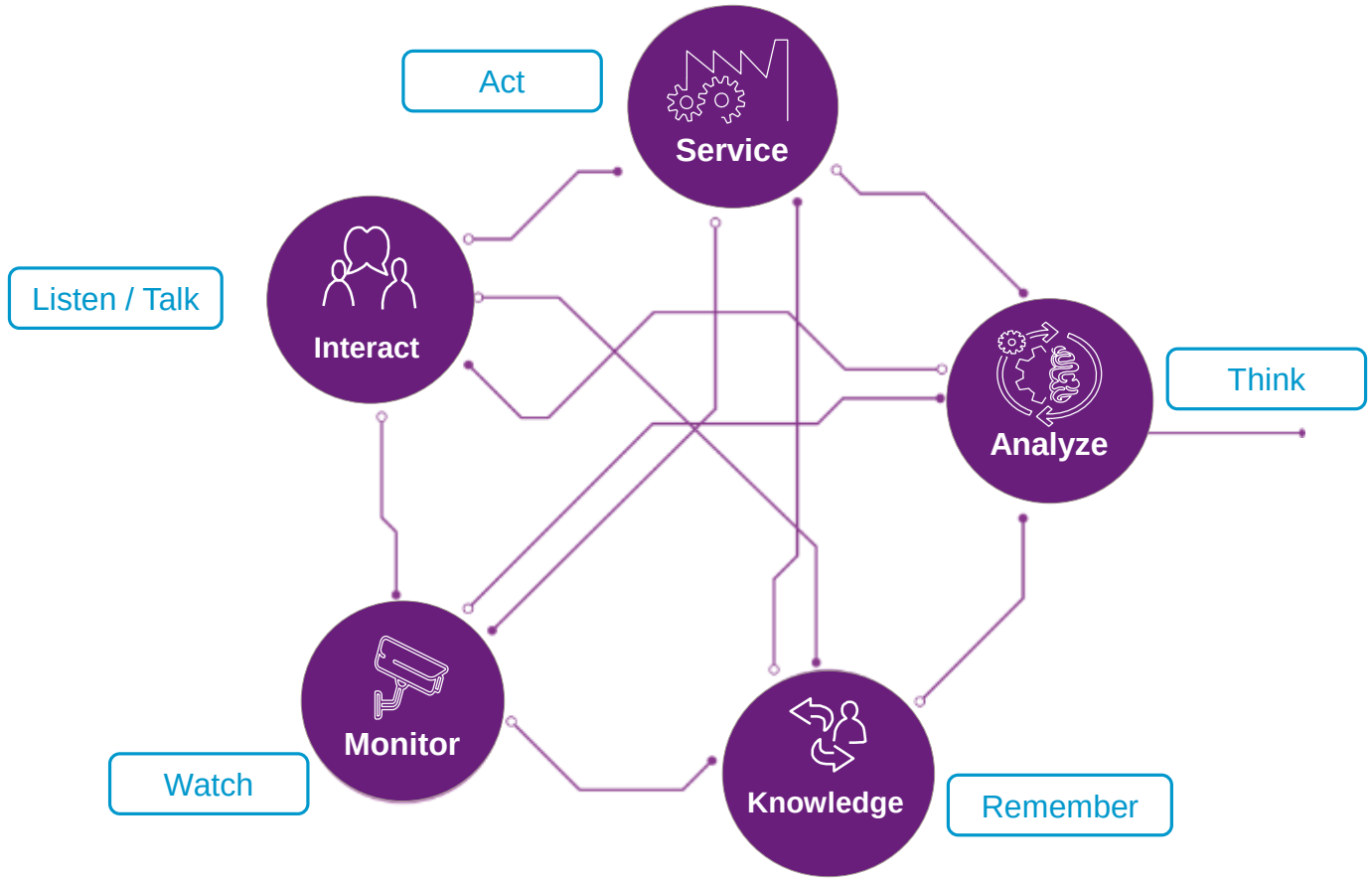
7 Machine Learning

8 Deep Learning

9 Swarm Intelligence


Source: Capgemini Digital Transformation Institute Analysis

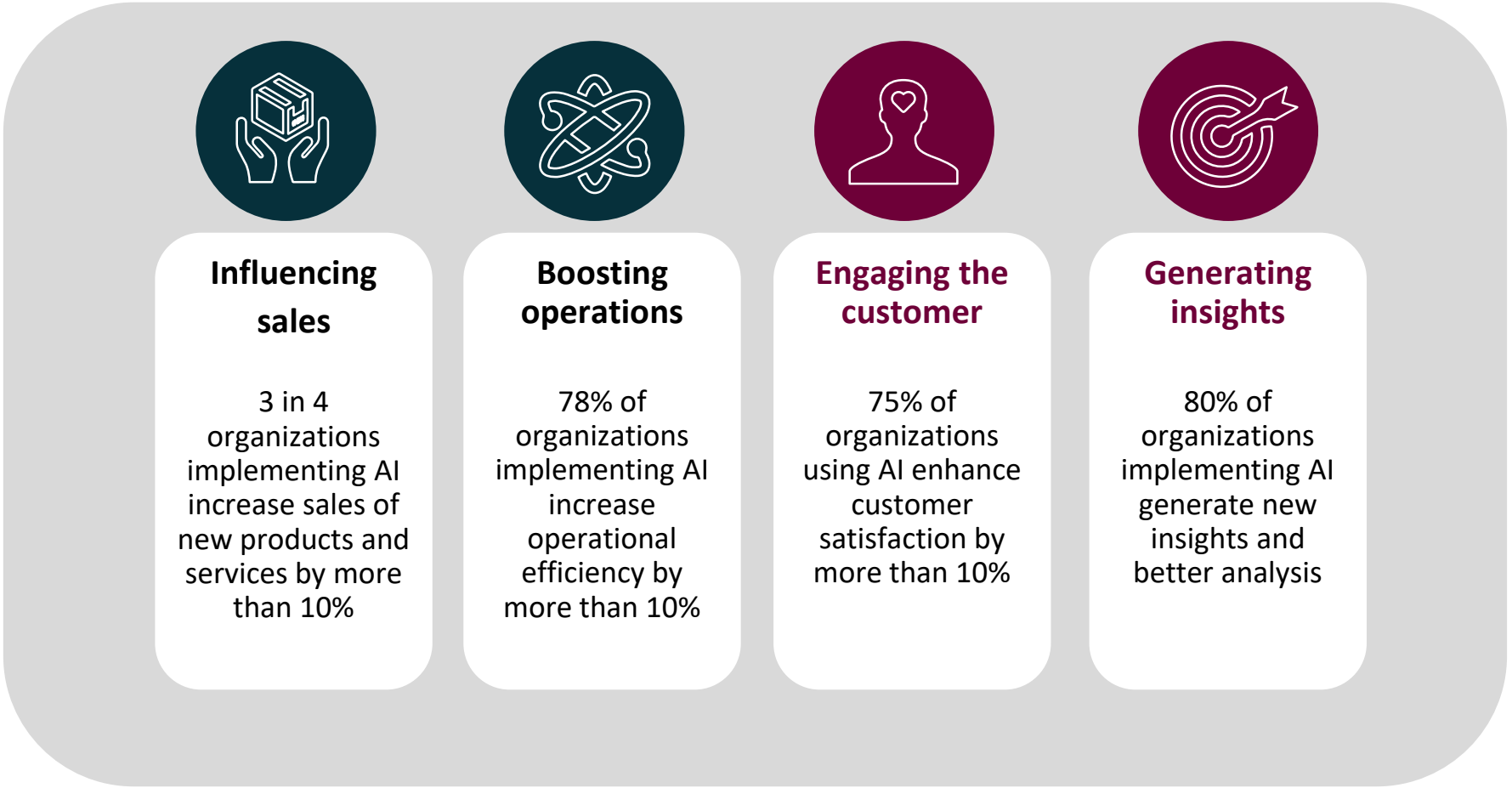
# Identify areas where AI can create the most significant, long-term advantage




Source: Capgemini Digital Transformation Institute Analysis

# AI is here and now: It is driving benefits across the organization




Source: Capgemini Digital Transformation Institute, State of AI survey, N=993 companies that are implementing AI, June 2017

# Digital AI Use Cases …

# Use Cases: Organizations are missing a bigger opportunity by ignoring the low-hanging fruit

Source: Capgemini Digital Transformation Institute, State of AI survey, June 2017

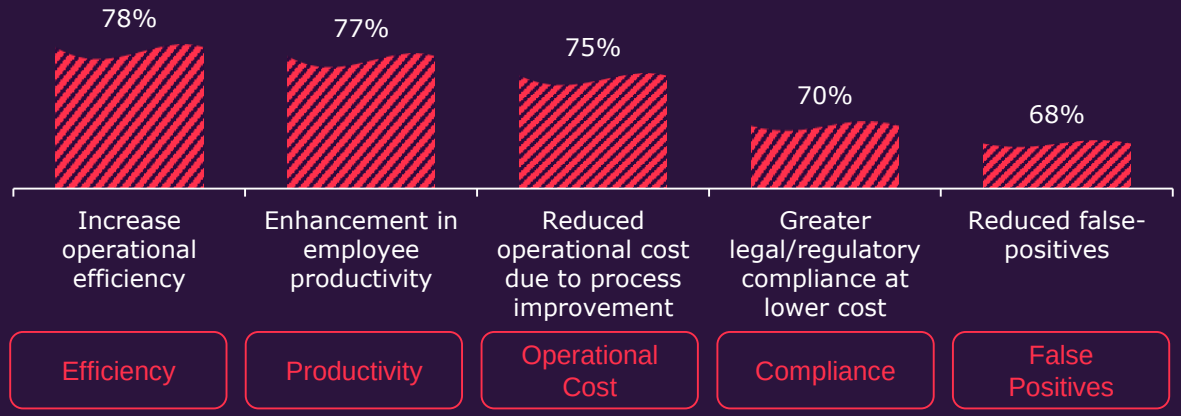
# AI is driving benefits across the organization

## Sales

Organizations are driving sales performance through AI

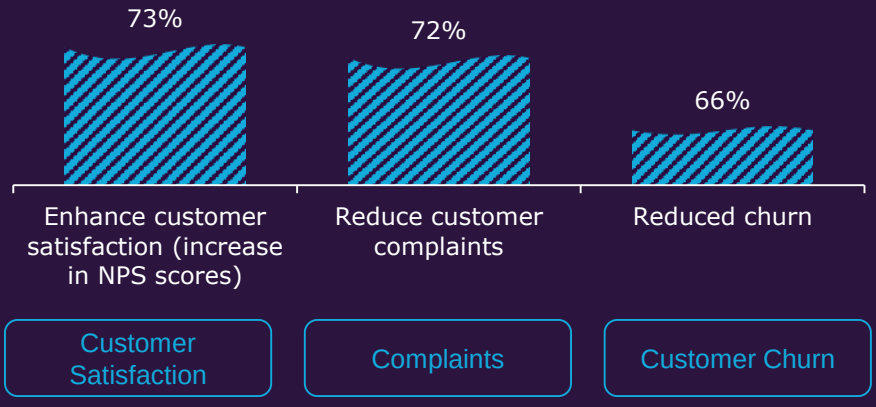

## Operations

Operational efficiency is getting a big boost from AI




## Customer Engagement

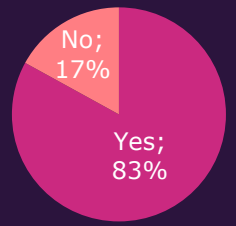
AI is helping organizations engage with customer better




## Jobs and Creativity

AI is bringing new insights and making organizations more creative


AI is creating new job roles in organizations




 | 

# Typical AI use cases usually fall in these categories

## (*Underlying examples are just examples)*

**External**

### OPTIMIZE CUSTOMER ENGAGEMENT INCREASE SALES

- Interactive and recommendation bots
- Facial recognition, segmentation and next best action analytics
- Automated content based on segmentation and sentiment
- Churn prevention and prescriptive recommendations

### MITIGATING RISK & MANAGING COMPLIANCE

- Fraud detection
- Digital forensics
- Warranty Fraud prevention
- Operational risk management
- Cybersecurity
- Anomalous Behavior Detection

**Business Outcomes**

### MANAGING TALENT & DIGITAL EMPLOYEES

- Interactive HR compensation, benefits and rules chatbots
- Facial recognition to support security and "soft badge"
- Proactive, automated health recommendations
- Automated customer service segmented by loyalty

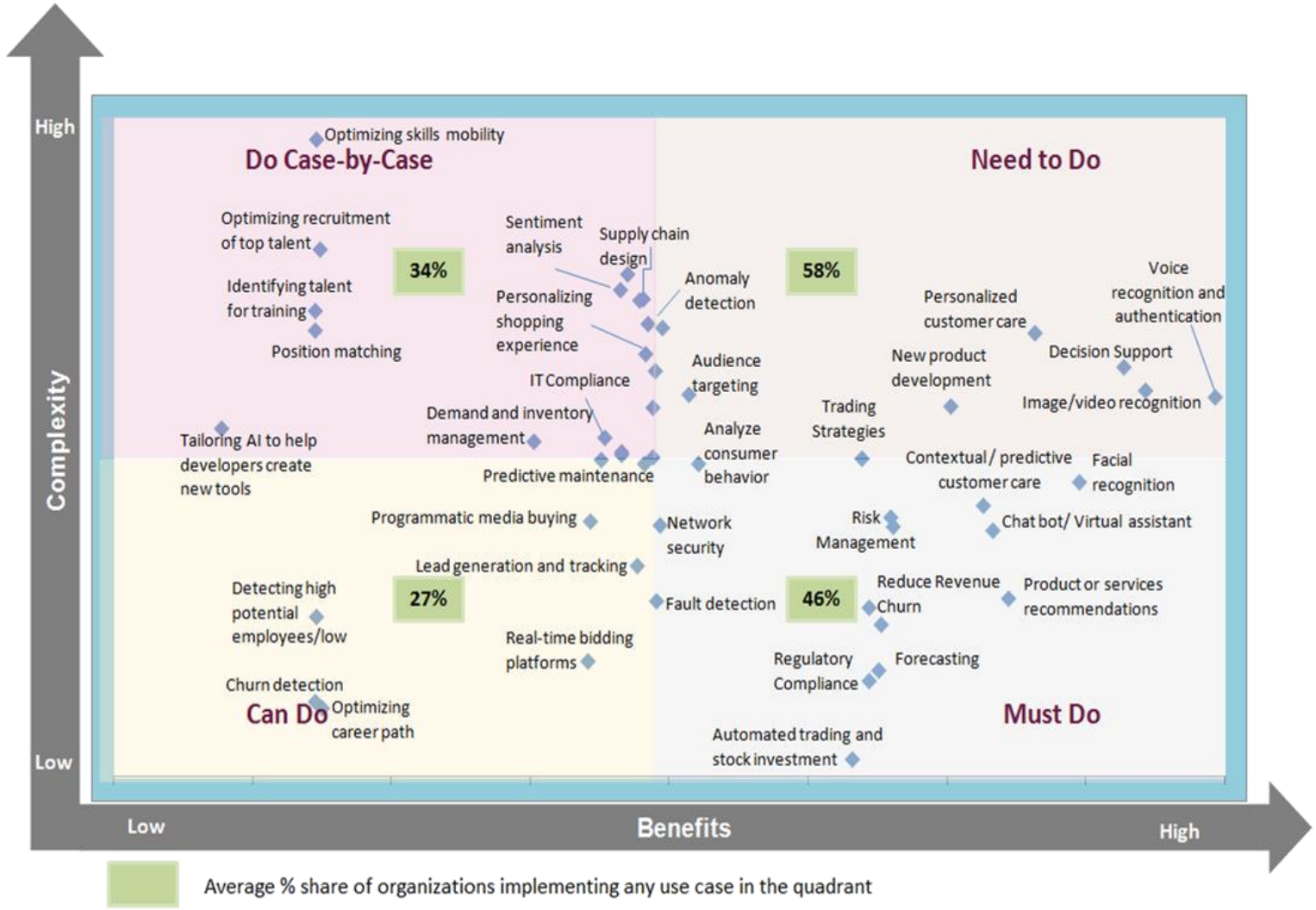
### BOOST OPERATIONS FOR BETTER PRODUCTS & SERVICES

- Machine learning demand forecasting
- IoT and preventative maintenance
- ProcureSMART
- Quality management
- Data Lake and Hadoop / Spark for faster analytics and reporting
- Stream analytics for real-time inventory management

**Internal**

# Many organizations are tackling the toughest challenges first

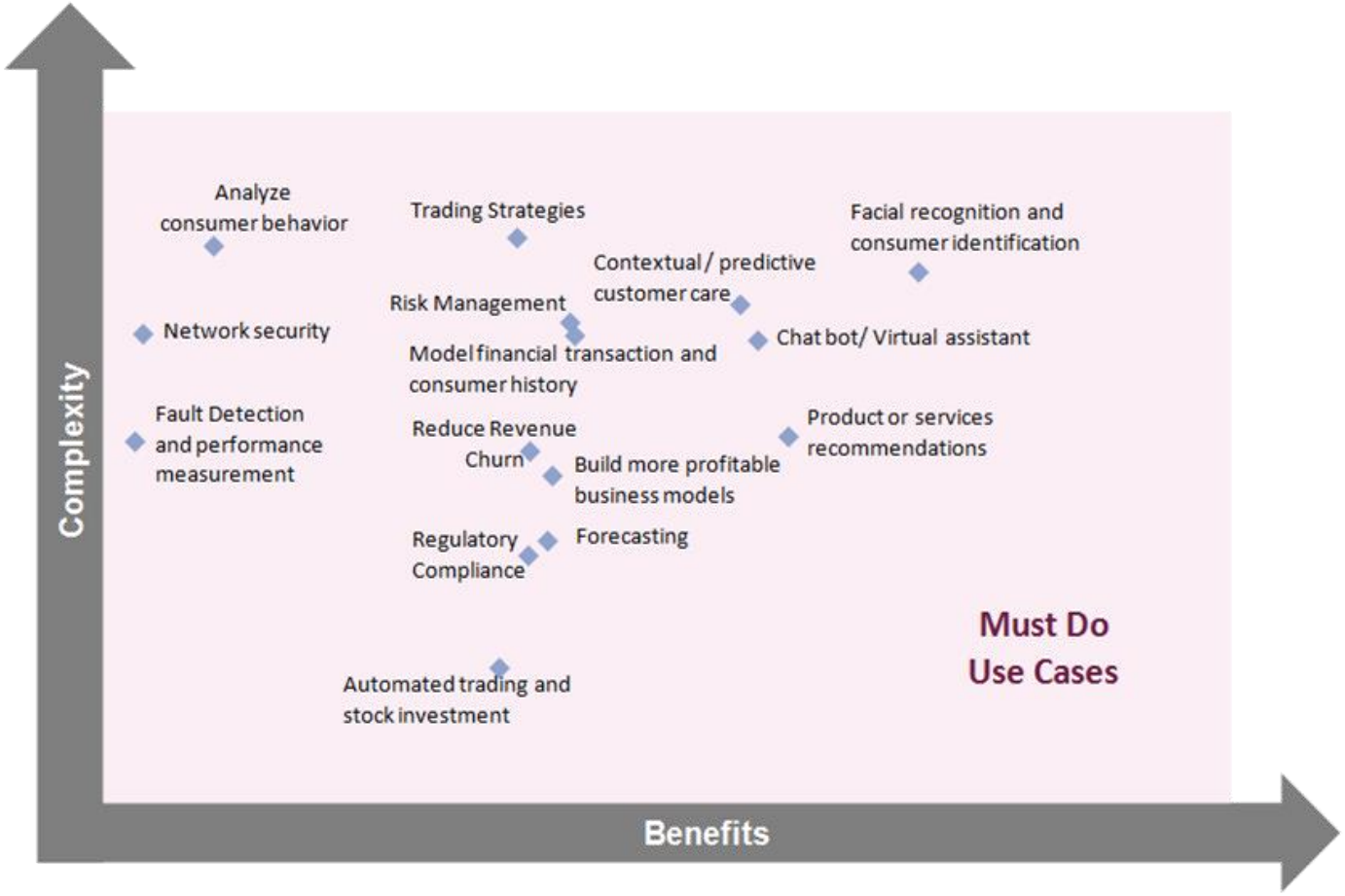



Source: Capgemini Digital Transformation Institute, State of AI survey, N=993 companies that are implementing AI, June 2017

# Few organizations (46%) are tackling the 'must do' use cases, which are the low-hanging fruits

***Only about a fifth (20%) of companies are implementing 'must do' use cases at scale***

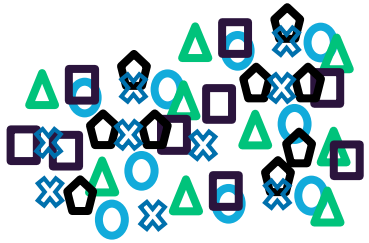



Source: Capgemini Digital Transformation Institute, State of AI survey, N=993 companies that are implementing AI, June 2017

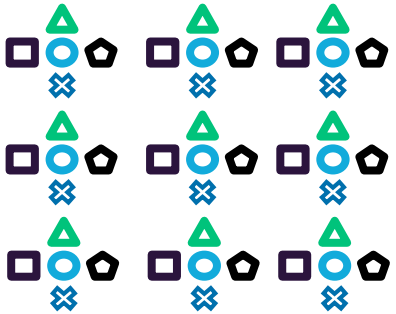
 

# AI will industrialize RPA and accelerate the back office transformation

**Unstructured Input**



**Structured Result**



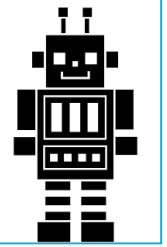
## AI / cognitive Robotics

- Collects and interprets **unstructured** data
- Identifies patterns and data structures
- Learns problem solving and decision taking
- Along probabilistically models

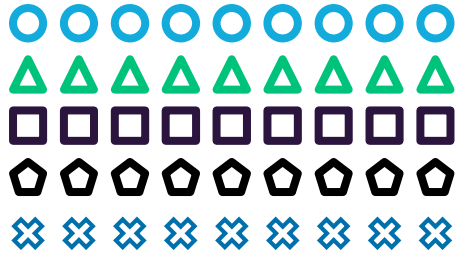
**Virtual Delivery Center**

## (Robotics) Process Automation

- Scalable virtual FTE
- Non-intrusive to existing software
- Enables full complete automation
- Acts deterministic



**Structured Information**



**AI enables the processing of big data and unstructured information which will increase the automation scope as well as the effectiveness and efficiency of automation**

# Pinpoint use cases where AI can create most value for your organization

| Industry | Low hanging fruit—least adopted "must do" use cases |
|---|---|
| **Automotive** | • Managing risk<br>• Reducing revenue churn<br>• Forecasting<br>• Analyzing consumer behavior |
| **Manufacturing** | • Managing risk<br>• Forecasting<br>• Detecting faults and measuring asset performance |
| **Retail** | • Forecasting<br>• Tracking customer history/transaction<br>• Reducing revenue churn |
| **Utilities** | • Analyzing consumer behavior<br>• Trading strategies<br>• Forecasting |
| **Telecom** | • Reducing revenue churn<br>• Forecasting<br>• Managing risk<br>• Tracking customer history/transaction |
| **Banking** | • Analyzing consumer behavior<br>• Trading strategies<br>• Automated trading and stock investment |
| **Insurance** | • Analyzing consumer behavior<br>• Trading strategies<br>• Reducing revenue churn<br>• Complying with regulations |

Source: Capgemini Digital Transformation Institute, State of AI survey, N=993 companies that are implementing AI, June 2017

# Society 5.0 …

https://www.capgemini.com/de-de/resources/studie-gesellschaft-5-0/

# Auf dem Weg in die Gesellschaft 5.0: Zentrale Ansätze der Studie

1. Chancenzentrierung: Digitalisierung eröffnet **Gestaltungsspielräume**

2. Disruption entsteht nicht nur durch Digitalisierung: Zusammenspiel von zentralen **Veränderungstreibern**

3. Qualität von **digitalen Infrastrukturen** als Voraussetzung und **Digitalkompetenz** als Grundfähigkeiten vermitteln

4. Neue Einflussfaktoren verändern die Gesellschaft – das **Zielbild** muss neu erarbeitet werden

5. Kulturelle **Identität** neu definieren

6. Individualität darf nicht zu **Entsolidarisierung** führen

7. Auf der Höhe der Zeit gestalten: politischen **Regelungsbedarf gestalten**

# Short Facts: Prognos Studie „Society 5.0“

## Die smarte Gesellschaft bedarf der Weiterentwicklung von Themenfeldern und Investitionen

**Gesellschaft 5.0**

- Folgestufe des Informationszeitalters
- Gesellschaft, in der alles miteinander vernetzt ist – Mensch, Maschinen, Umfeld und Services
- Digitalisierung als Gestaltungschance zum Umgang mit gesellschaftlichen, ökologischen (etc.) Herausforderungen

**Ziel der Studie:**

- Anwendung bereits bewährter Prognosemodelle auf vorhandene Datensätze zur Identifizierung von Auswirkungen
  - der Digitalisierung auf die Gesellschaft und aktuelle Politikfelder
  - Impulse an die Politik zum besserem Verständnis der Lebensbereiche
  - Effektivere Unterstützung unserer Kunden und Partner

### Arbeiten

- Wegfall bestehende Jobs, Entwertung/Neubewertung Kompetenzen
- Lebenslanges Lernen mehr denn je als Realität
- Änderung von Arbeitsverhältnissen und Einkommenspotenzialen
- Erfordernis eines Update des Steuer- und Sozialsystems
- Digitalisierung ermöglicht Kontrolle, „Gesellschaft 5.0 braucht Vertrauen“

### Migration und Integration

- Zahl der Asyl- und Schutzsuchenden dürfte anhaltend hoch bleiben
- Bekämpfung der Fluchtursachen als zentrale Aufgabe
- Geografisch weit entfernte Probleme erfordern lokale Lösungen
- Gesteuerte Migration als Chance für den Arbeitsmarkt
- Fragen der sozialen und wirtschaftlichen Teilhabe erfordern neue Antworten

### Mobilität und Urbanisierung

- Privater Pkw bleibt das dominierende Verkehrsmittel
- Smarte Angebote schaffen Mobilität auch in ländlichen Regionen. Abnehmende Notwendigkeit physischer Ortswechsel
- Aufwertung peripherer Regionen durch Online-Handel und attraktive Verkehrssysteme
- Kernstädte bleiben attraktive Wohnorte
- Ressourcen- und Kostenschonung durch Intelligente Verkehrs- und Wohnkonzepte

### Alter und Gesundheit

- Digitale Lösungen und Alltagshelfer ermöglichen ein selbstbestimmtes Leben in den eigenen vier Wänden
- Telemedizinische Anwendungen entlasten Ärzte und Fachkräfte im Gesundheitswesen
- Integration ausländischer Fachkräfte wird einfacher, internationale Expertise wird national verfügbar
- Medizin wird proaktiv, individuell und kostengünstiger

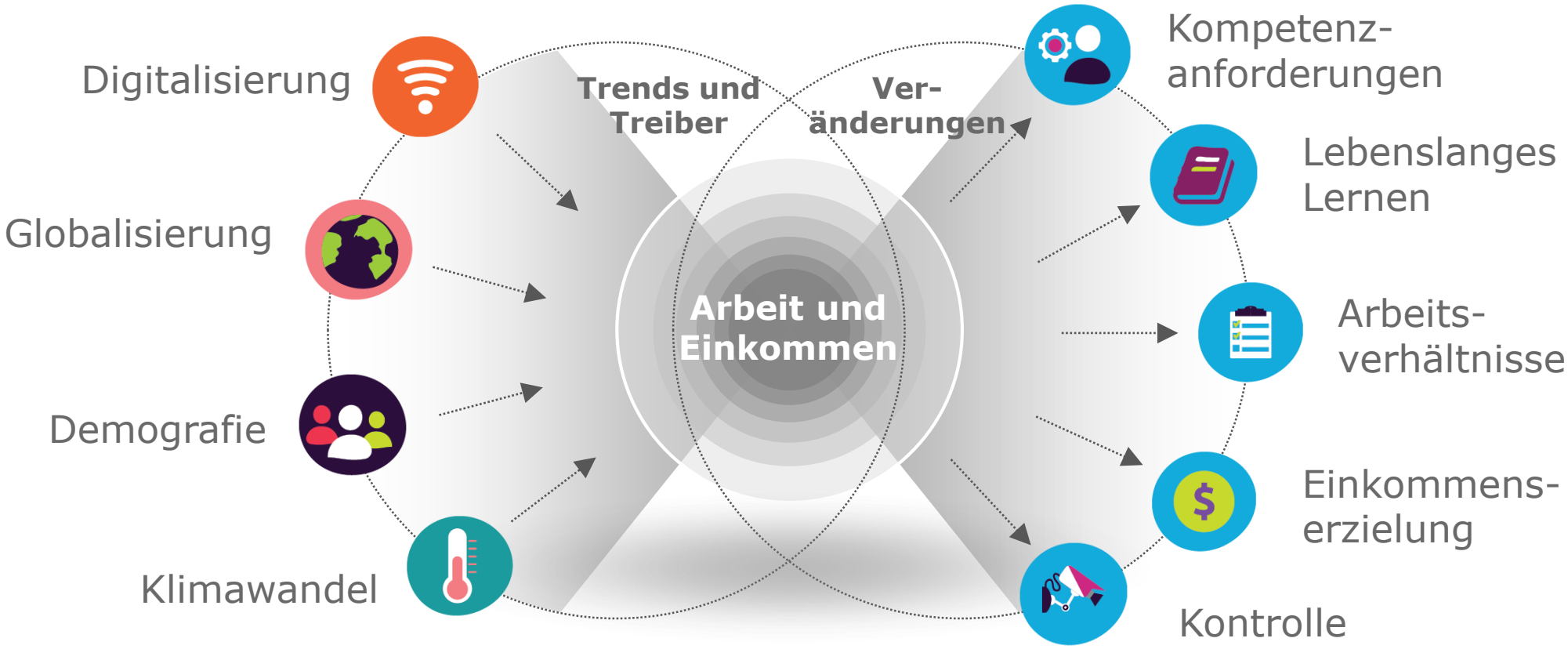
# Auf dem Weg in die Gesellschaft 5.0 – Trends und Handlungsfelder

# Agenda

1. ARBEIT UND EINKOMMEN
2. MIGRATION UND INTEGRATION
3. MOBILITÄT UND URBANISIERUNG
4. ALTER UND GESUNDHEIT
5. WIE GELINGT DER WEG IN DIE GESELLSCHAFT 5.0?

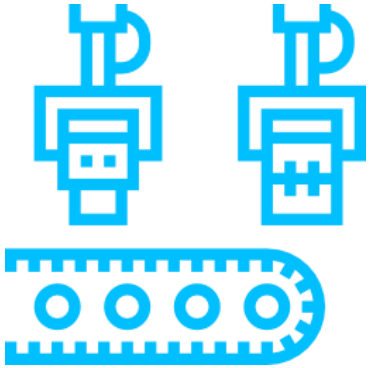
# 1. ARBEIT UND EINKOMMEN



# 1. ARBEIT UND EINKOMMEN

→ Die **Produktion** in der Gesellschaft 5.0 verändert sich



- Automatiserung als **Chance** für den Menschen
- Ressourcensparende Produktion dank neuer Technologien
- Technologischer Fortschritt hilft, Herausforderungen einer alternden Erwerbsbevölkerung zu meistern

- Keine standardisierte Massenproduktion mehr
- Produktion erfolgt auf Bestellung und direkt vor Ort → Konsument wird aktiv in Prozess eingebunden
- Konsumenten und Produzenten werden zu **Prosumern**

- Reshoring statt Offshoring aufgrund Kostenersparnis durch Automatisierung
- Bedeutung der Lohnkosten an gesamten Produktionskosten nimmt ab

→ Standortverlagerungen nicht mehr notwendig

# 1. ARBEIT UND EINKOMMEN

→ Die Digitalisierung verändert die Art zu arbeiten, die Arbeitszeit und den Arbeitsort

- **Life-Long-Learning** wird zu essentieller Aufgabe für beruflichen Werdegang
- Proaktive Gestaltung der Digitalisierungsauswirkungen erfordert Veränderung des Bildungssystems

- Digitalisierung verändert nicht das **Ob** der Arbeit, sondern das **Wie**
- Substituierbarkeitspotenzial nach Berufen liegt bei 19 bzw. 33 Prozent
- Hoch spezialisiertes, empathisches Arbeiten wird zunehmen

- Auflösung der Trennung zwischen **Arbeits- und Privatleben**
- Etablierung flexiblerer Arbeitszeitmodelle
- Alternative Beschäftigungsformen werden forciert werden

# 1. ARBEIT UND EINKOMMEN

→ Gesellschaft 5.0 als Schlüssel zu neuen Beschäftigungsformen und mehr Gerechtigkeit

- Digitaliserung hilft dabei neue Erwerbsquellen zu erschließen
- **Digital Economy** schafft signifikante Nebeneinkünfte

- **Dezentralisierte Einheiten** übernehmen Arbeit
- Für viele niedrigschwellige Jobs wird lediglich mobiles Endgerät benötigt
- Neuer Wettbewerb führt zu Entwicklungsschub

- Vision einer europäischen Sozialversicherung
- Öffentliche Verwaltung sollte Systeme etablieren, die zuverlässig mit Daten und Informationen umgehen
- Informationelle Selbstbestimmung als zentrale Vorraussetzung

# People & Statements: AI

# Industry/ Academia Speak

**Michael Natusch**
Head of AI, **Prudential Insurance**

- "AI is all about customer experience, scalability, compliance by design, and then cost. In this order"
- "AI is taking away the time humans previously spent on repetitive issues and allowing them to focus on where human intelligence can drive value"

**Luciano Floridi**
Professor, **Oxford University**

- "The AI that will be successful is not the one I want, it is the one that I want again because of what it makes me not do, or what it enables me to do."

**Atif Rafiq**
Chief Information Officer & Chief Digital Officer, **Volvo**

- "Our aim is to use AI to solve meaningful customer and enterprise problems."
- "We think about digitization as a fundamental change in how work gets done through real agile processes."

**Michael Schrage**
Research Fellow, **MIT Sloan**

- "AI will be quicker to enter industries that are heavily regulated."
- "I worry less about folks in their 20s, I worry about people in their 40s."

# The View from the Silicon Valley

**Frank Chen**
Partner, **Andreessen Horowitz (A16Z)**

- "An AI-native company is going to treat data very seriously – harvesting the data, feeding the data into algorithms, and labeling the data so that the algorithms can make accurate predictions."

**Rajen Sheth**
Senior Director, Cloud AI, **Google**

"AI today is really where the web and the Internet were in 1994. Everybody sees a lot of promise, but it is still very hard to build upon."

**Babak Hodjat**
Co-Founder & CEO, **Sentient**

- "AI is discovering how to grow plants – deciding which spectrum of light to shine, the humidity, water levels, and minerals to be added. You can actually optimize for taste, believe it or not"

# The View from Tech Leaders

**Lili Cheng**
Corporate VP, AI, **Microsoft**

- "We don't want people to have a PhD in AI to benefit from."
- "With AI, compared to other technologies, we are probably more mindful of the impact on how work may change"

**Rob High**
CTO, Watson, **IBM**

- "You don't need to be skilled in AI, you need to be skilled in your use case"
- "The role of AI is not to replace humans, it is to augment"

Amr Awadallah
CTO & Cofounder, Cloudera

- "It is important to understand the limitations of what can and cannot be done with AI."
- "Those organizations that are reaping the benefits today started thinking about AI up to eight years ago. They began building the proper foundations from a data platform perspective."

# Do you need to know AI to leverage AI?

*You don't produce your own electricity, you just take advantage of it. Likewise, you might just take advantage of smart solutions that can be deployed to solve specific problems.*
**Luciano Floridi,**
University of Oxford

*Existing developers in traditional organizations shouldn't have to immerse themselves into the deep learning model in order to benefit from it.*
**Rajen Sheth,**
Google

*We don't want people to have a PhD in AI to benefit from AI.*
**Lili Cheng,** Microsoft

*I don't think you need to be an expert in the technology of AI to benefit from it. You don't need to be skilled in AI, you need to be skilled in your use case.*
**Rob High,**
IBM Watson

*We are not going to go on a big hiring spree and try to hire up all the AI experts around the world. Instead, we will focus on hiring people with the right mathematical background and aptitude to understand our problems, our data, and our customers.*
**Michael Natusch,** Prudential Plc

# AI Success and Acceptance - It's all about Quality!

**People matter, results count.**

## About Capgemini

A global leader in consulting, technology services and digital transformation, Capgemini is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. It is a multicultural company of 200,000 team members in over 40 countries. The Group reported 2016 global revenues of EUR 12.5 billion.

Learn more about us at

www.capgemini.com