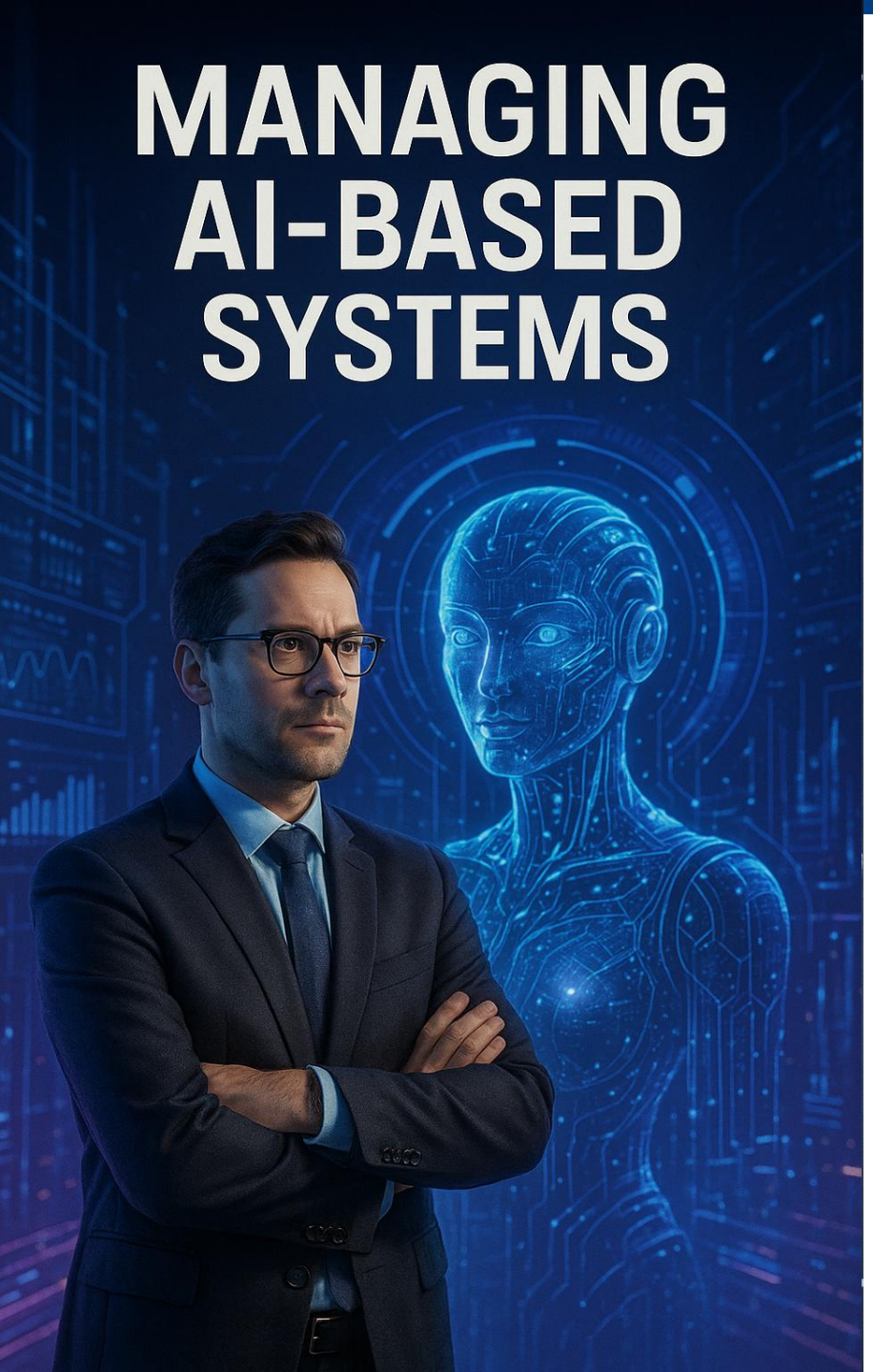

Session 7: AI readiness & service platforms

Managing AI-based Systems

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Course navigator

2
3 Basic understanding of AI and its business potential
4

AI Ideation

5 Application potentials of AI technologies

6 Identification, design and evaluation of AI use cases

AI Strategizing

7 **Evaluation an organization's AI readiness**

8 Management and governance of AI

AI Design & Development

10 Architectures of AI applications

11 Data Management and Model Transparency

12 Design of human-AI interactions

AI Operations at Scale

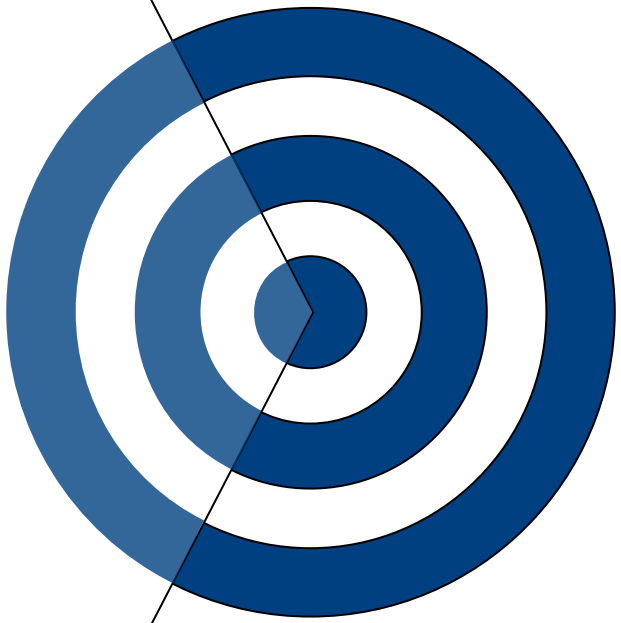
13 Monitoring and KPI-based control

14 Ethical, legal and social implications of AI

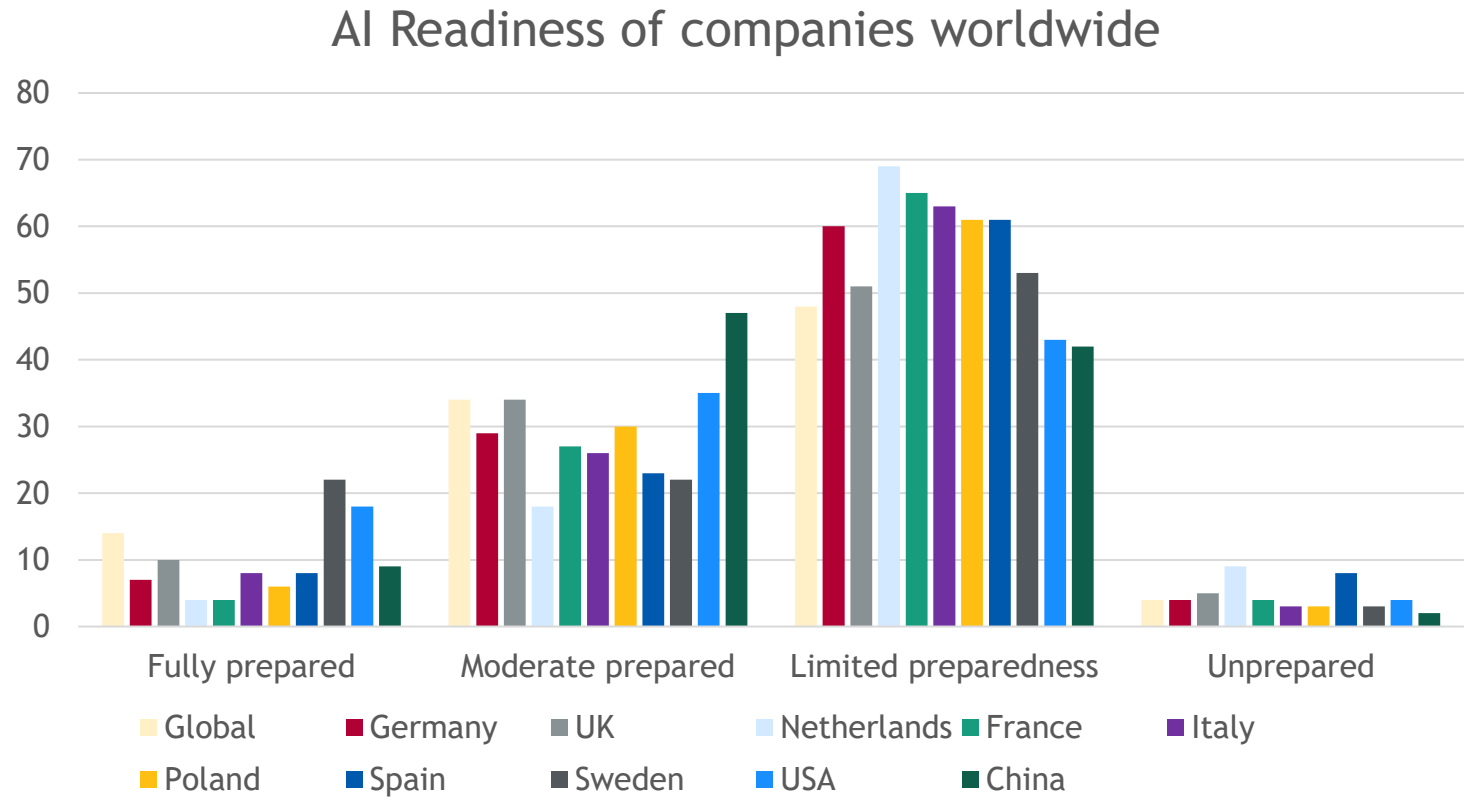
Implementation

Objectives of today's lecture

1. You understand why it is important to carefully to assess AI readiness
2. You will be able to evaluate the AI readiness of a company
3. You get to know different specifications to choose a fitting AI service platform



Many companies feel not to be well-prepared for AI



Sub-groups of AI readiness

- Germany lacks especially in infrastructure and data readiness compared to the global average
- Regarding AI Strategizing, German companies feel quite confident and nearly reach global average

Information on sample size

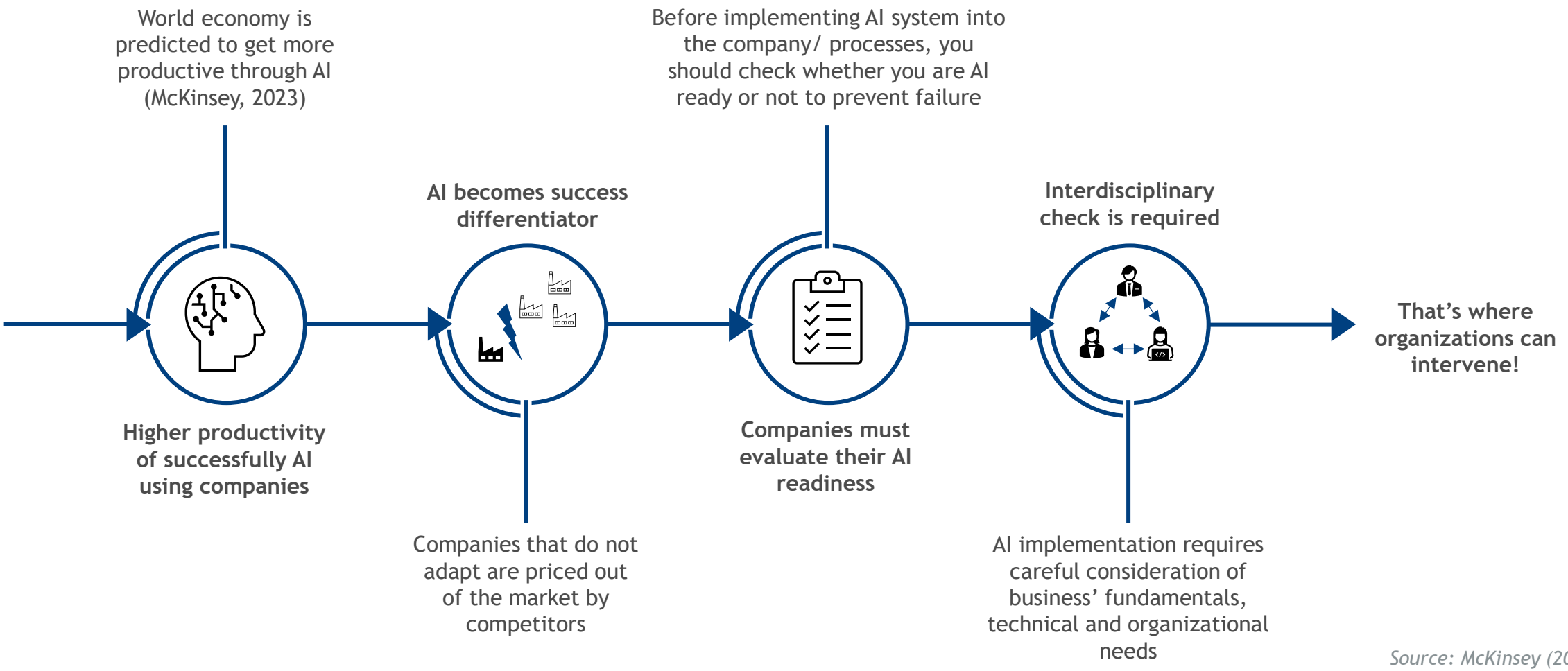
- 8161 Executives of companies (>500 empl.)
- 30 countries
  - 9 European countries

The evaluation of the current data situation shows that German companies are lagging in both European and global comparison. The global average shows that more than every 2nd company in the world does not feel AI ready (sum of limited preparedness and unpreparedness).

Source: Cisco (2023)

Image: https://blog.purestorage.com/purely-technical/ai-readiness-is-not-an-option/

Why is AI readiness important to evaluate?



Source: McKinsey (2023)

01 | AI readiness definition and related terms

02 | Organizational AI readiness factors

03 | Integrating AI service platforms

01 | AI readiness definition and related terms

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ARE YOU READY FOR AI?

Image: https://omdia.tech.informa.com/Marketing/Campaigns/AI-Readiness-Barometer

Definition and related terms: AI readiness

AI readiness

The preparedness of organizations to implement change involving applications and technology related to AI (1)

related to

Innovation adoption

(AI is technological innovation)

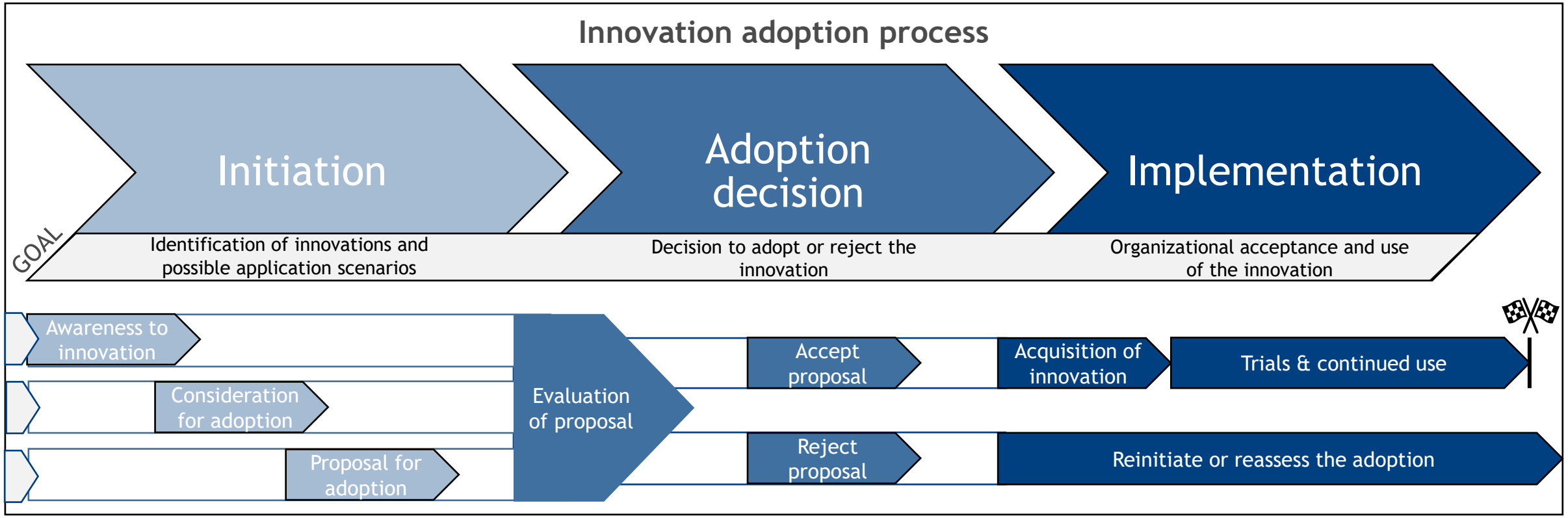
Innovation adoption refers to the decision to use innovation (expectation of improved organizational performance) and understand the necessity of its organizational use (2)

Organizational readiness for change

Readiness indicates the state necessary to engage in a specific activity, e.g., the adoption of a specific innovation such as AI (2,3)

(1) Alsheibani et al. (2018), (2) Jöhnk et al. (2021), (3) Lokuge et al. (2018))

Definition and related terms: Innovation adoption process



The general process of innovation adoption can also be applied for AI implementation. An AI readiness check could be positioned in the step of initiation, especially evaluation of proposal.

Rogers (2003), Gopalakrishnan and Damanpour (1997), Hameed et al. (2012), Jöhnk et al. (2021)

Definition and related terms: Organizational readiness for change

Readiness for technology adoption

- Financial and techn. resources
- Management support
- Organizational culture
- Commitment
- Communication of goals
- Partnership readiness

Readiness for digitalization

- Organizational assets
- Capabilities
- Commitment

Readiness for AI?

Are there specific factors for readiness in artificial intelligence?

Chwelos et al. 2001; Damanpour and Schneider 2006; Iacovou et al. 1995; Lokuge et al. 2018; Nguyen et al. 2019, Robey et al. 2008

01 | AI readiness definition and related terms

02 | Organizational AI readiness factors

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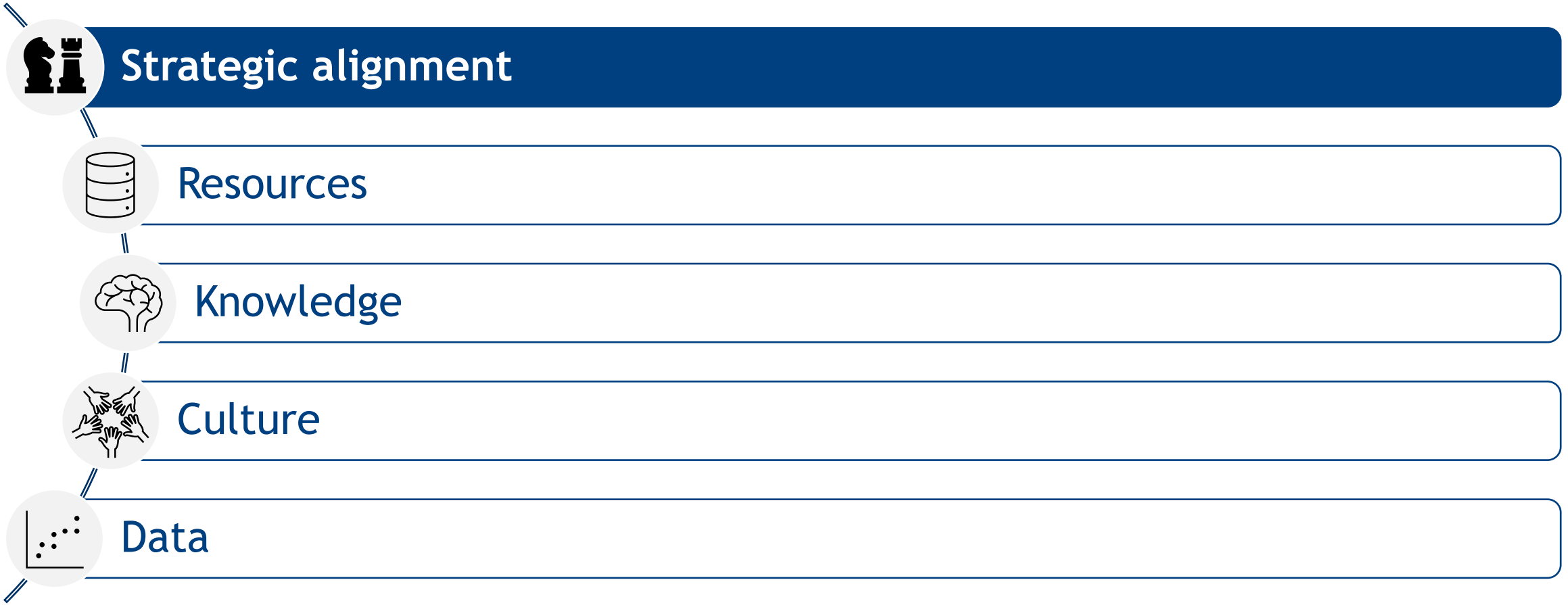
Which factors do you think are important for AI readiness?

Organizational AI readiness factors

(1) Jöhnk et al. 2021

Organizational AI readiness factors: Strategic alignment



(1) Jöhnk et al. 2021

Organizational AI readiness factors: Strategic alignment

Strategic alignment

AI-business potentials

AI characteristics: Functions are highly versatile and broadly applicable

Organizational necessity: AI-business potentials ensure that AI adoption is beneficial and suitable for organization

Customer AI readiness

AI characteristics: Use requires understanding of complexity, lack of algorithm transparency

Organizational necessity: Customer AI readiness enables in- & external customers to use AI-integrated offerings

Top management support

AI characteristics: AI's complexity poses change not only within but across organizational levels, which requires top management commitment

Organizational necessity: Top management support shows strategic relevance to organization

AI-process fit

AI characteristics: AI-based systems are more precise if processes are structured and provide standardized data input

Organizational necessity: AI-process fit through standardization, reengineering and implementation of new processes facilitates AI adoption

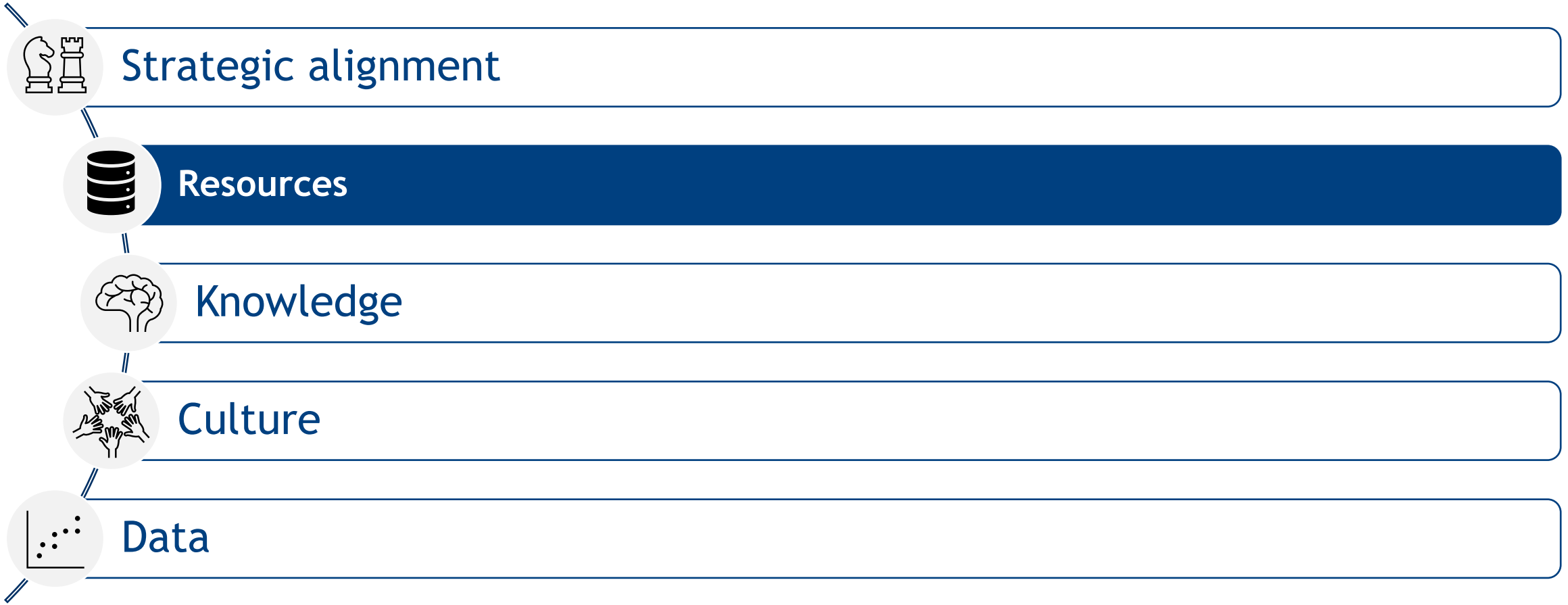
Data-driven decision-making

AI characteristics: AI-based systems are data-driven and require openness to incorporate such insights

Organizational necessity: Data-driven decision-making fosters AI adoption because both utilize data and statistical methods to gain insights

Jöhnk et al. (2021)

Organizational AI readiness factors



(1) Jöhnk et al. 2021

Organizational AI readiness factors: Resources

Resources

Financial budget

AI characteristics: AI-based systems require high investments to tailor assets and capabilities to the unique data

Organizational necessity: Strategic allocation of financial budget for AI adoption supports the overcoming of initial obstacles and uncertainty

Personal

AI characteristics: Adoption requires a broader spectrum of different roles and know-how for core business use

Organizational necessity: AI specialists and business analysts with specific know-how facilitate adoption

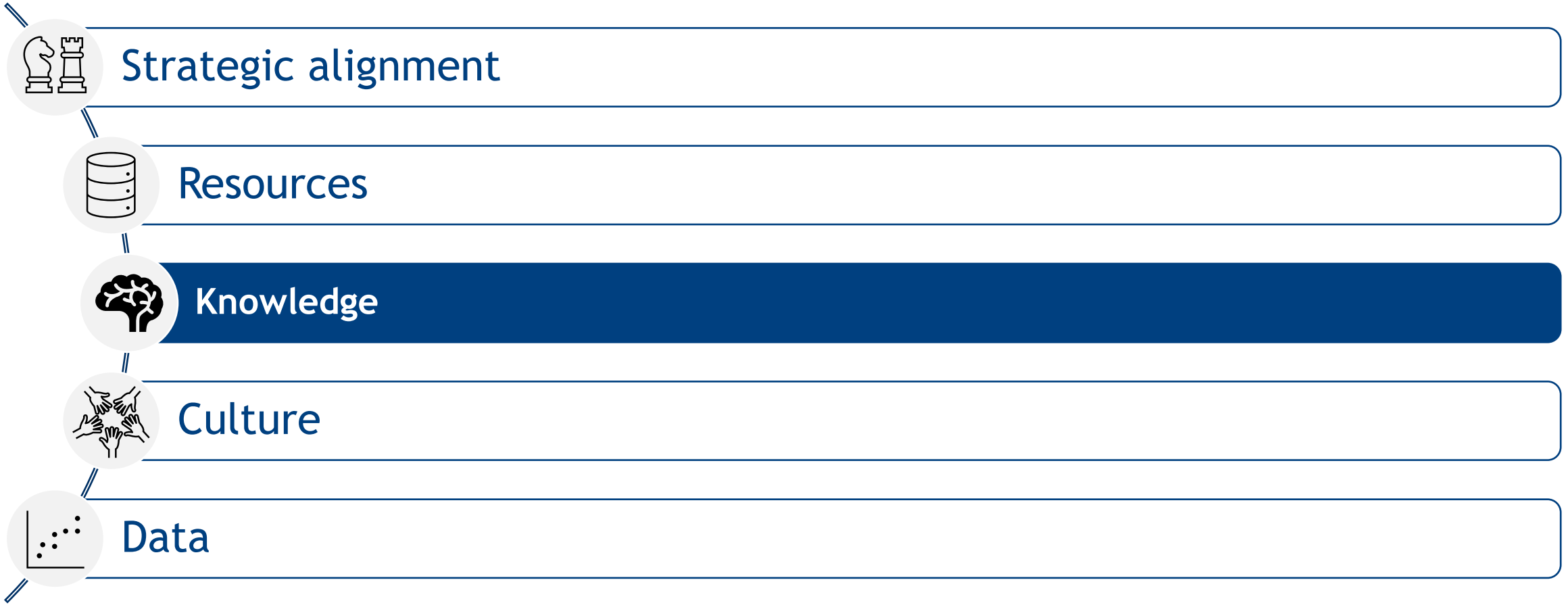
IT infrastructure

AI characteristics: Deploying AI poses high workloads and data storage requirements

Organizational necessity: IT infrastructure enables AI-related activities and AI integration

Jöhnk et al. (2021)

Organizational AI readiness factors



(1) Jöhnk et al. 2021

Organizational AI readiness factors: Knowledge

Knowledge

AI awareness

AI characteristics: AI's underlying concepts (e.g., machine learning) are hard to grasp

Organizational necessity: AI awareness ensures that employees have adequate understanding and expectations toward AI

Upskilling

AI characteristics: Requires every employee to have a basic understanding of AI

Organizational necessity: Upskilling enables employees to learn and develop AI(-related) skills

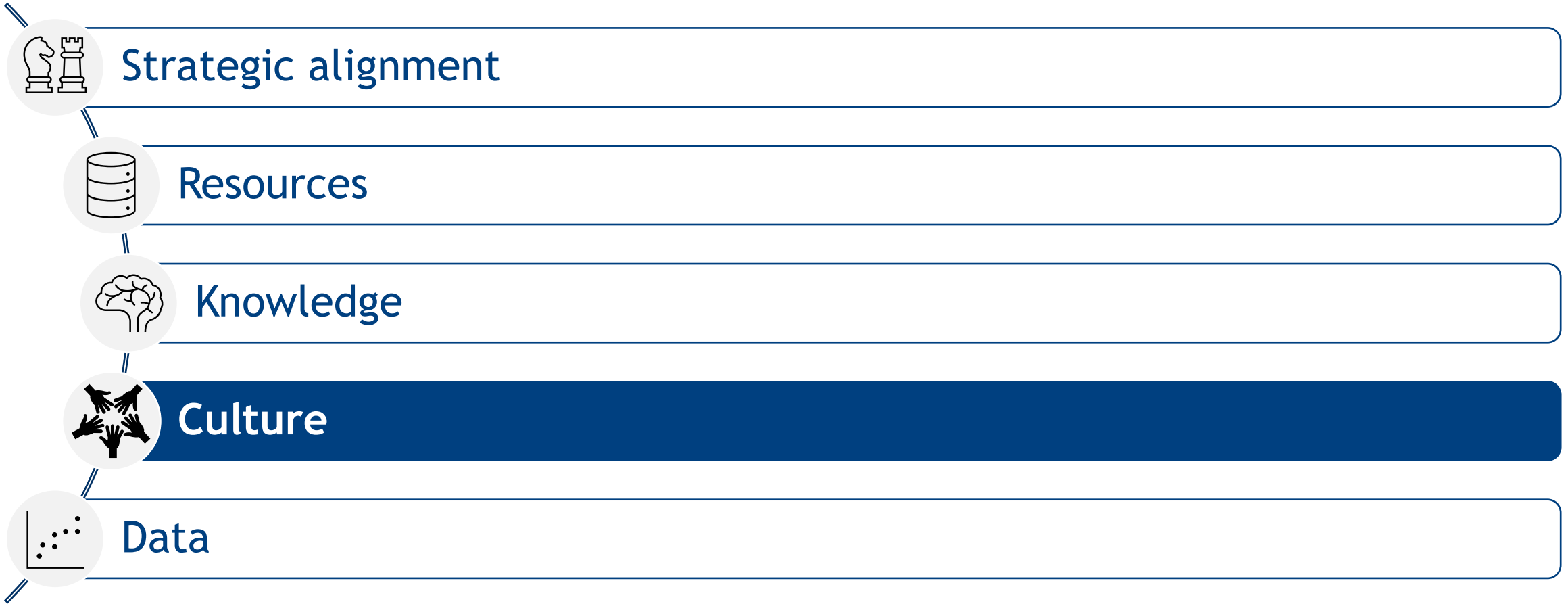
AI ethics

AI characteristics: AI-based systems are at risk for biased learning and unethical outcomes

Organizational necessity: AI ethics comprise measures to prevent bias, safety violations or discrimination in AI outcomes

Jöhnk et al. (2021)

Organizational AI readiness factors



(1) Jöhnk et al. 2021

Organizational AI readiness factors: Culture

Culture

Innovativeness

AI characteristics: Employees' fear of AI-induced job loss threatens proactive innovativeness

Organizational necessity: Innovativeness increases employees' willingness to change the status quo through the application of AI

Collaborative work

AI characteristics: AI deployment relies on integrating different perspectives (i.e., domain, data and IT)

Organizational necessity: Collaborative work enables employees to work in teams and combine different skills

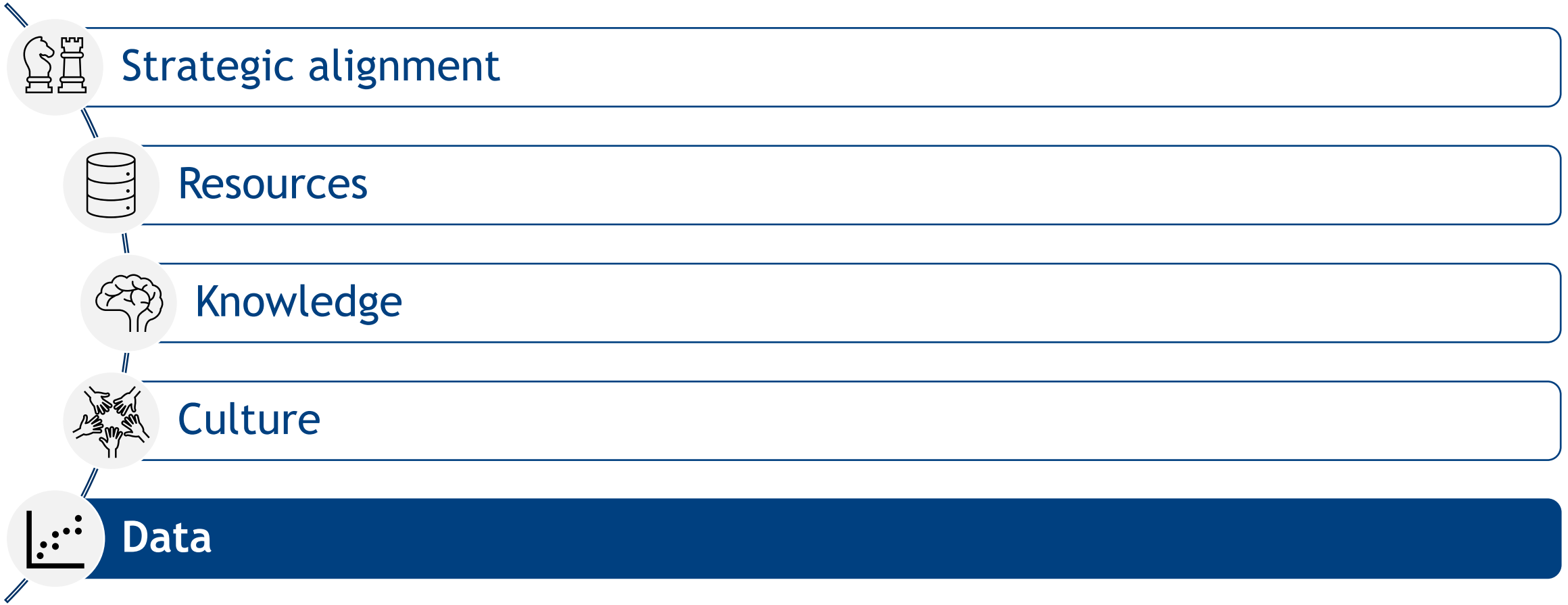
Change management

AI characteristics: Employees' lack of understanding and fear of AI threaten the acceptance of AI-based systems

Organizational necessity: Change management helps employees to understand and cope with AI-induced organizational change

Jöhnk et al. (2021)

Organizational AI readiness factors



(1) Jöhnk et al. 2021

Organizational AI readiness factors: Data

Data

Data availability

AI characteristics: AI-based systems learn through different data types and large data amounts

Organizational necessity: Data availability within the organization fuels AI solutions

Data quality

AI characteristics: AI-based systems achieve better results the higher the quality of the data, they learn with, is

Organizational necessity: Data quality ensures accurate AI outcomes

Data accessibility

AI characteristics: AI personnel require access to relevant data sources for deployment

Organizational necessity: Data accessibility facilitates AI experts to easily prototype and develop AI solutions

Data flow

AI characteristics: Initial and continuous training of AI-based systems requires smooth and automated data flow

Organizational necessity: Data flow between its source and its use ensures high data accessibility to AI experts

Jöhnk et al. (2021)

Recommended reading

Bus Inf Syst Eng 63(1):5–20 (2021)
https://doi.org/10.1007/s12599-020-00676-7

RESEARCH PAPER

Ready or Not, AI Comes— An Interview Study of Organizational AI Readiness Factors

Jan Jöhnk · Malte Weißert · Katrin Wyrtki

Received: 13 March 2020 / Accepted: 20 October 2020 / Published online: 22 December 2020

Abstract Artificial intelligence (AI) offers organizations much potential. Considering the manifold application areas, AI's inherent complexity, and new organizational necessities, companies encounter pitfalls when adopting AI. An informed decision regarding an organization's readiness increases the probability of successful AI adoption and is important to successfully leverage AI's business value. Thus, companies need to assess whether their assets, capabilities, and commitment are ready for the individual AI adoption purpose. Research on AI readiness and AI adoption is still in its infancy. Consequently, researchers and practitioners lack guidance on the adoption of AI. The paper presents five categories of AI readiness factors and their illustrative actionable indicators. The AI readiness factors are deduced from an in-depth interview study with 25 AI experts and triangulated with both scientific and practitioner literature. Thus, the paper provides a sound set of organizational AI readiness factors, derives corresponding indicators for AI readiness assessments, and discusses the general implications for AI adoption. This is a first step toward conceptualizing relevant organizational AI readiness factors and guiding purposeful decisions in the entire AI adoption process for both research and practice.

Keywords Artificial intelligence · AI adoption · AI readiness · Organizational readiness assessment · Interview study

1 Introduction

Artificial intelligence (AI) is a general-purpose technology (GPT) with a unique learning capability that provides organizations with potentials for wide-ranging improvements as well as entirely new business opportunities. Iansiti and Lakhani 2020. Being a GPT, AI drives changes at the task, process, and business model level in a plethora of application areas and as such offers a competitive advantage to organizations (Brynjolfsson and McAfee 2017). Ample access to improved learning algorithms and available AI use cases as well as corresponding solutions facilitate AI adoption in organizations. In 2019, 80% of large organizations aimed to adopt or had adopted some form of AI (Gartner 2019; Ghosh et al. 2019). However, most organizations use AI in single pilots, whereas only 8% of organizations have adopted AI in core practices (Fountaine et al. 2019). Due to AI's nature as a GPT, possible application scenarios are not always directly obvious and organizations must understand the technology to decide on the intended adoption purpose (Jovanovic and Rousseau 2005). Consequently, the adoption of AI poses challenges on an organizational, technical, and individual level (Baier et al. 2019; Bughin et al. 2017). Thus,

Electronic Supplementary Material The online version of this article (https://doi.org/10.1007/s12599-020-00676-7) contains supplementary material, which is available to authorized users.

Accepted after two revisions by the editors of the special issue

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Jöhnk, J., Weißert, M., & Wyrtki, K. (2021) **Ready or Not, AI Comes — An Interview Study of Organizational AI Readiness Factors**, Business & Information Systems Engineering, 63, 5-20.

01 | AI readiness definition and related terms

02 | Organizational AI readiness factors

03 | Integrating AI service platforms

AI platforms have evolved to cater to meet the diverse needs of different industries

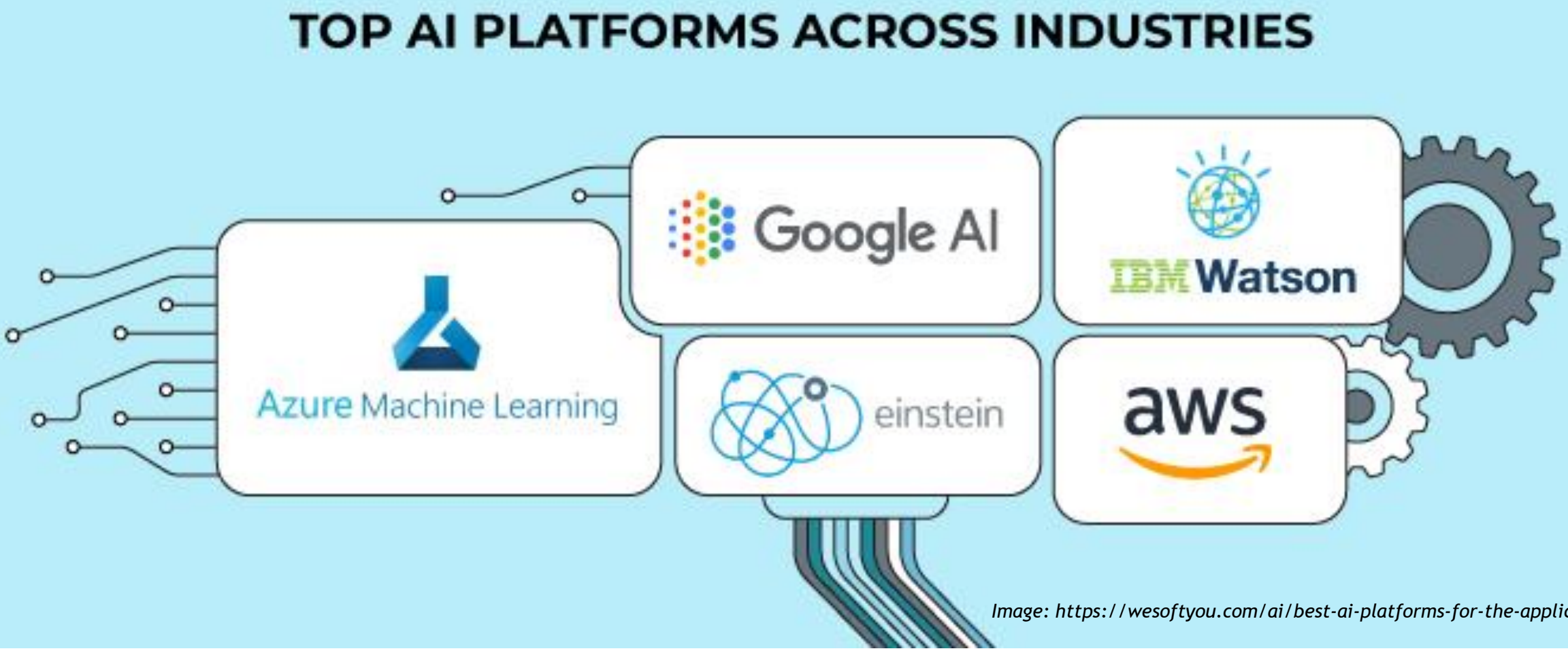


Image: https://wesoftyou.com/ai/best-ai-platforms-for-the-application/

The artificial intelligence platforms market is estimated to grow at a CAGR of 34.86% between 2022 and 2027

Source: Technavio (2023)

Examples of AI service platforms: Microsoft Azure

Azure Machine Learning

Azure ML is an integrated, comprehensive data science and advanced analytics solution; it offers data preparation, collaborative notebooks and automated machine learning

Application example
A healthcare company could use Azure ML to analyze patient data and make predictions about future health risks

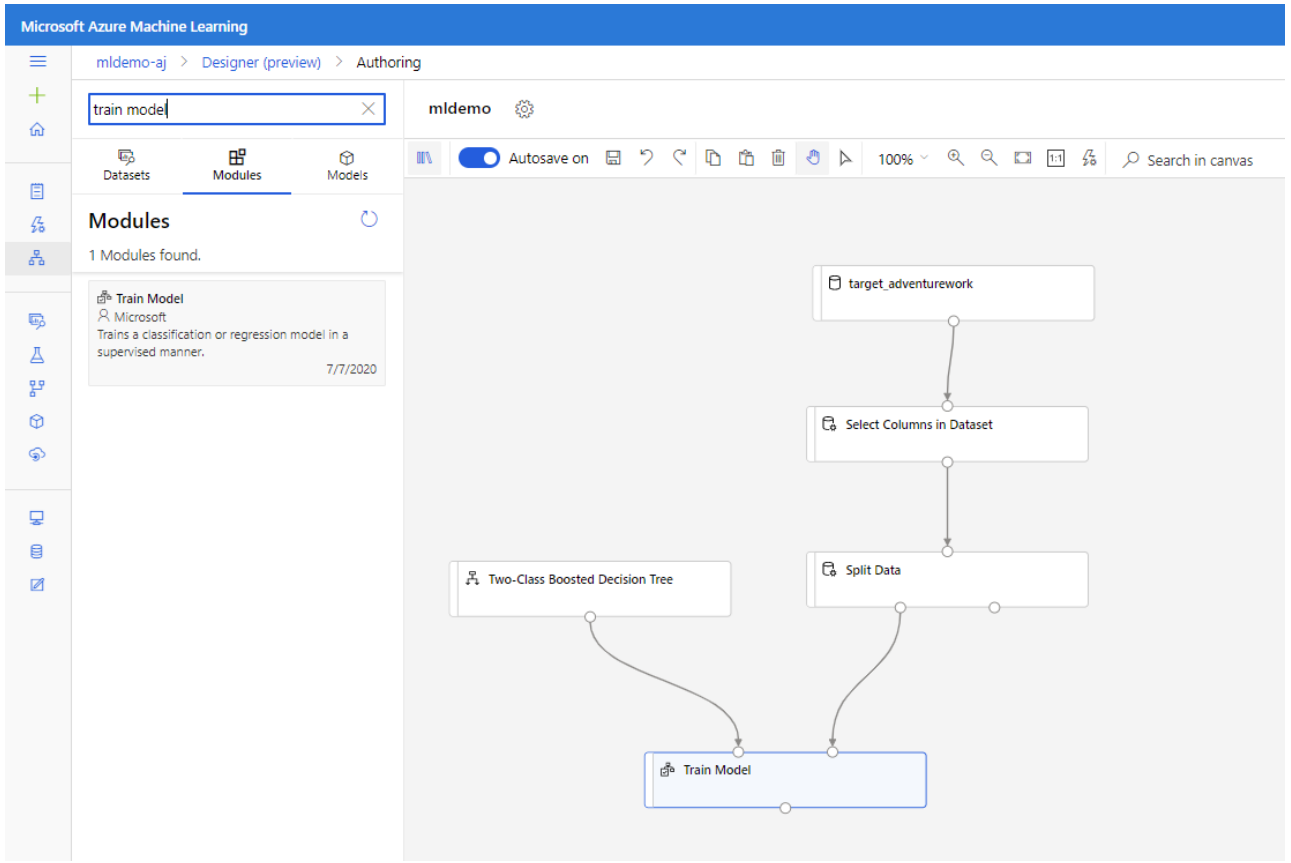


Image: Microsoft

Examples of AI service platforms: AWS

Amazon Web Services (AWS) Machine Learning

AWS offers a variety of machine learning and deep learning services, including Amazon SageMaker for training and deploying models

Application example
Organizations can use SageMaker to create, train and deploy custom models without having to worry about the underlying infrastructure

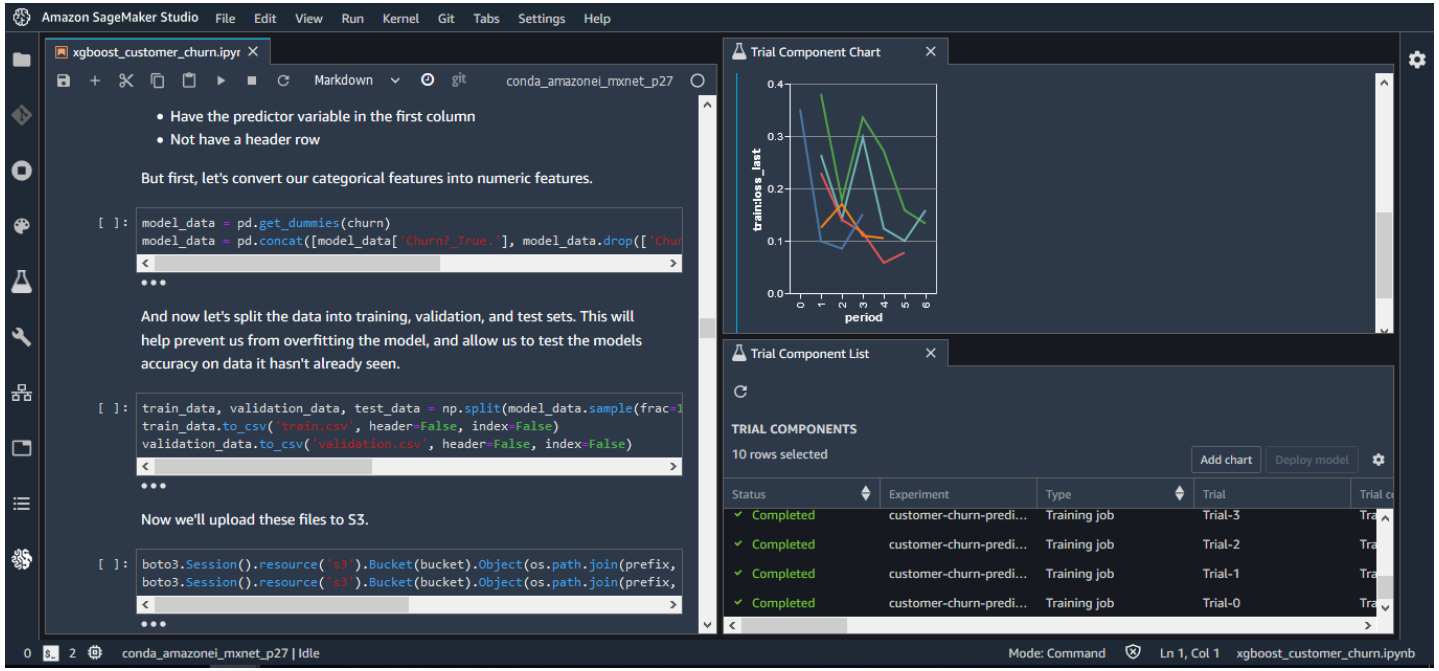


Image: AWS

Examples of AI service platforms: Google Cloud

Google Cloud (AI and Machine Learning)

Google Cloud offers services for generative AI, machine learning, speech processing, document and data, vision and video and AI infrastructure

Application example
An e-commerce company can use Vision AI to analyze images in its catalogue and generate product recommendations

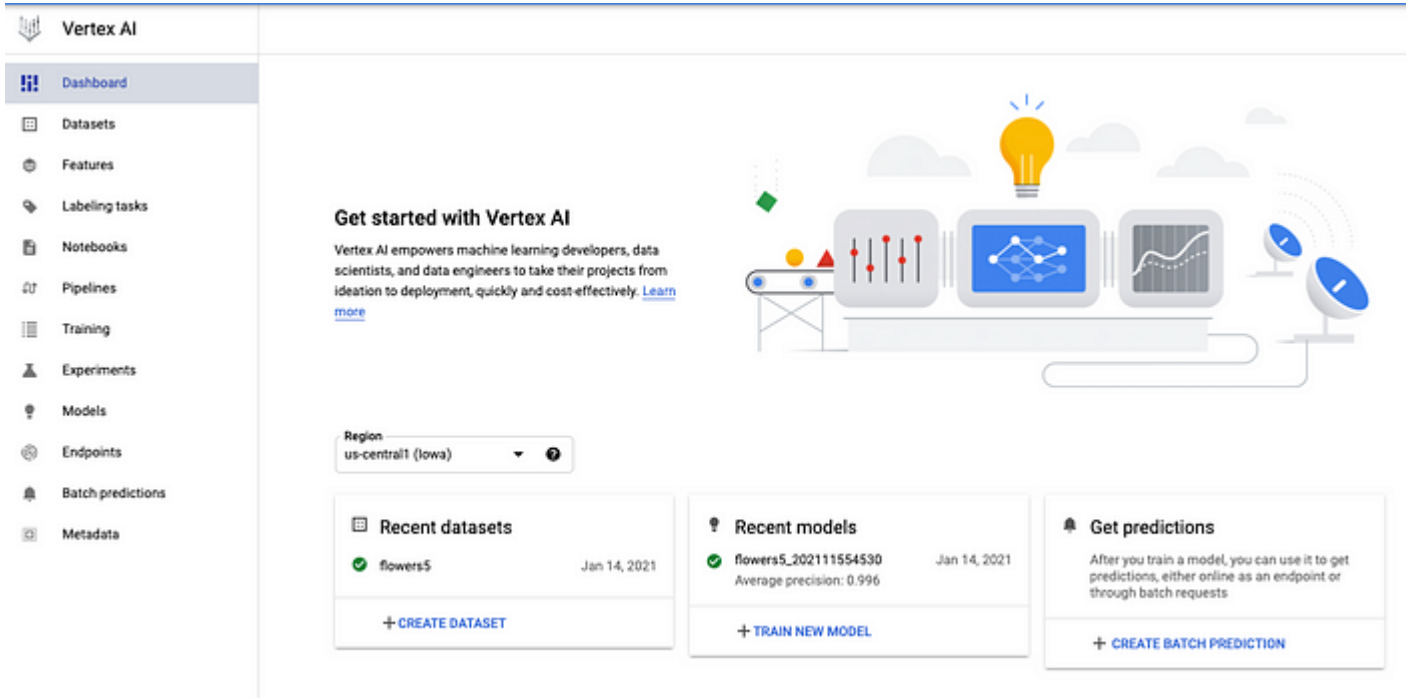
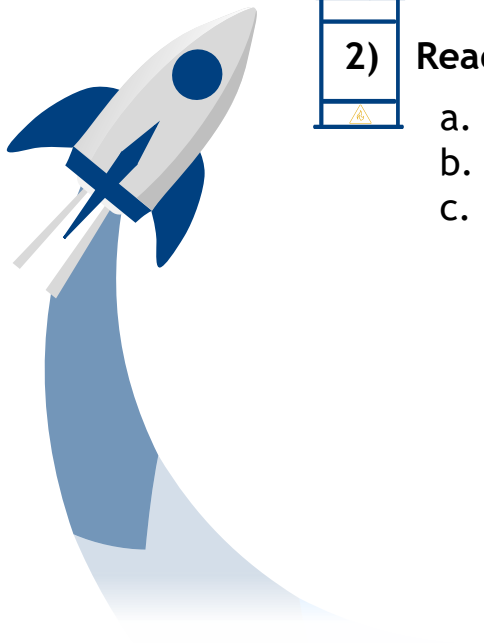


Image: Towards data science

What are prevailing motives to use AI service platforms?

1) High degree of freedom to create your own AI models or applications:

a. Platform enables organizations to create their own AI models with a high degree of freedom
b. Provides generic AI development services
c. End-to-end services with various benefits for customers and providers (ease of use, operating costs, (technical) dependencies, and reducing complexity)



2) Ready-to-use AI applications:

a. Platform offers integrated AI functionalities
b. Limited development effort for customers
c. Continuous spectrum between development platforms and finished AI services

3) Focus on secondary AI services and resources:

a. Platform offers complementary services such as data labeling and ML model assessment
b. Access to pre-built ML models and resources
c. Support for the development process of AI solutions

Geske et al. (2021)

How to choose a fitting AI service platform

Customer context	AI service platform's offering	Third party integration
Locates and describes the area of application as well as assesses the AI service platform's specialization from a customer's perspective	Assesses the value proposition of the platform	Describes the platform's constitutive agents beyond the platform provider and the customer

The top three layers that help to define the AI Service platform are the customer context, the AI service platform's offering and the third-party integration

Gawer (2014), Geske et al. (2021)

Specifying the AI service platform: Customer context

Customer context				
	Industry focus	Industry-specific	Industry-unspecific	
	Activity focus	Activity-specific	Activity-unspecific	
	Platform use	Continuous	On-demand	Continuous and on-demand

The layer customer context locates and describes the area of application as well as assesses the AI service platform's specialization from a customer's perspective.

Gawer (2014), Geske et al. (2021), James and Chung (2015)

Specifying the AI service platform: Platform offering

AI FOR BUSINESS BUSINESS FOR AI

AI's service platform offering

AI service model	Application deployment	Application development & deployment service	Ready-to-use service	Hybrid service
Complementary services	Yes		No	
Complementary resources	Yes		No	

The layer AI's service platform offering assesses the value proposition of the platform

Gawer (2014), Geske et al. (2021)

Specifying the AI service platform: Platform offering

AI FOR BUSINESS BUSINESS FOR AI

AI's service platform offering						
	Pricing model	One-off payment	Regularly based on variable rates	Regularly based of fixed rates	Free-mium	Free of charge
	Code-based interaction	Yes		No		
	Graphical interface	Click through	Click through and drag and drop	Drag and drop	None	

The layer AI's service platform offering assesses the value proposition of the platform

Gawer (2014), Geske et al. (2021)

Specifying the AI service platform: Third-party integration

Third-party integration 	**Integrated complementor**	Selected comple-mentors	Selected comple-mentors and crowd	Crowd	None
	Integrated complementor offering	Resource	Service	Resource and service	None

The layer third-party integration describes the platform's constitutive agents beyond the platform provider and the customer

Gawer (2014), Geske et al. (2021)

Recommended reading

AI Service Platform Taxonomy

GATEWAYS TO ARTIFICIAL INTELLIGENCE: DEVELOPING A TAXONOMY FOR AI SERVICE PLATFORMS

Research Paper

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Abstract

Artificial Intelligence (AI) carries the potential to drive innovation in many parts of today's business environment. Instead of building AI capabilities in-house, some organizations turn towards an emergent phenomenon: AI service platforms. However, as a novel concept in both research and practice, a systematic characterization of AI service platforms is missing. To address this gap, we define the concept of AI service platforms and develop a comprehensive taxonomy. Therefore, we rely on existing literature, 14 expert interviews, and a sample of 31 AI service platforms. Our contribution is threefold: First, our taxonomy systematically structures essential properties of AI service platforms, guiding future research and management practice. Second, we derive three generic motives of AI service platforms. Third, we contribute to the literature by critically discussing to what extent AI service platforms fit into the existing academic discourse on digital platforms and elaborate on future research directions.

Keywords: AI Service Platform, Digital Platform, Artificial Intelligence, Taxonomy.

1 Introduction

Fostering developments in new products, services, and business models, Artificial Intelligence (AI) is experiencing attention in research and practice. AI applications are diverse and involve different technological approaches. Examples range from classification in medical diagnosis (Hofmann et al., 2019) to the generation of music (Hofmann et al., 2021). Today, AI has moved from the theoretical realm to the global marketplace. Amongst others, the maturing of machine learning (ML), the availability of data, and adequate computing power have fueled the rise of AI (Jordan and Mitchell, 2015). Despite AI's promised potential, companies have not yet widely adopted AI. Lorica and Paco (2019) state that only 27 percent of the observed companies are already deploying AI, while another 54

Geske, F.,Hofmann, P., Lämmermann, L., Schlatt, V. and Urbach, N. (2021) **Gateways to Artificial Intelligence: Developing a Taxonomy for AI Service Platforms**, Proceedings of the 29th European Conference on Information Systems (ECIS 2021), June 14-16, Marrakesh, Marocco.

Today’s lecture at a glance

- We discussed different factors to evaluate the AI readiness of a company
- We understand when companies should build their own platform and when they should approach an AI service platform
- We are able to choose the right AI service platform by choosing the right specifications

Questions, comments, observations

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Pictures

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