ARTIFICIAL INTELLIGENCE

The AI Advantage: Powering Business Competitiveness

Statista Q Report

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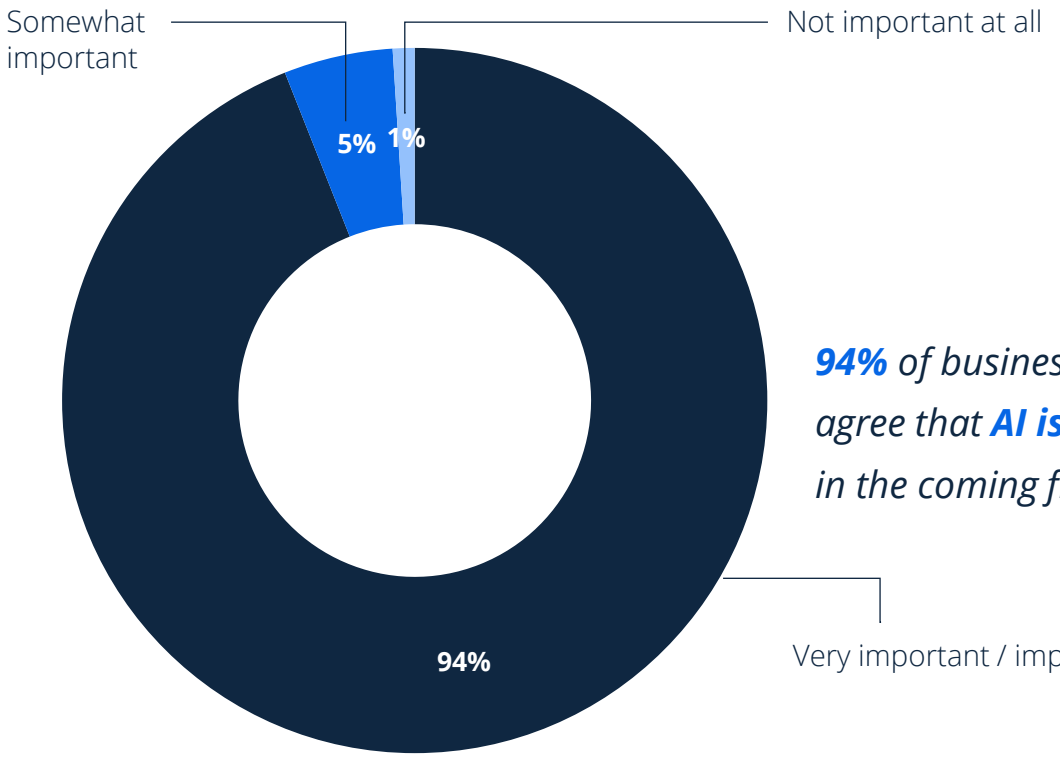
Business leaders agree that leveraging AI will be critical to their future business success.

Importance of AI solutions to organizations' overall success worldwide



***94%** of business leaders surveyed agree that **AI is critical to success** in the coming five years.*

This report will provide deep insights and provide guidance on how to leverage AI potentials in a pragmatic way

Notes: Worldwide; October 2022; 2,620 respondents; business leaders.

Source: Deloitte

CHAPTER 1

Introduction

Artificial Intelligence (AI) essentially refers to computing technologies that are inspired by the ways people use their brains and nervous systems to reason and make decisions, but they typically operate quite differently.

The concept of AI has been the source of inspiration for many science fiction writers and futurologists for over a century. Today, advancements in computing and big data have made it a reality, with machines now being deployed at a large scale across industries. The application of AI technologies is driving growth at individual, business, and economic levels. In fact, AI has started to outperform human beings in a range of work activities, including ones requiring cognitive abilities.

There are three main types of artificial intelligence

Definitions

Machine learning

This involves designing new learning algorithms and improving existing ones to enable computers to act without explicit programming. These algorithms allow computers to analyze large volumes of complex data to recognize patterns and make predictions and adjustments.

The different types of machine learning are:

- Supervised learning
- Unsupervised learning
- Reinforcement learning

Robotics

This branch of technology is concerned with developing and training robots to interact with people and the world in general in predictable ways. However, current efforts also revolve around using deep learning to train robots to manipulate situations and act with a certain degree of self-awareness.

Common fields within robotics are:

- Soft robotics
- Touch robotics
- Humanoid robots

Artificial Neural Networks (ANNs)

This area is concerned with developing algorithms that mimic the functioning of the neocortex area of the human brain, where all the thinking occurs. This comparison is not entirely correct because in a human brain, neurons are not arranged in a linear sequence, as is the case with ANNs.

There are three different types of ANNs:

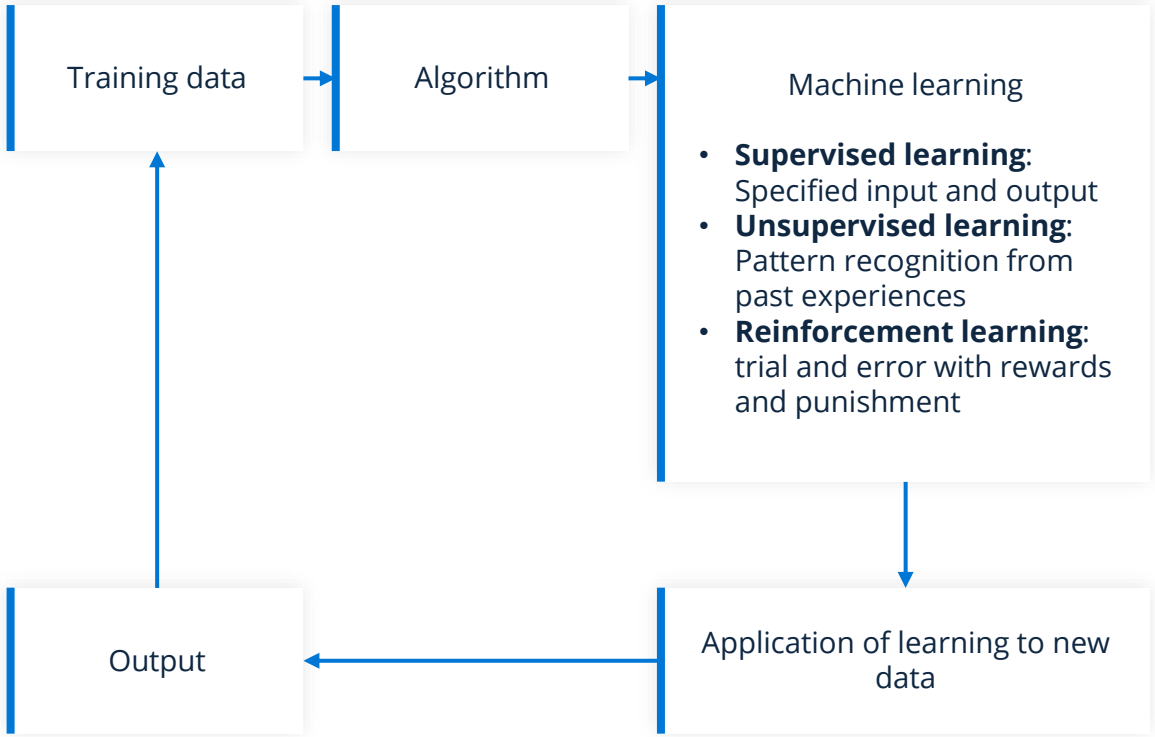
- Deep learning
- Convolutional neural networks
- Recurrent neural network

Sources: PwC; McKinsey

Machine learning applies insights from existing data to new data

Machine Learning

Illustration of the machine learning process



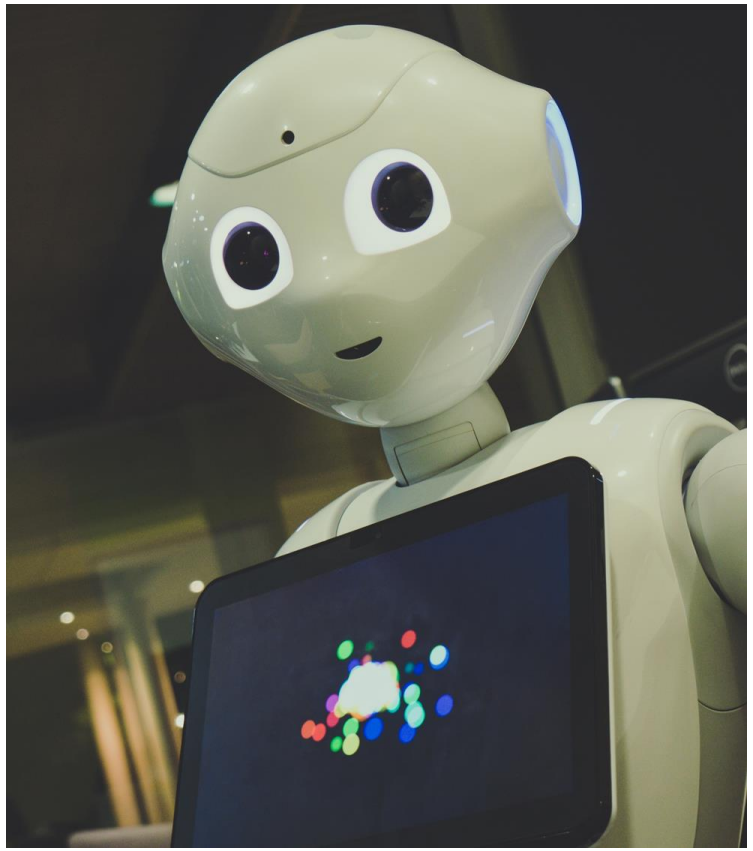
Sources: SAS; McKinsey

AI is used to advance the behavior potential of robots

Robotics

Advances in machine learning, including computer vision and tactile perception, will continue to be key enablers in advancing the capabilities of robotics:

- **Soft robotics:** These robots are built out of soft and deformable materials, which gives them the ability to mimic the movements of living beings. These structures can achieve complex movements and are more adaptable than traditional rigid robots. For example, Soft Robotics Inc. makes robotic grippers that are used to handle tender items such as soft foods without damaging them.
- **Touch robotics:** Typically used to perform surgeries, these robots deliver a sense of touch, feel, and vision to the operator. They are usually designed as biologically inspired hands. Other use cases include assisting people with limited mobility, picking up soft objects such as fruit, and handling hazardous material.
- **Humanoid robots:** Robots similar in structure to a human being, with a torso, head, arms, and legs. Some robots might only model a part of the body, for example, the upper body. Android robots resemble a male body, while Gynoids resemble a female body. According to BBC's Science Focus magazine, Honda Motor Corporation's Asimo is currently the most advanced robot in the world.



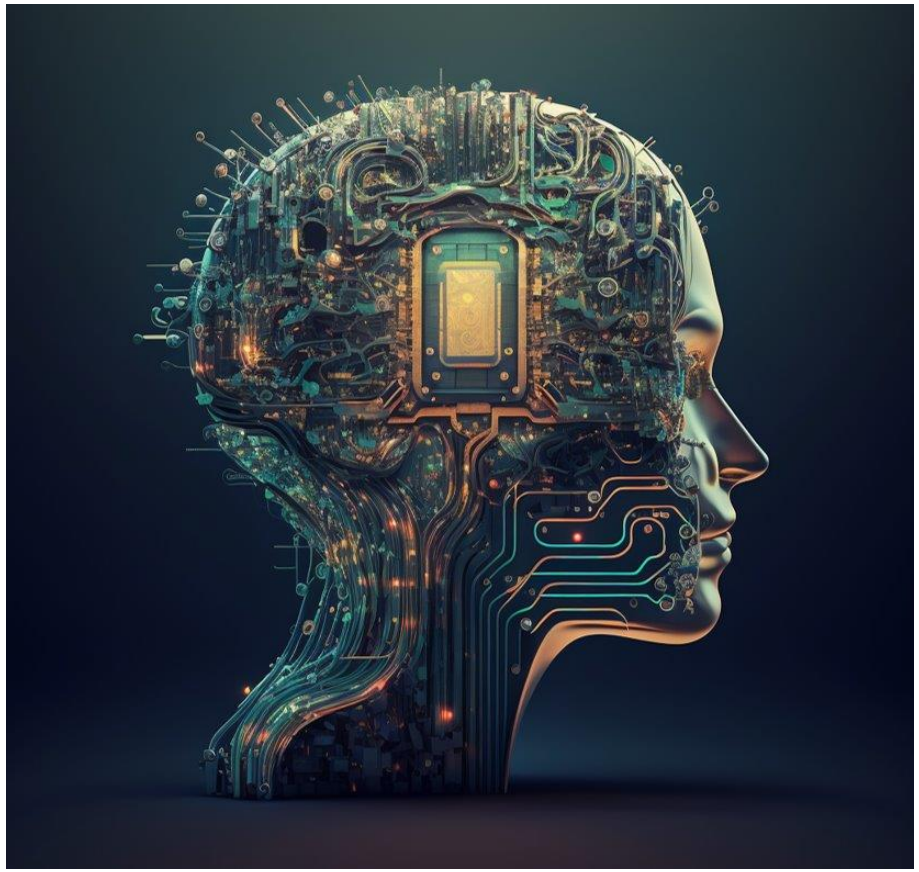
Sources: Company information

Artificial Neural Networks mimic the working of a human brain

Artificial neural networks

There are three types of artificial neural networks:

- **Deep learning:** These algorithms have many layers (usually over 10) of neural networks which process information at many levels. This branch of machine learning is especially important because it is the first family of algorithms that does not require manual intervention. Instead, it learns from raw data, very much like a human brain does, making use of different types of sensory inputs.
- **Convolutional neural networks (CNN):** These are very similar to ordinary neural networks in their overall working. The only difference is that the connections between neural layers are similar to those seen in the animal visual cortex, the part of the brain that processes images. These architectures are programmed to perceive each input as an image.
- **Recurrent neural network (RNN):** These neural networks differ from others in terms of their architecture. Their neurons are connected to each other, thereby allowing them to send feedback signals to each other. Here, the information travels in loops from layer to layer so that each bit of information can be stored as memory and the network can exhibit dynamic behavior. It is due to this that RNNs have been found to be apt for **natural language processing applications**.



Sources: Company information

CHAPTER 2

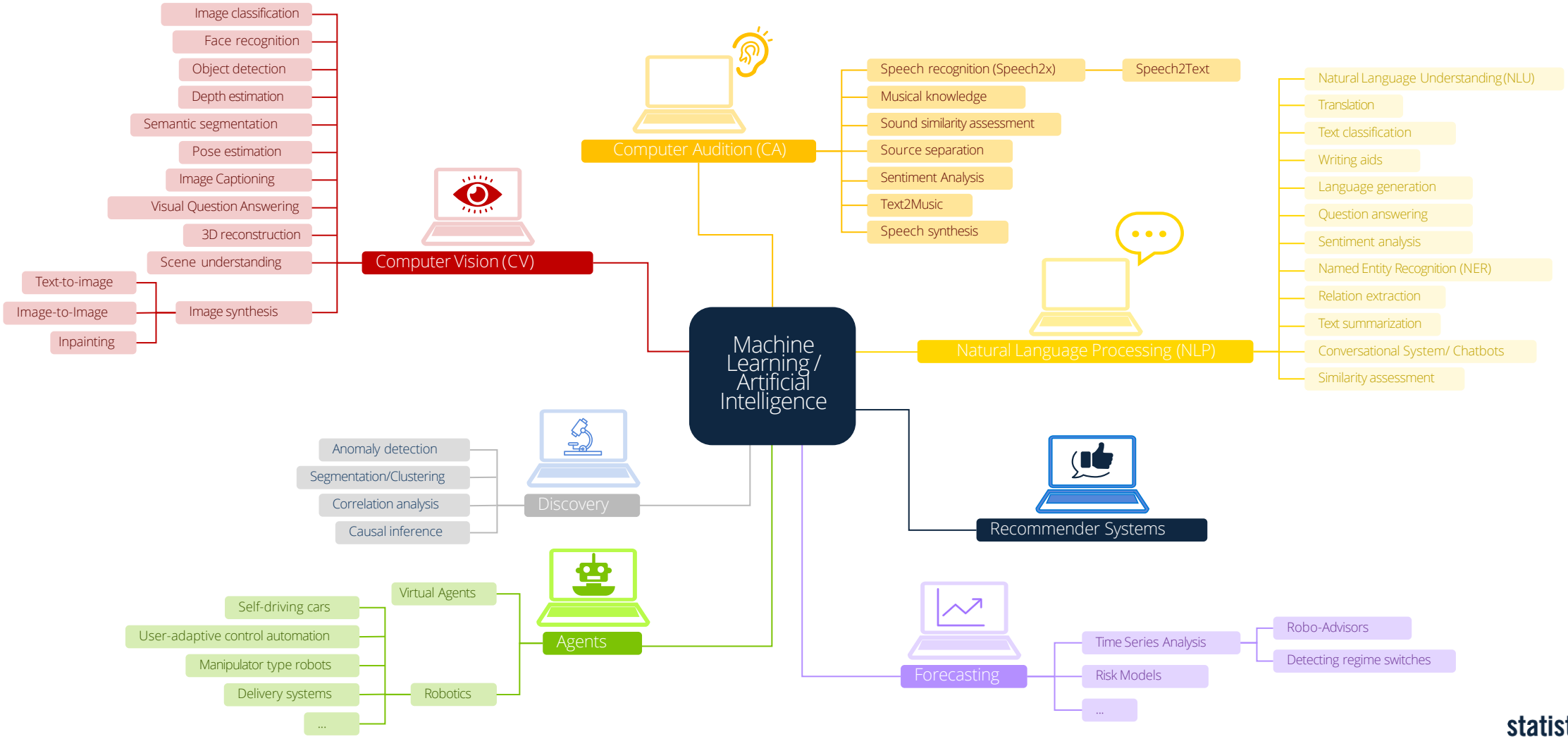
Current State & Applications

AI solutions are increasingly being customized to serve the needs of the automotive, healthcare, education, finance, entertainment, and other industries.

In the automotive sector, AI is primarily used to power autonomous cars, with these systems expected to become standard in new vehicles in the medium to long term. In the healthcare industry, developments in the field of AI and machine learning have not only accelerated the pace of innovation in the industry but are also changing entire operating models. In the education industry, there are attempts to provide customized learning programs for each student using AI, while in the finance industry, AI wealth management solutions can offer higher personalization.

Recent developments in AI led to a huge range of new capabilities, offering multiple potential use cases for organizations

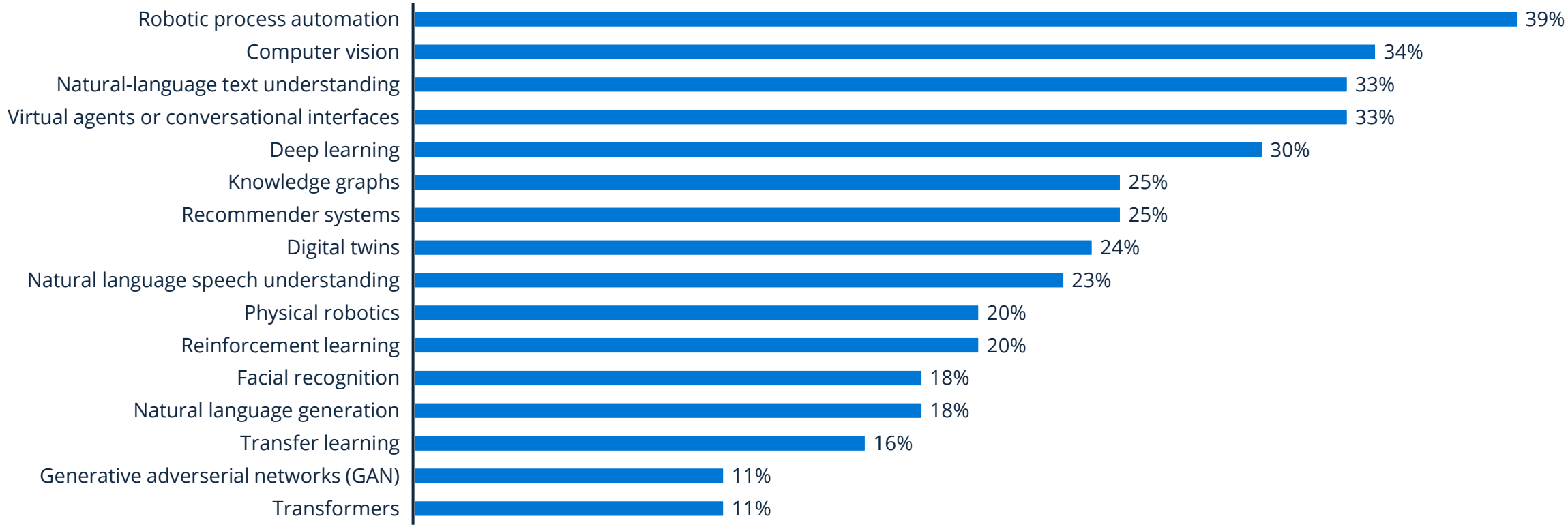
Selection of commonly utilized AI capabilities in modern organizations



Sources: Nxt Statista

Many AI capability are already adopted by businesses, led by Robotic Process Automation and Computer Vision technologies

Leading AI capabilities adoption rate in business 2022

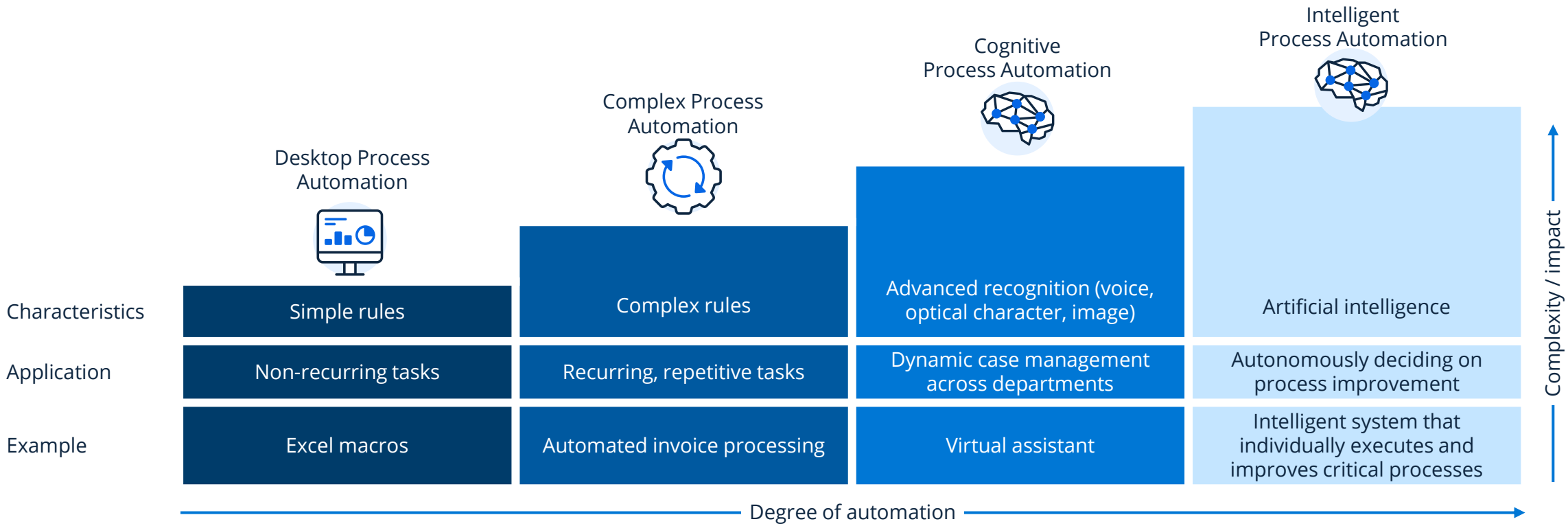


Sources: McKinsey

Potentials of process automation technologies based on the degree of automation and the complexity of the task

In the most advanced stage, AI will autonomously decide process improvement

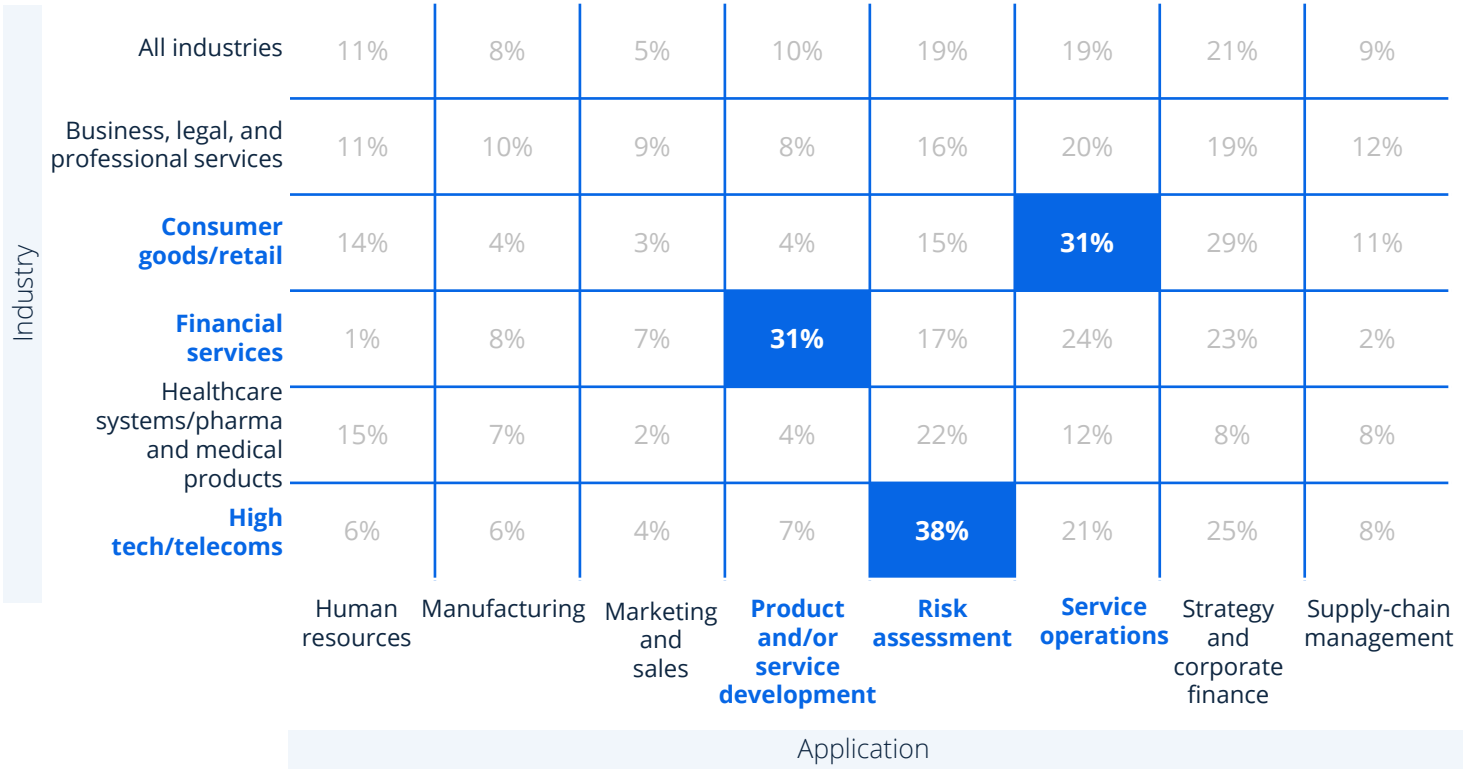
Stages of process automation



Sources: u.a. Gartner

AI is currently most prominent in service operations, strategy and corporate finance, adoption rates in other sectors are quickly rising

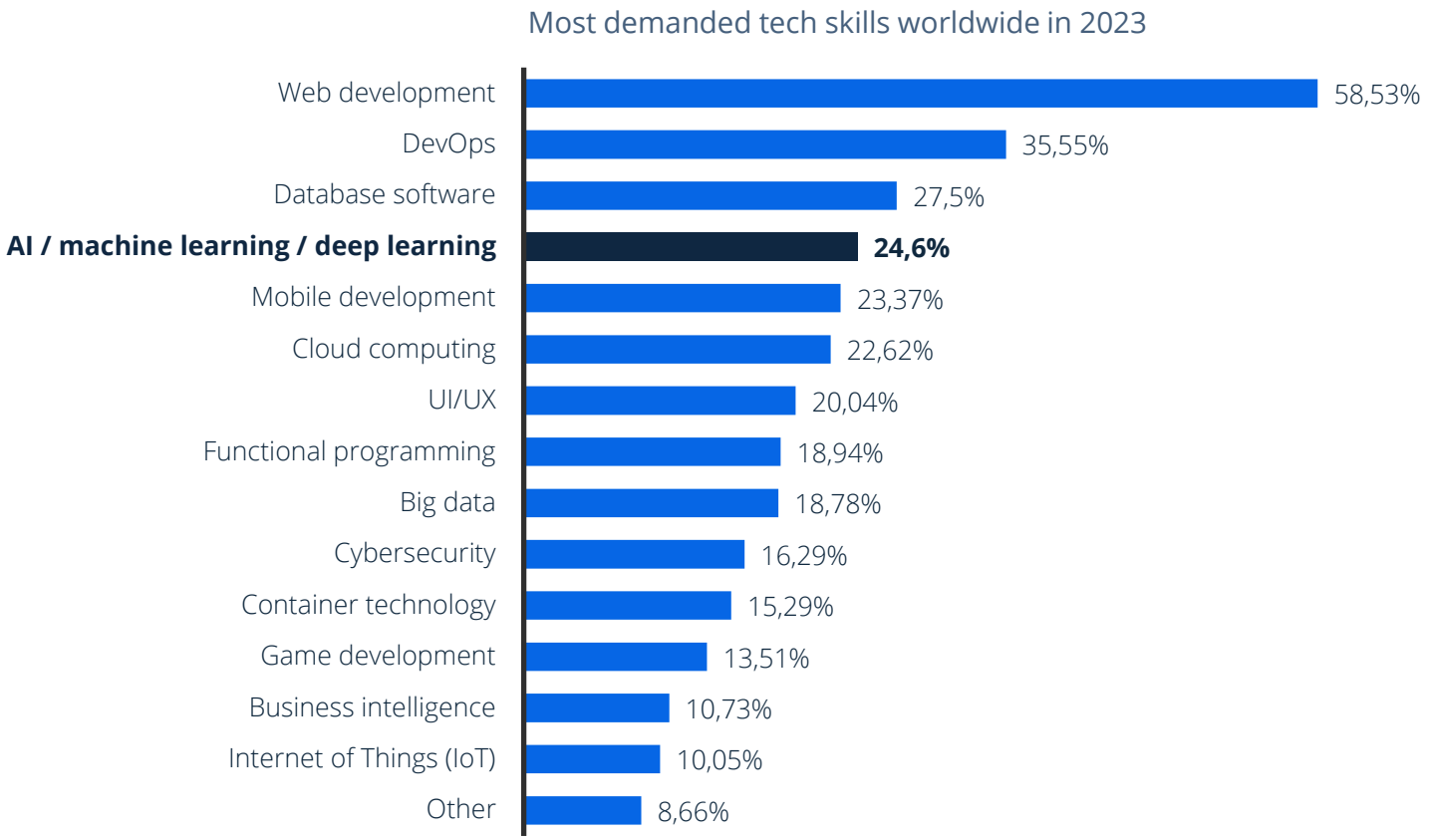
AI adoption in organizations worldwide 2022, by industry and application



The highest AI adoption rates were in the **high tech/telecoms sector** for risk-related applications **(38%)**, followed by **consumer goods/retail** service operations **(31%)** and **financial services** product and/or service development **(31%)**.

Sources Stanford University; McKinsey & Company

In order to enable a quick adoption of AI capabilities in organisations, corporate recruiters are looking to hire people with AI skills



Around **25% of recruiters** were looking to hire people with **AI**, **machine learning**, **and deep learning** knowledge, making these the fourth most in-demand set of tech skills for 2023.

Notes: Worldwide; 2022; 18,200 developers from 131 countries and recruiters from 98 countries.

Sources: CodinGame; CoderPad

CHAPTER 4

Industry Impact

One of the major factors driving the current wave of AI growth is the strong interest of Venture Capital (VC) investment in AI start-ups. On the technology front, rapid advancements in computing power are driving the industry to the next level. Similarly, open-source platforms are promoting and enabling collaborative learning, which is conducive for the growth in AI.

The current wave of growth in the AI industry is as much about the abundant availability of big data as it is about software and hardware. The amount of big data being generated by today's increasingly digitized economy is growing at a rate of 40% each year and is expected to reach 163 trillion gigabytes by 2025. This growth in big data is driving the improvement of AI algorithms.

VCs remained as the most active AI investors in 2022, driving the wave of AI growth worldwide

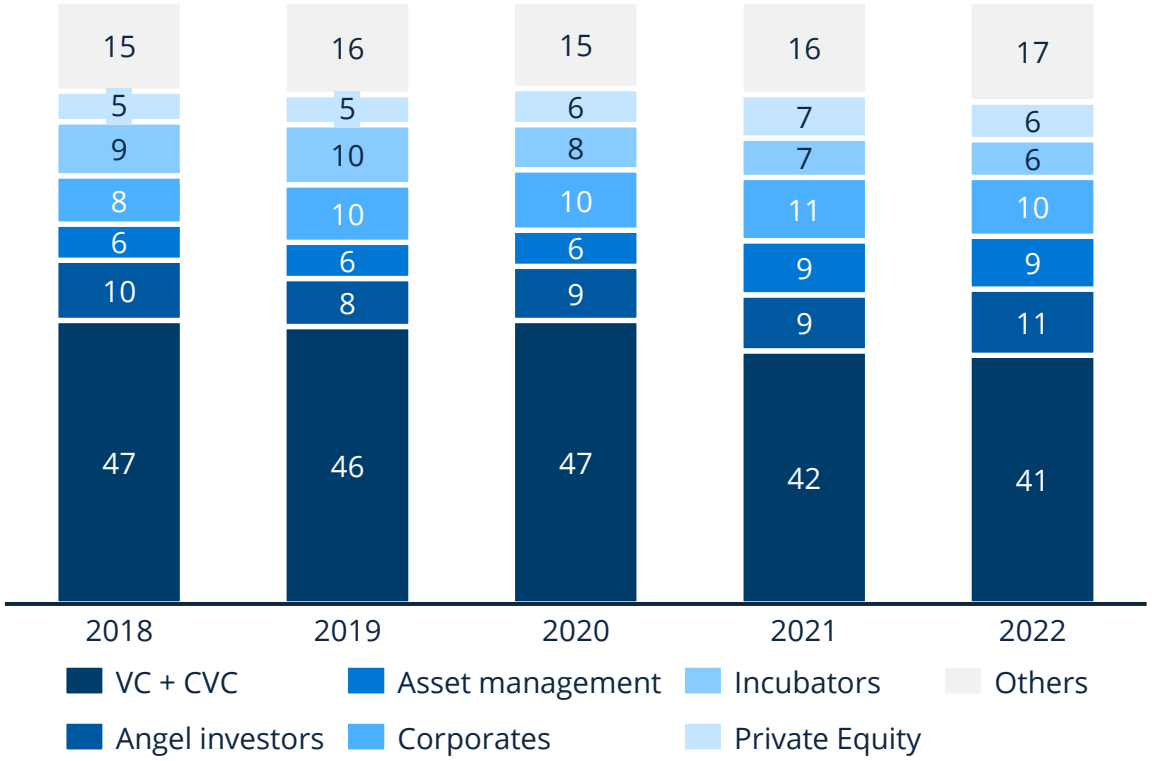
Investors' confidence

One of the major factors driving the current wave of AI growth is the strong interest of Venture Capital (VC) investment[1] in AI start-ups. According to CB Insights, the annual global AI funding increased at a CAGR[2] of over 32.8% from US$6.3 billion in 2015 to US$45.8 billion in 2022.

The other key insights related to global AI investments in 2022 are:

- The U.S. with 236 deals worth US$5.0 billion and Asia with 191 deals worth US$2.4 billion maintain lead in AI-related deals and fundings in Q4'2022.
- AI deal share remained consistent in 2022 in major global markets.
- 2 out of every 5 AI related deals were for US-based companies.
- Average deal size reached US$20.7 million in 2022.
- Funding for mega-rounds accounted for nearly 48% of total AI fundings in 2022. The U.S and Asia led the mega-round funding in Q4'2022.

Share of active AI investors in %



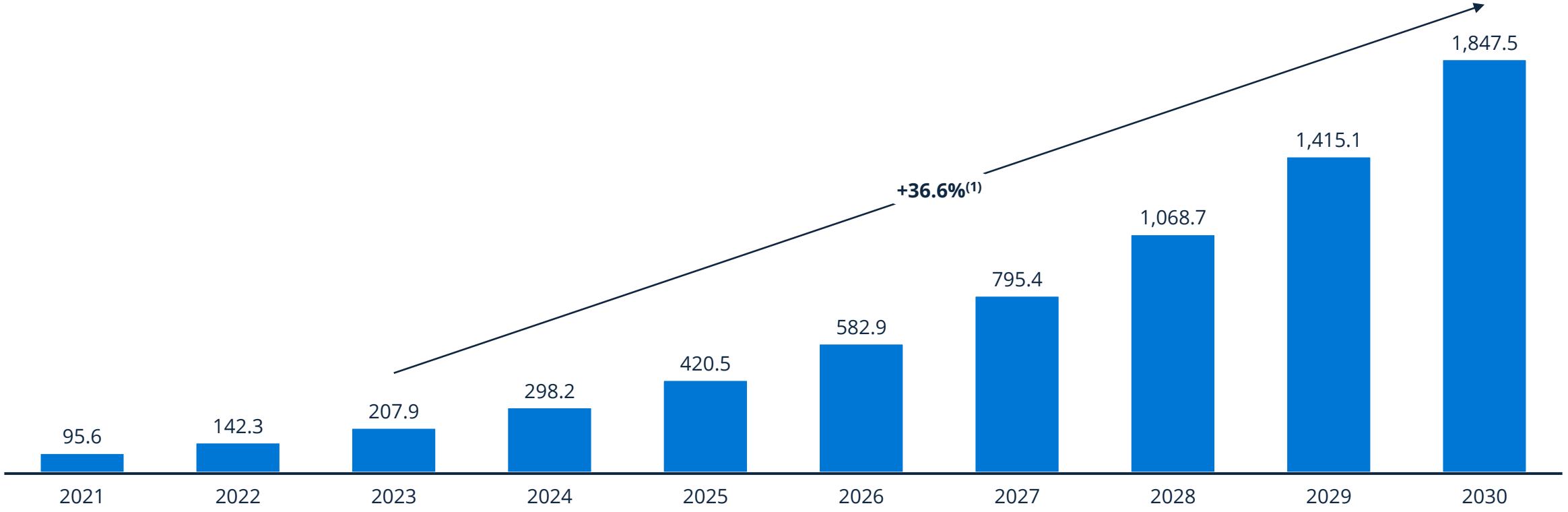
Notes: (1) Includes investment by Corporate Venture Capital (CVC) investment (2) CAGR: Compound Annual Growth Rate / average growth rate per year

Sources: CB Insights; GCV Analytics; Singularity Hub; Company information

Global Artificial Intelligence market is projected to cross US$1 trillion by 2028

Global revenue projection

Global Artificial Intelligence market in billion US$



Notes: (1) CAGR: Compound Annual Growth Rate / average growth rate per year

Sources: Next Move Strategy Consulting

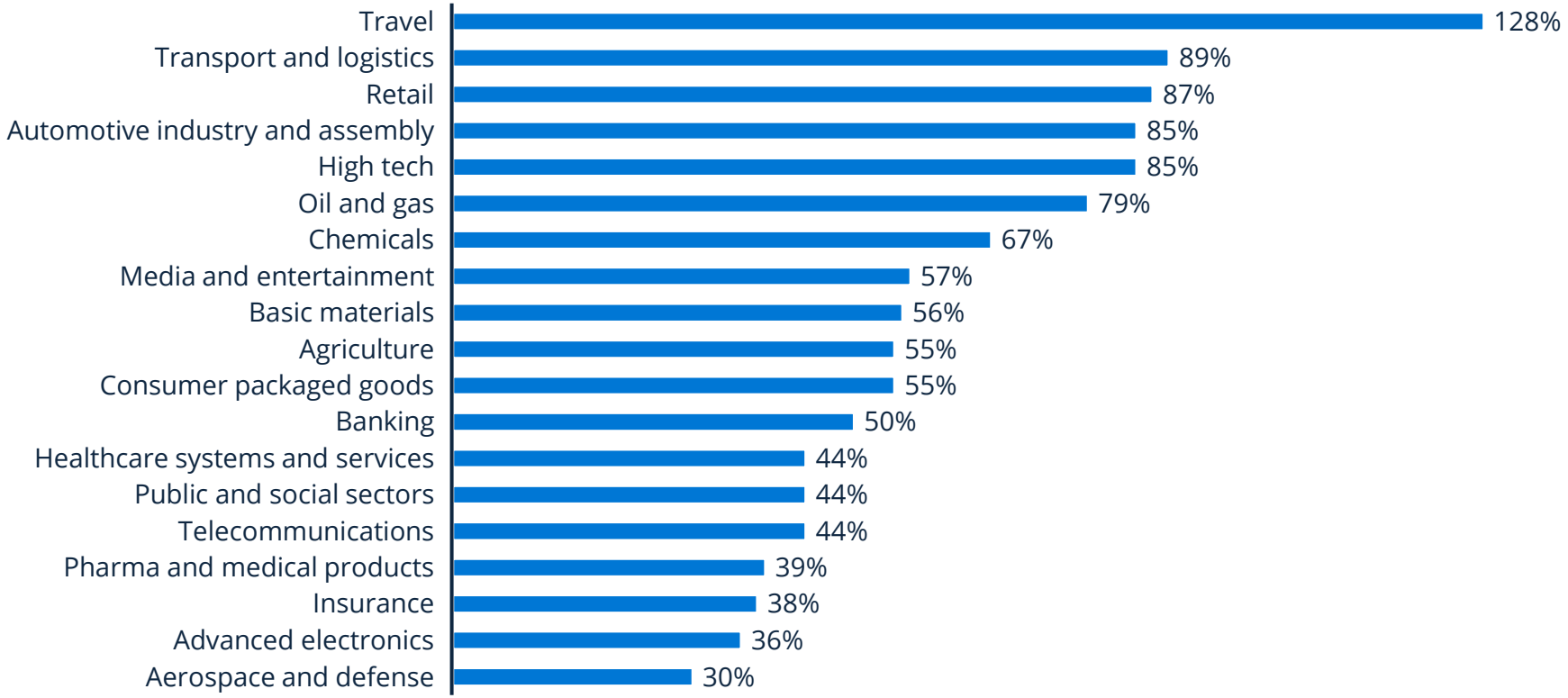
Advanced AI techniques will improve industry performance through its incremental value

Impact of AI

A study by McKinsey on more than 400 use cases across 19 industries and nine business functions highlights the use and economic potential of advanced AI techniques. In more than two thirds of use cases, AI can improve performance as compared to other analytics techniques.

The travel industry has the highest potential incremental value of 128%, followed by transport and logistics (89%), retail (87%), automotive industry and assembly (85%), high technology (85%), oil and gas (79%), chemicals (67%) and media and entertainment (57%).

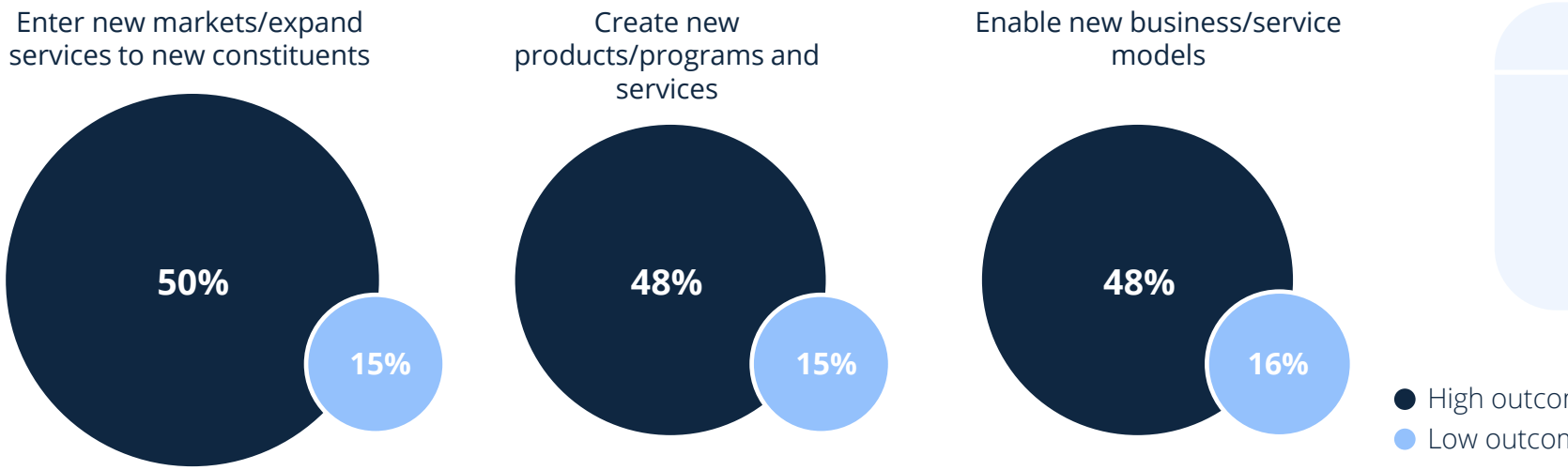
Potential incremental value of AI as compared to other analytics techniques



Sources: McKinsey

AI deployment is delivering valuable, real-world business results, if suitable use cases have been identified and implemented

AI revenue-generating outcomes among businesses worldwide in 2022



Approximately **50% of respondents** were significantly more likely to report **positive revenue-generating outcomes** from AI deployment.

How to identify the right use cases from the endless pool of AI capabilities?
Professional Service organisations offer related Solutions (see chapter 4)

Notes: Worldwide; October 2022; 2,620 respondents; business leaders.

Sources: Deloitte

CHAPTER 4

Pragmatic AI
How to leverage the momentum

Embracing AI technology is not merely an option but a critical step for businesses that seek to thrive in the future. The implementation of AI offers a range of benefits, including increased operational efficiency, data-driven decision making, improved customer experiences, identification of product improvements and new business concepts.

Harnessing the power of AI in an increasingly dynamic and fast-paced business environment requires a suitable and pragmatic approach that includes a detailed discovery, fast identification and prioritization of relevant use cases and the implementation of applications in weeks, rather than months.

Collaborating with Statista enables you to unleash AI's full force

AI at Statista: from buzzword to real benefits

What you can expect from the next pages

Roadmap for gaining a clear picture of …

… the impact of AI on your **market and competitive environment**

+

… beneficial **use cases** that AI is enabling for you already today

+

… how these uses cases can be implemented incl. first **MVPs**

Get to know an appropriate way to capture today's AI related opportunities and mitigate risks

What you can expect from us

By working with us, you will benefit from our …

… deep understanding of your **industry** and potential **AI value drivers**

+

… **Statista database** and **analyst** and **market research teams**

+

… know-how in **building AI based products** and fighting off AI risks

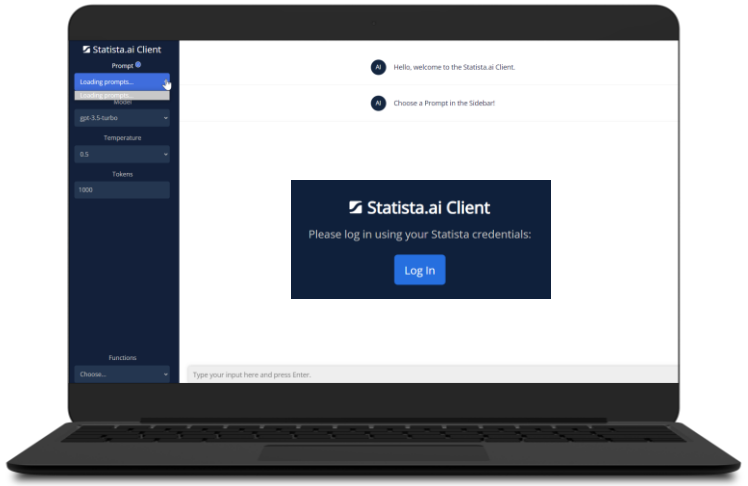
Combination of strategic insights, firsthand AI experiences and AI implementation skills

Artificial intelligence is our DNA.
We speak AI fluently from firsthand experience to implementing “real-life” cases

Illustrative use cases developed and implemented by our project team

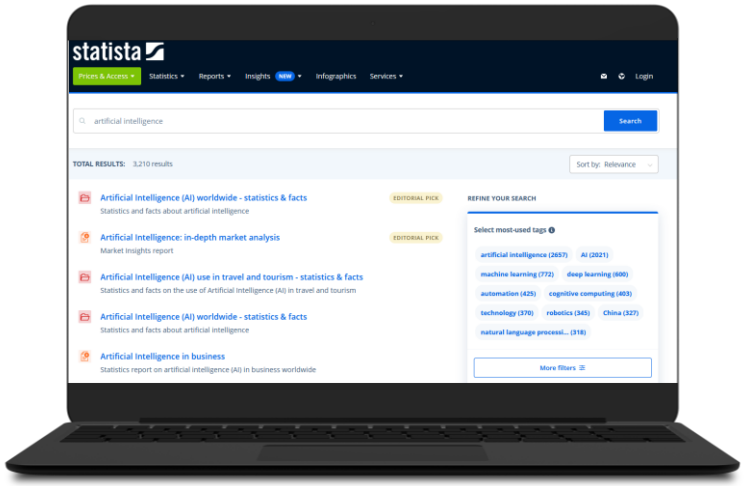
Internal Processes

Automatic prompt engine: Internal “Statista AI client” enabling access to various communication and AI modules with **pre-defined traceable prompts** for all employees with specific needs.



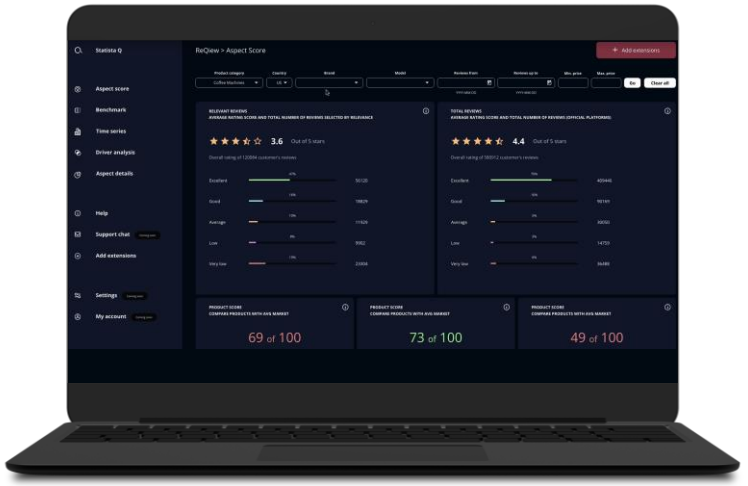
Product Improvement

AI search: AI-powered customer search to convert **natural language** with artificial intelligence into matching statistics.



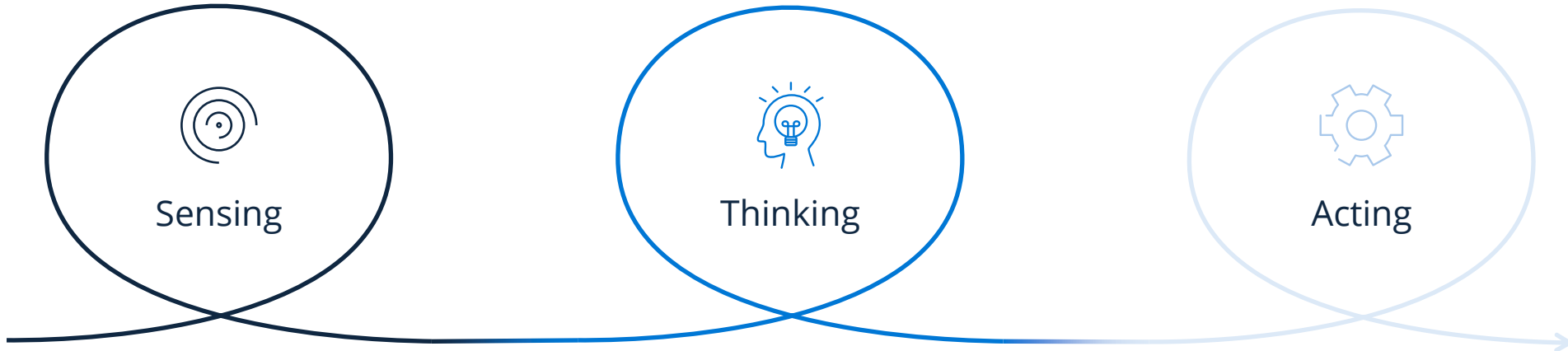
New Business

ReQiew: Natural language processing tool to generate deeper insights from client’s online reviews by **identifying specific topics and assigning sentiments** (Link).



In our “Pragmatic AI” approach, we guide you from first AI ideas to “real life” applications within 6 weeks

High level overview



	Sensing	Thinking	Acting
Duration	~ 1–2 weeks	~ 1–2 weeks	~ 2–3 weeks
Target	**Understand AI and get market, technology and competitor insights**	**Identify and prioritize most relevant use cases**	**Implement first use cases and define future setup for AI**
Core tasks	▪ Analyze market/technology ▪ Conduct competitor screening ▪ Identify trends and hurdles	▪ Identify and detail use cases ▪ Prioritize top company cases ▪ Define AI requirements	▪ Develop/code initial cases ▪ Generate AI learnings ▪ Define orga and setup for future AI

We apply a proven holistic AI framework to cover all relevant dimensions and options systematically

Simplified illustration of our approach

Identify use cases

I **Internal Processes**

II **Product Improvement**

III **New Business**

Understand and define AI engine

Input type
Text
Video
Audio
Sensor data
...

Output type
Text
Graphs
Classifications
Regressive values
...

Dataset
Text corpora
Social network datasets
Time-series data
Simulation datasets
...

Pre-processing
Data cleaning
Normalization
Dimensionality reduction
Feature engineering
...

AI engine

Model
Vicuna
Llama
GPT-4
Bard
...

Performance metrics
Accuracy
Recall
F1-score
AUC-ROC
...

AI Techniques
NLP
Vision
Robotics
Data mining
...

Align pre-requisites

DATA MANAGEMENT & INFRASTRUCTURE
Integration
Infrastructure
Risk & security
Usage right

BUSINESS CASE
Scalability
Maturity
Cost drivers
Synergy potential
Quick wins

CULTURE AND CAPABILITIES
Inspirational leaders
Dedicated resources
Capabilities
AI mindset

In our AI projects, you benefit from the entire expertise of the Statista Group

statista

ANALYTICAL POWERHOUSE AND AI IMPLEMENTATION UNIT

Statista analyst and market research unit that handles individual information requests on market data and trends (> 100 FTE)

Teams in **Hamburg, New York, Singapore and London** to evaluate relevant developments first-hand

Continuous screening of AI developments regarding technical innovations, use cases, business models or potential partners

Competence center for AI implementation for both Statista itself and external clients with a strong track record

nxt statista

DIGITAL STRATEGY AND BUSINESS BUILDING

Founded in **2004** as **BCG-McKinsey spin-off and founder of several companies since then**, e.g. **Statista**

Focus on **growth strategies, data-driven business models** and **digital business building**

Industry-specific frameworks to assess AI use cases and business potentials

Top-of-the-class **data science** and **data engineering** for MVPs, incubation and realization of new data-driven business models

AI Audit success factors

1. **First-hand experience in AI and data-driven business models** ✓
2. **Strategic thinking and entrepreneurial spirit** ✓
3. **Best-in-class methodological know-how** ✓
4. **Pragmatic approach and focus on "real-life results"** ✓

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Turning Questions into Insights.

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