DIENSTLEISTUNGSTAGUNG 2019
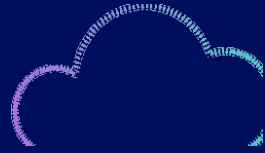SERVICE SYSTEMS INNOVATION

Andrea Martin, CTO IBM DACH

Artificial Intelligence – The Future for the Services Industry

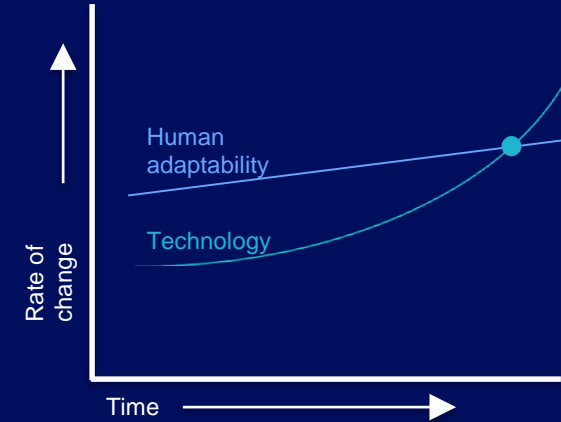Status & Outlook

3 2 1 ...

3 reasons why we have entered the era of AI

1. Data in digitized form
   - Data you possess, Data outside your firewall, Data that's coming
   - Structured / unstructured
2. Cloud computing
3. Algorithms

2 explanations why we need the era of AI (of several)

1. Human adaptability has fallen behind the pace of change set by technology

2. AI can help prevent bias

Human adaptability

Technology

Rate of change

Time

1 definition of AI: It mimics human thinking and therefore augments human intelligence by ...

...UNDERSTANDING...

...REASONING...

...LEARNING...

...INTERACTING

We prefer talking about an "augmented intelligence", i.e. solutions that support humans to become better in their jobs and take better decisions. It's about "man with machine", not "man vs. machine".

A scientific project awarded by DLR, developed by Airbus and IBM

What can you do with AI?

Discovery

Decision

Engagement

Baylor College of Medicine uses AI technology to accelerate cancer research by analyzing over 70,000 articles automatically

Woodside Energy uses IBM Watson as a trusted advisor to make better decisions in the operation of large facilities, based on insight from 28,000 documents and all their engineers.

IBM Watson and Airbus collaborate to support astronauts on the ISS with CIMON (Crew Interactive MObile CompanioN).

Photo: Courtesy of Airbus

Which use cases can you realize with AI ?

Catalog

Search the catalog...   [Filter]

All Categories

- Compute
- Containers
- Networking
- Storage
- **AI** ›
- Analytics
- Databases
- Developer Tools
- Integration
- Internet of Things
- Security and Identity
- Starter Kits
- Web and Mobile
- Web and Application

AI

Watson Assistant
Lite • IBM

Watson Assistant lets you build conversational interfaces into any application, device, or channel.

Compare and Comply
Lite • IBM

Process governing documents to convert, identify, classify, and compare important elements

Discovery
Lite • IBM

Add a cognitive search and content analytics engine to applications.

Knowledge Catalog
Lite • IBM

Discover, catalog, and securely share enterprise data.

Knowledge Studio
Lite • IBM

Teach Watson the language of your domain.

Language Translator
Lite • IBM

Translate text, documents, and websites from one language to another. Create industry or region-specific translations via the service's customization

Machine Learning
Lite • IBM

IBM Watson Machine Learning - make smarter decisions, solve tough problems, and improve user outcomes.

Natural Language Classifier
IBM

Natural Language Classifier uses advanced natural language processing and machine learning techniques to create custom classification models.

Natural Language Understanding
Lite • IBM

Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment and more.

Personality Insights
Lite • IBM

The Watson Personality Insights derives insights from transactional and social media data to identify psychological traits.

Speech to Text
Lite • IBM

Low-latency, streaming transcription

Text to Speech
Lite • IBM

Synthesizes natural-sounding speech from text.

Tone Analyzer
Lite • IBM

Tone Analyzer uses linguistic analysis to detect three types of tones from communications: emotion, social, and language. This insight can then

Visual Recognition
Lite • IBM

Find meaning in visual content! Analyze images for scenes, objects, faces, and other content. Choose a default model off the shelf, or create your own

Watson OpenScale
Lite • IBM

IBM Watson OpenScale is an enterprise-grade environment for AI infused applications that provides enterprises with visibility into how AI is

Watson Studio
Lite • IBM

Embed AI and machine learning into your business. Create custom models using your own data.

PowerAI
Third Party

The accelerated deep learning platform for enterprise. Built on the IBM PowerAI platform, powered by Nimbix.

With the IBM AI principles and ethics as well as pragmatic guidance we differentiate our business model from other market participants and drive trust in and acceptance of AI
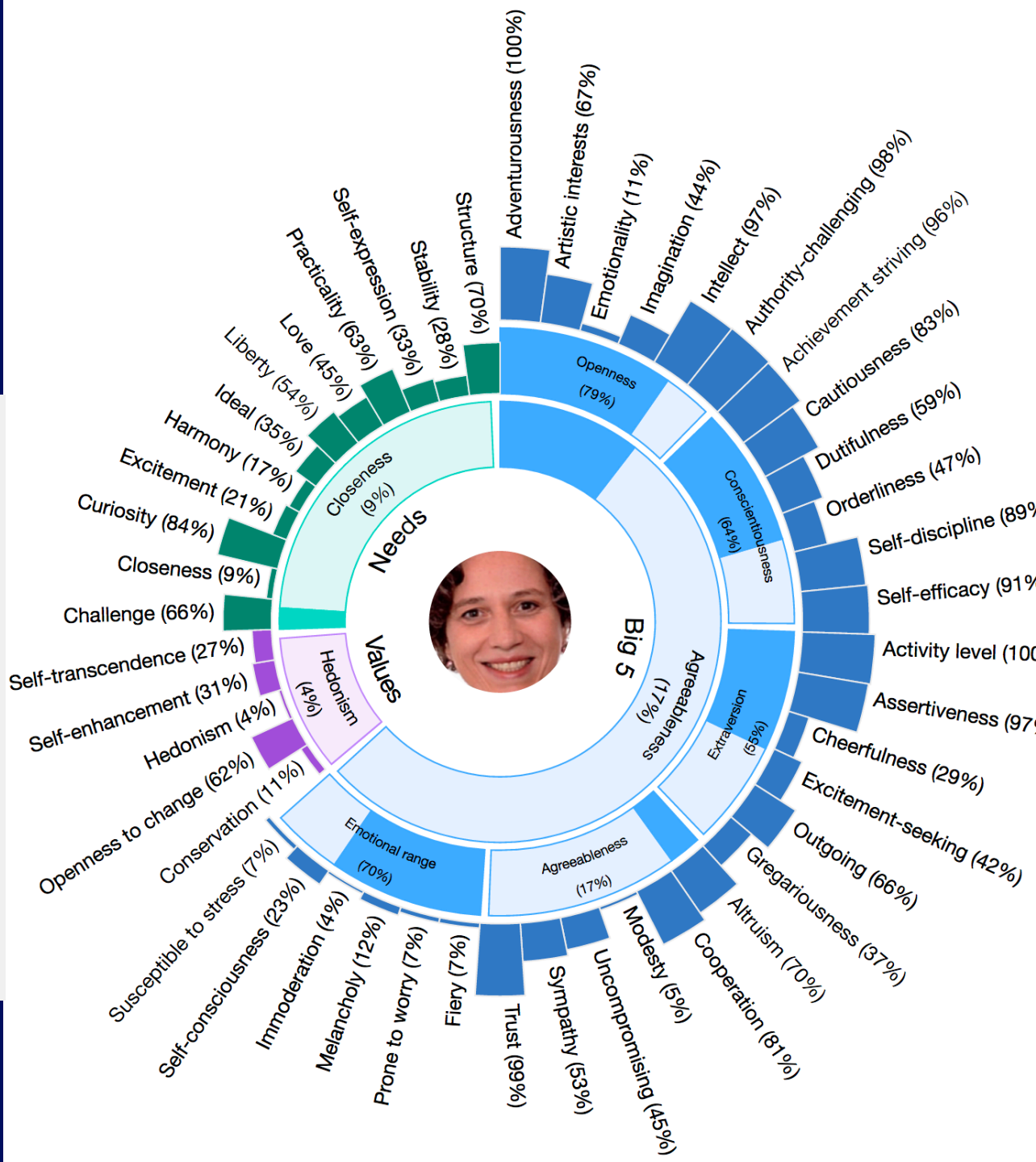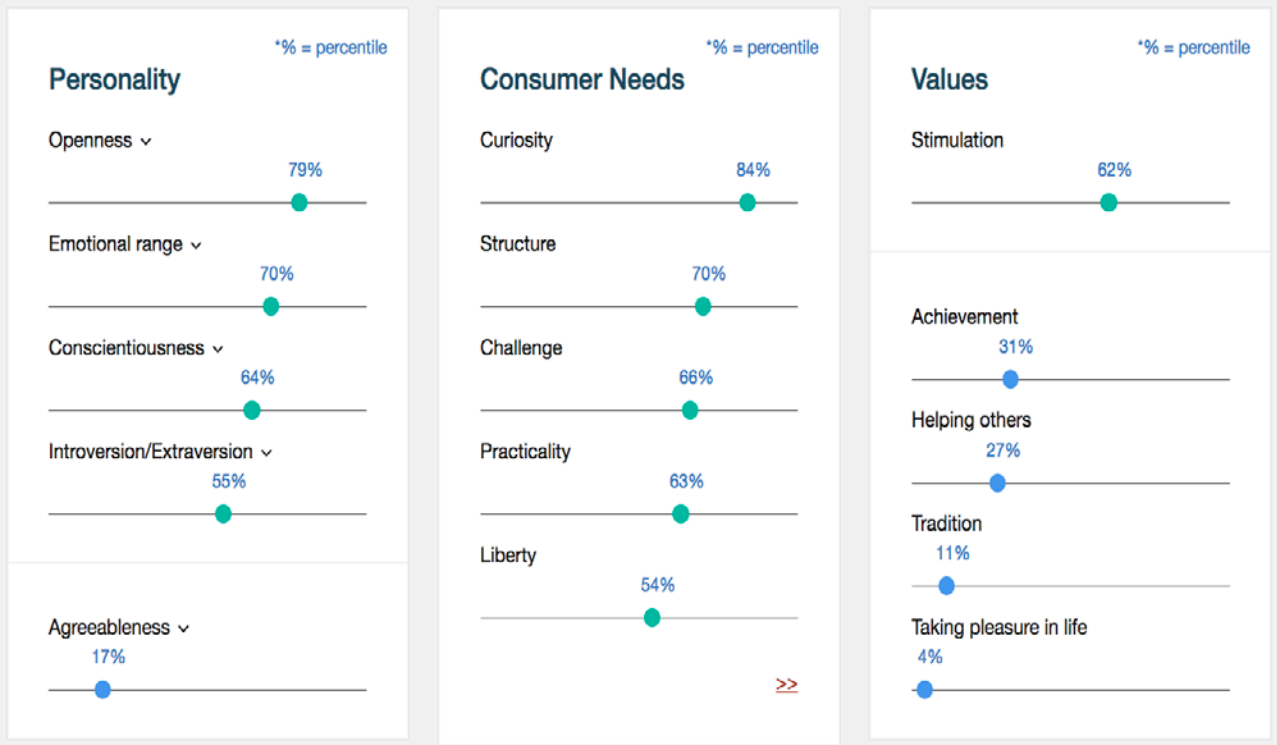
"
When you introduce powerful technologies into this world you have a responsibility that they are introduced in the right way
"

Ginni Rometty, CEO IBM Corporation, at the World Economic Forum Davos, 2017

Our principles:

Purpose
The purpose of AI is to augment human intelligence

Ownership
Data and insights belong to their creator

Transparency
New technology, including AI systems, must be transparent and explainable

Prerequisites for trust in AI:

– **FAIRNESS** – Is it fair?

– **EXPLAINABILITY** – Is it easy to understand?

– **ROBUSTNESS** – Did anyone tamper with it?

– **ASSURANCE** – Is it accountable?

Pragmatic solutions, e.g.:
- Watson OpenScale
- AI Fairness 360 Open Source Toolkit
- Everyday Ethics for Artificial Intelligence – A practical guide for designers & developers

In addition we step up to our responsibility and engage in political bodies

European Commission > Strategy > Digital Single Market > Policies >

Digital Single Market

POLICY

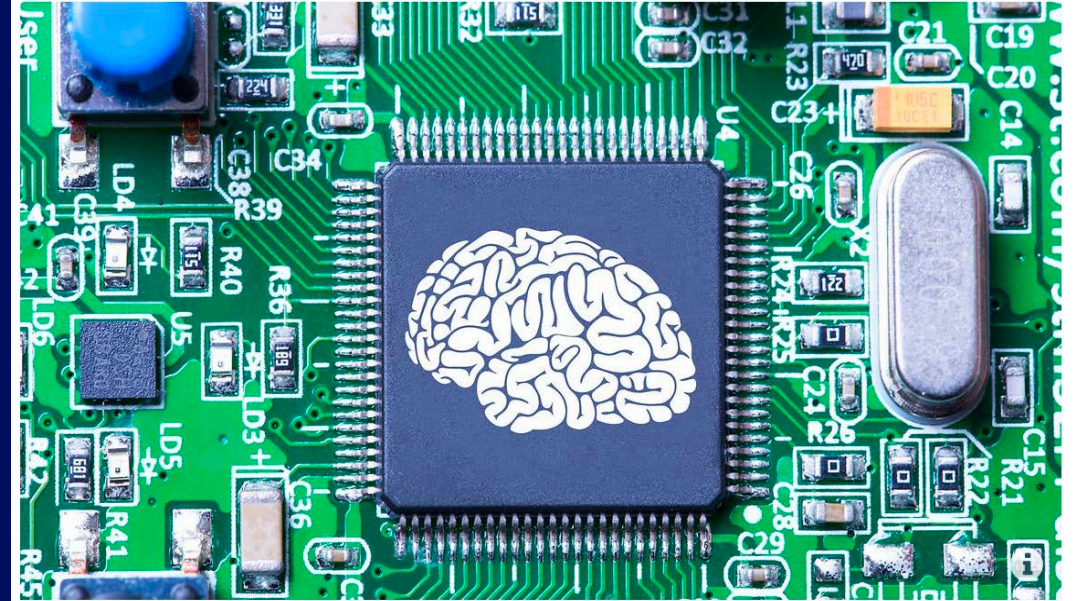**High-Level Expert Group on Artificial Intelligence**

Following an open selection process, the Commission has appointed 52 experts to a new High-Level Expert Group on Artificial Intelligence, comprising representatives from academia, civil society, as well as industry.

Enquete-Kommission „Künstliche Intelligenz – Gesellschaftliche Verantwortung und wirtschaftliche, soziale und ökologische Potenziale"

Arbeit und Aufgaben   Kontakt   Bibliografie

Der Bundestag greift mit der Enquete-Kommission „Künstliche Intelligenz – Gesellschaftliche Verantwortung und wirtschaftliche, soziale und ökologische Potenziale" eine der zentralen Debatten unserer Zeit auf. Die Enquete-Kommission, die sich zu gleichen Teilen aus Mitgliedern des Deutschen Bundestages und sachverständigen externen Expertinnen und Experten zusammensetzt, soll den zukünftigen Einfluss der Künstlichen Intelligenz (KI) auf unser (Zusammen-)Leben, die deutsche Wirtschaft und die zukünftige Arbeitswelt untersuchen. Erörtert werden sowohl die Chancen als auch die Herausforderungen der KI für Gesellschaft, Staat und Wirtschaft. Zur Diskussion stehen eine Vielzahl technischer, rechtlicher und ethischer Fragen. Zum Auftrag der Enquete-Kommission gehört, nach dem Einsetzungsbeschluss (19/2978) auf Basis ihrer Untersuchungsergebnisse den staatlichen Handlungsbedarf auf nationaler, europäischer und internationaler Ebene zu identifizieren und zu beschreiben, um einerseits die Chancen der KI wirtschaftlich und gesellschaftlich nutzbar zu machen und ihre Risiken zu minimieren.
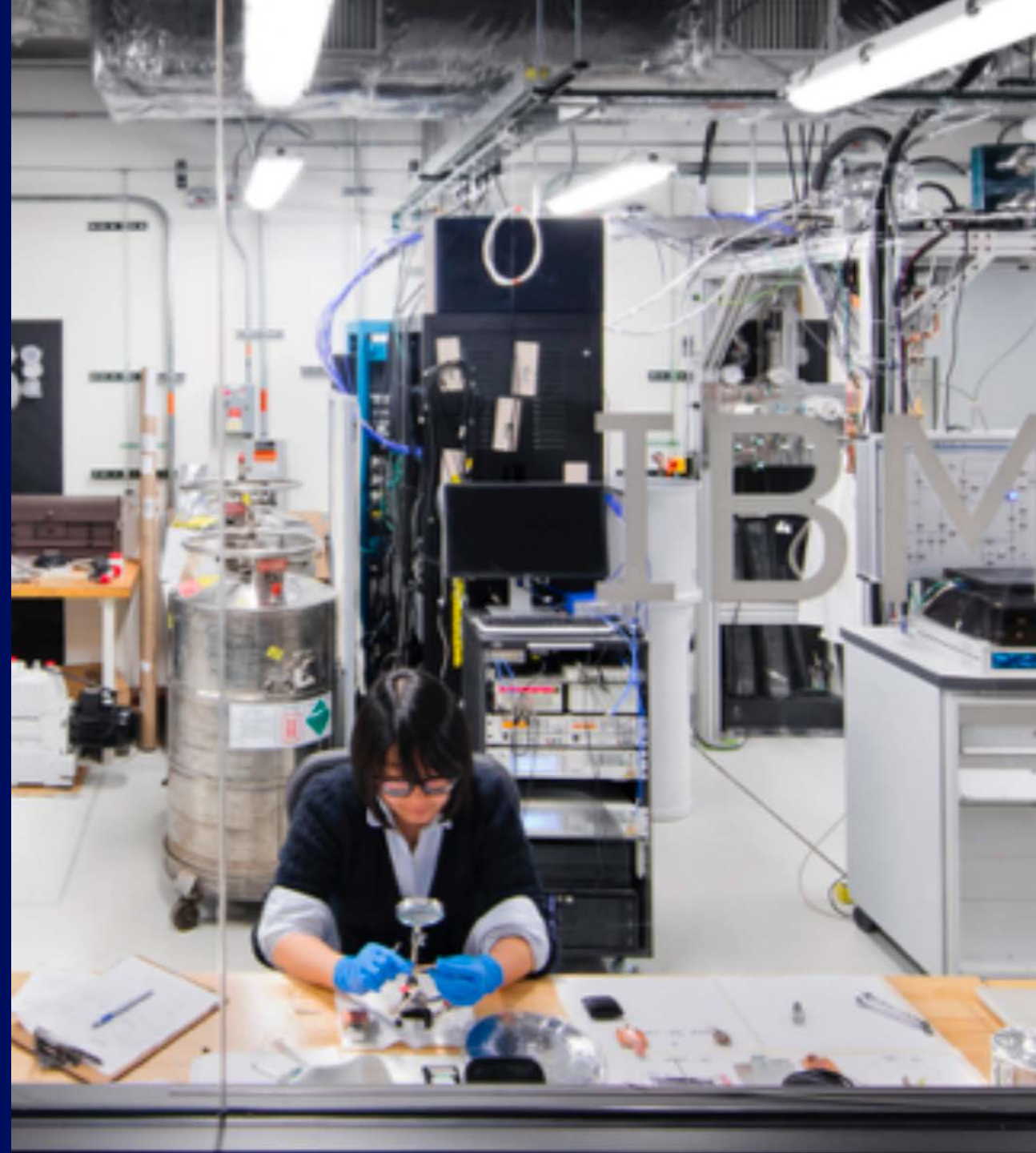
But challenges remain and continue…but we'll cope with them
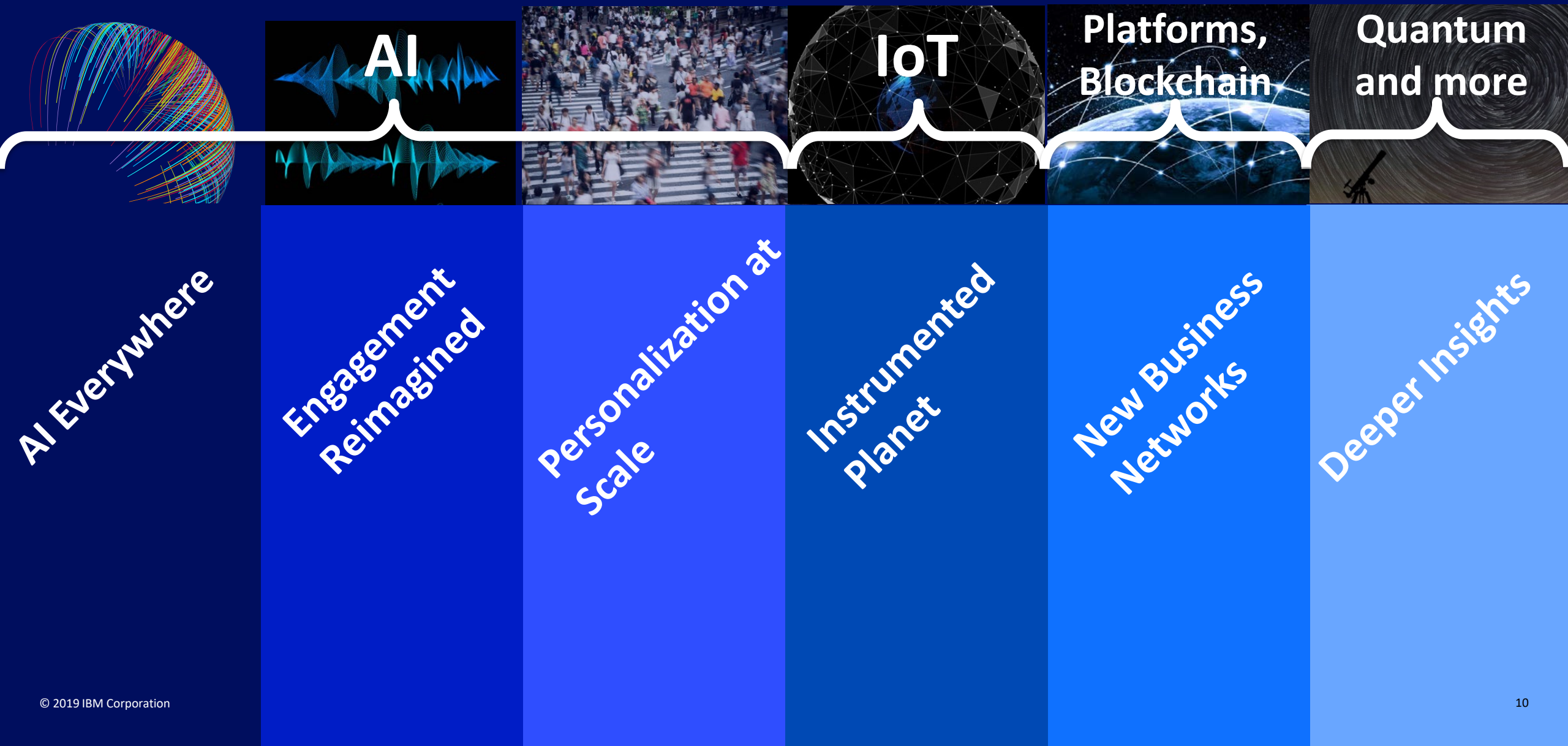
Regarding core AI, e.g.

– **Effective teamwork and natural interaction**
- Dialog, deep natural language understanding
- Common sense reasoning
- Theory of mind, affective computing, sentiment analysis

– **Proactive decision support**
- Understanding what humans need, when, and in which form

– **Dynamic improvement over time**
- Learning from few examples, learning concepts, transfer learning

Regarding ethics, e.g.

– Balance of long term results and short term actions
– How to capture and encode norms/values/expectations
– Contributors to these discussions
– …

What lies ahead? Six trends according to IBM Research

AI

IoT

Platforms, Blockchain

Quantum and more

AI Everywhere

Engagement Reimagined

Personalization at Scale

Instrumented Planet

New Business Networks

Deeper Insights

"Our machines should be nothing more than tools for extending the powers of the human beings who use them."

Thomas J. Watson, Jr. – former IBM President and CEO

Danke schön!
Thank you!

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