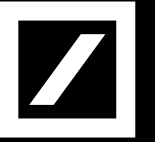# Generative AI: is it all just hype?

Four reasons it is (and four reasons it isn't)

NextGen Summer Seminar
New York
June 27, 2024

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Thematic Research
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Image by DALL-E

What have the LLMs ever done for us?

"All right, but apart from the sanitation, the medicine, education, wine, public order, irrigation, roads, the fresh-water system and public health…
… What have the Romans ever done for us?"

"Monty Python's Life of Brian", 1979

"As soon as it works, no one calls it AI anymore"

John McCarthy, who coined the phrase "artificial intelligence" in 1956

Image recognition

Translation

Image generation
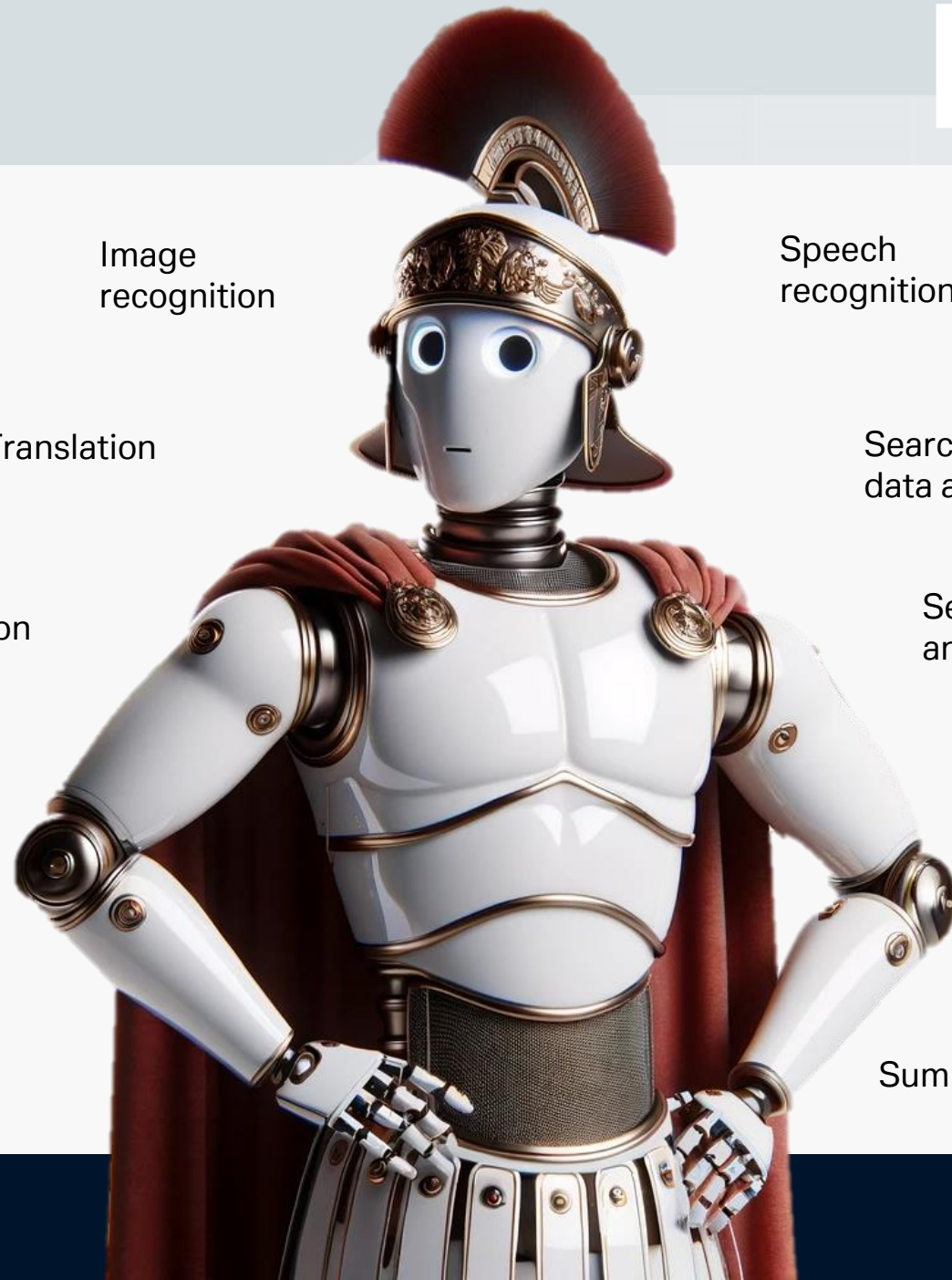
Writing

Brainstorming

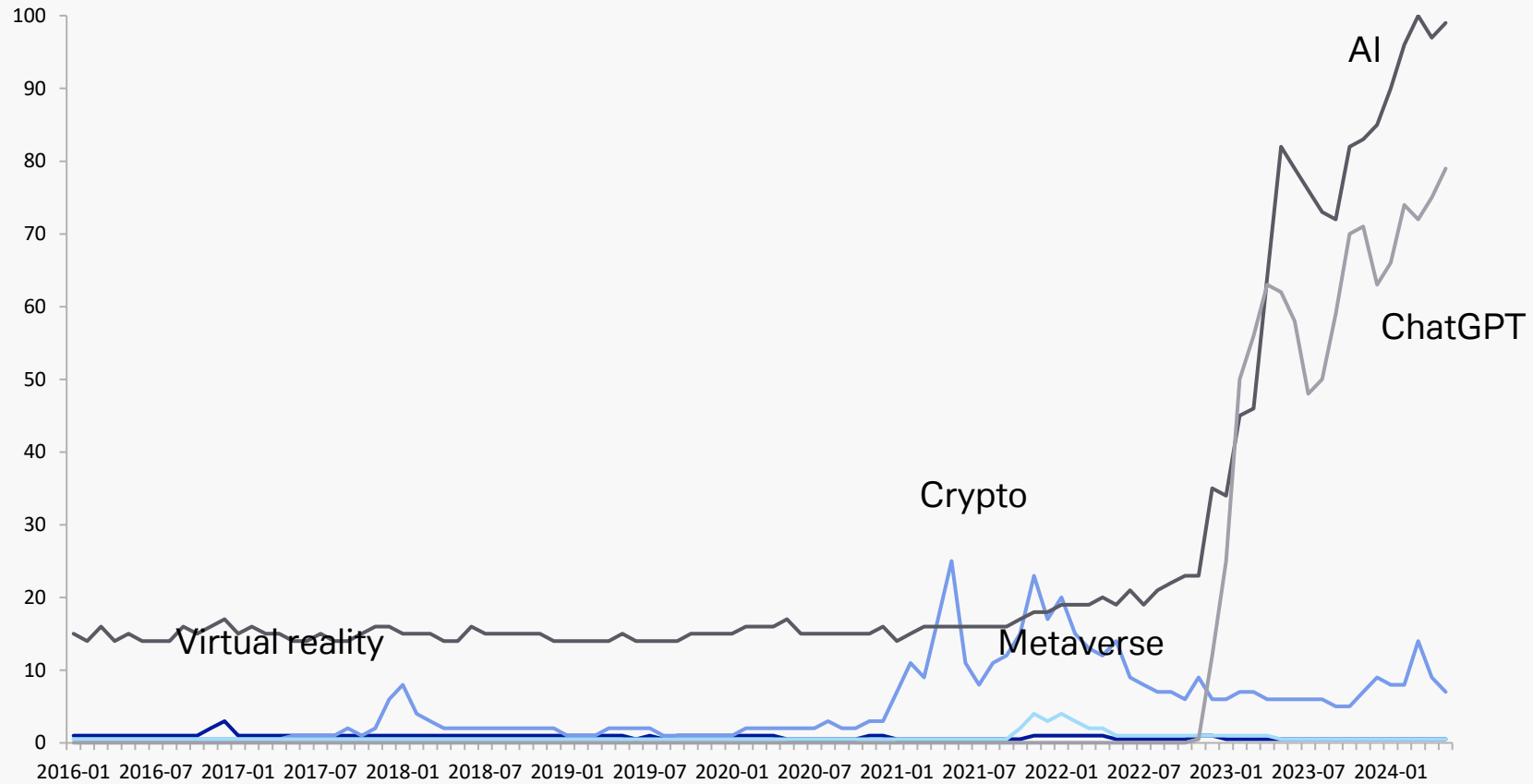Speech recognition

Search and data analysis

Sentiment analysis

Coding

Summarisation

How does the hype compare with other technology?

Relative number of Google web searches since 2015

Source: Google Trends

Most AI isn't generative, and some isn't even AI

Predictive AI

Deterministic, rules-based

Generative AI

Probabilistic, creative

Eg: Quantitative analysis
Algorithm trading
Fraud detection
Demand forecasting
Recommendations

Deep learning that simulates human brain

Eg: Image recognition
Writing and coding
Summarisation
Q&A (eg customer service bots)

Source: Bloomberg Finance LP, Deutsche Bank.

1) AI technology is flawed

"Create an image of a large group of investors watching a large screen showing a football match between Italy and Spain"

Image by DALL-E 3

1) AI technology is flawed

"Ultra realistic photo of three people diving into a swimming pool on a hot Sunday"

Image by DALL-E 3

1) AI technology is flawed

"Ultra realistic photo of three
people diving into a swimming pool
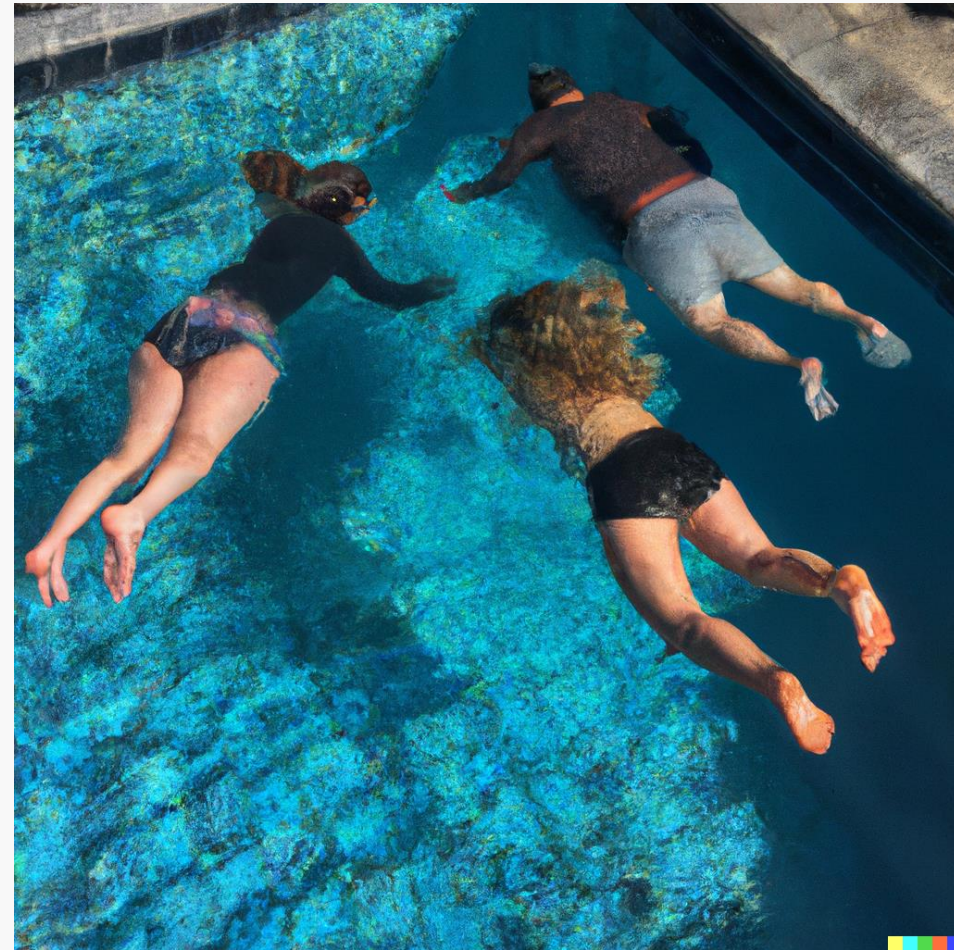on a hot Sunday"

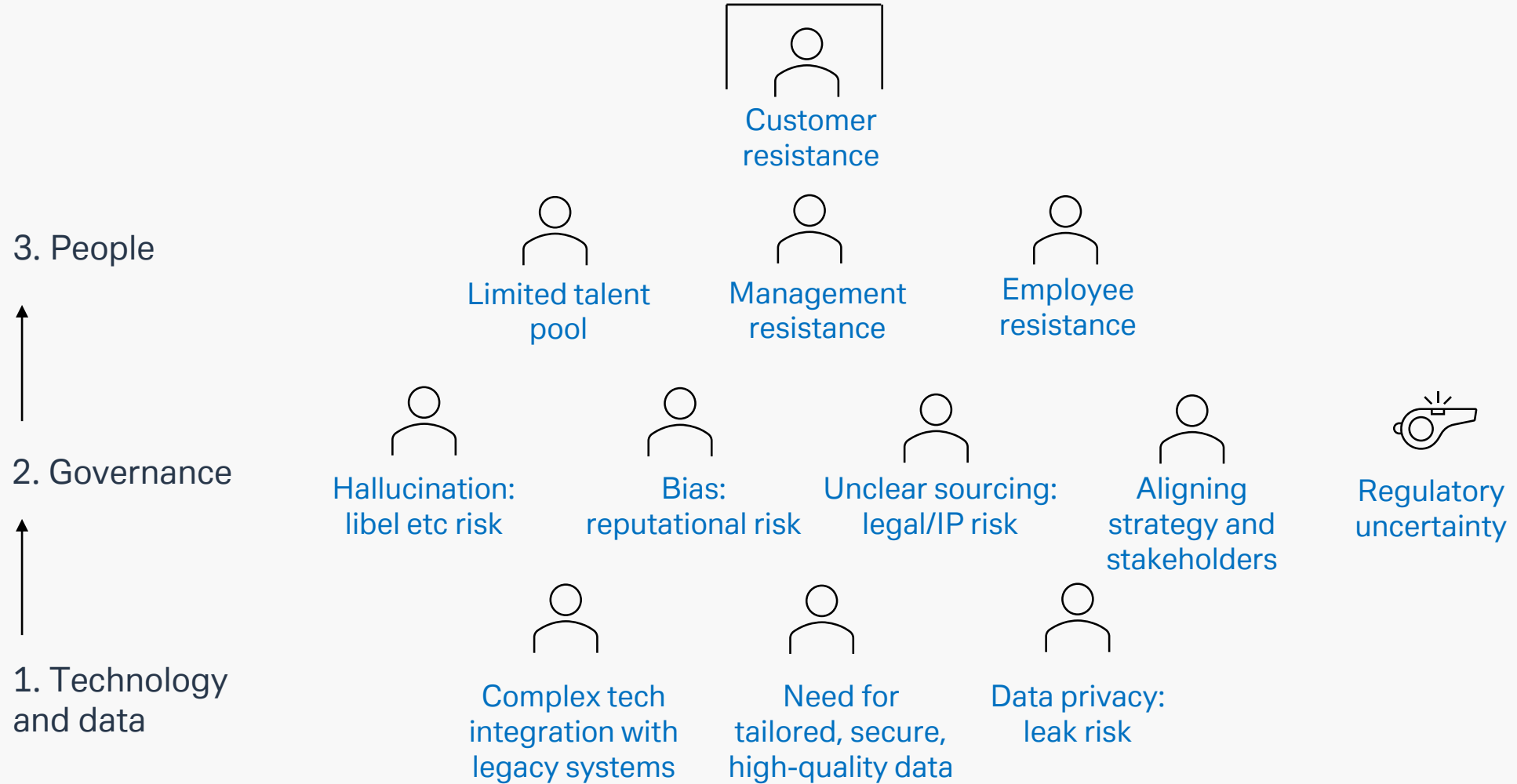*Image by DALL-E 2*

But… it shows sparks of intelligence

"The humor in this image comes from the absurdity of plugging a large, outdated VGA connector into a small, modern smartphone charging port."

Source: OpenAI

Customer resistance

3. People

- Limited talent pool
- Management resistance
- Employee resistance

2. Governance

- Hallucination: libel etc risk
- Bias: reputational risk
- Unclear sourcing: legal/IP risk
- Aligning strategy and stakeholders
- Regulatory uncertainty

1. Technology and data

- Complex tech integration with legacy systems
- Need for tailored, secure, high-quality data
- Data privacy: leak risk

Source: Deutsche Bank

But… applications are a process, not a product

Disruption will move up value chain over time

Business models

Processes

Tasks
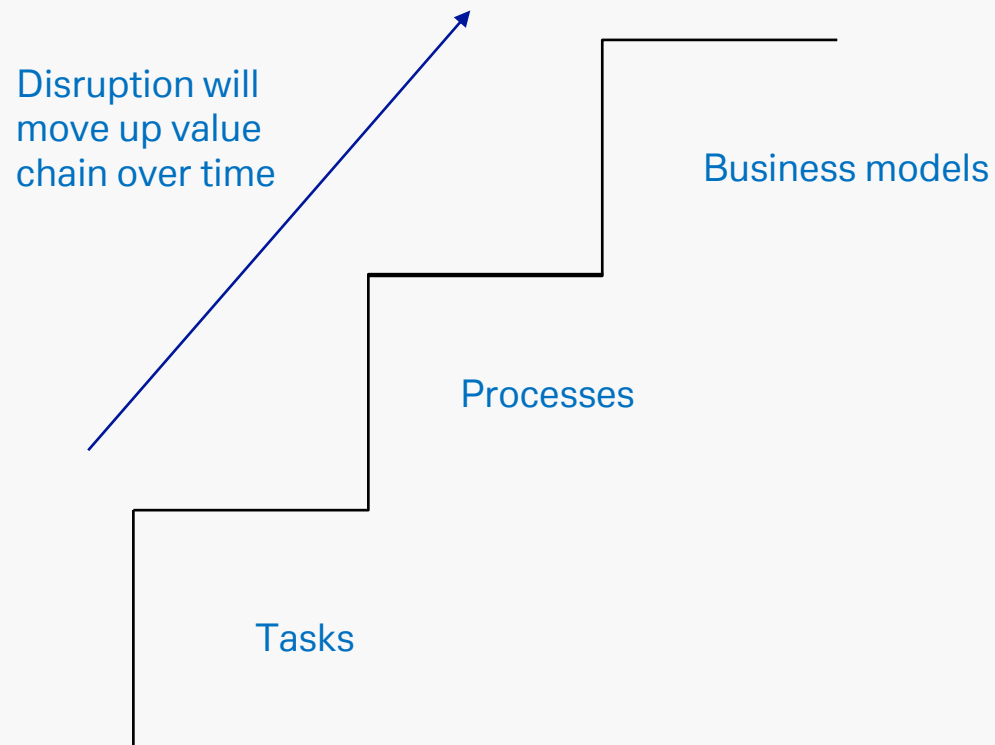
Source: Deutsche Bank

Scope for AI disruption up value chain

Long term

- Revenue-focused; new entrants
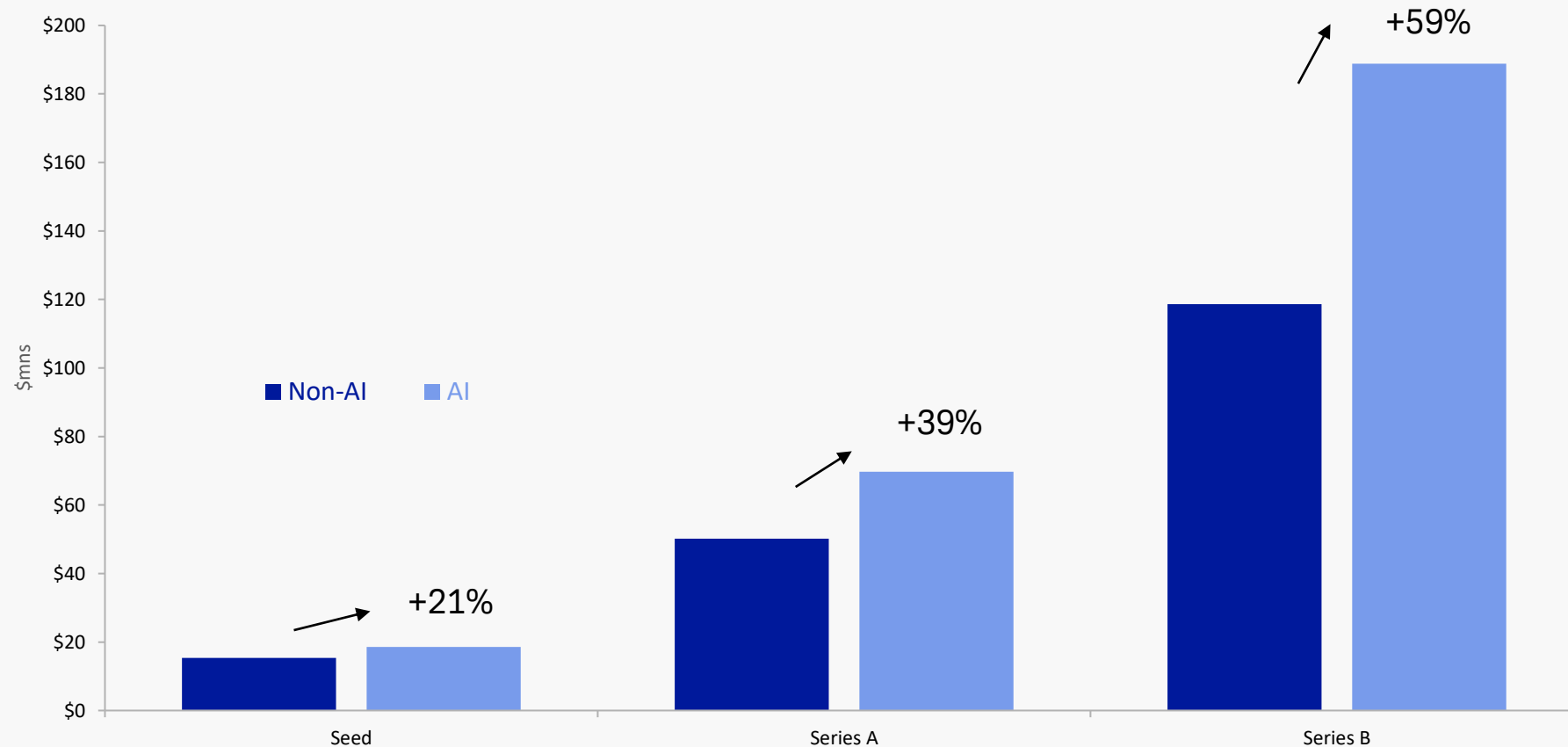
Medium term

- Cost-focused; opportunity for incumbents

Short term

- Incremental productivity focus; widespread opportunity to automate or reinvent structured tasks

Median valuations for venture capital-backed deals, 2023

$mns

■ Non-AI   ■ AI

+21%

+39%

+59%

Seed   Series A   Series B

Source: CB Insights valuation data, Deutsche Bank; compares the valuation of AI vs non-AI companies in 2023

CBINSIGHTS

But… valuations for the biggest companies are still tied to earnings

Median P/E ratio

Legend: INTC, MSFT, CSCO — MSFT, AAPL, AMZN, GOOGL, NVDA

Days from start date (01/01/1996 for dotcom companies, 01/01/2020 for five largest tech stocks today)
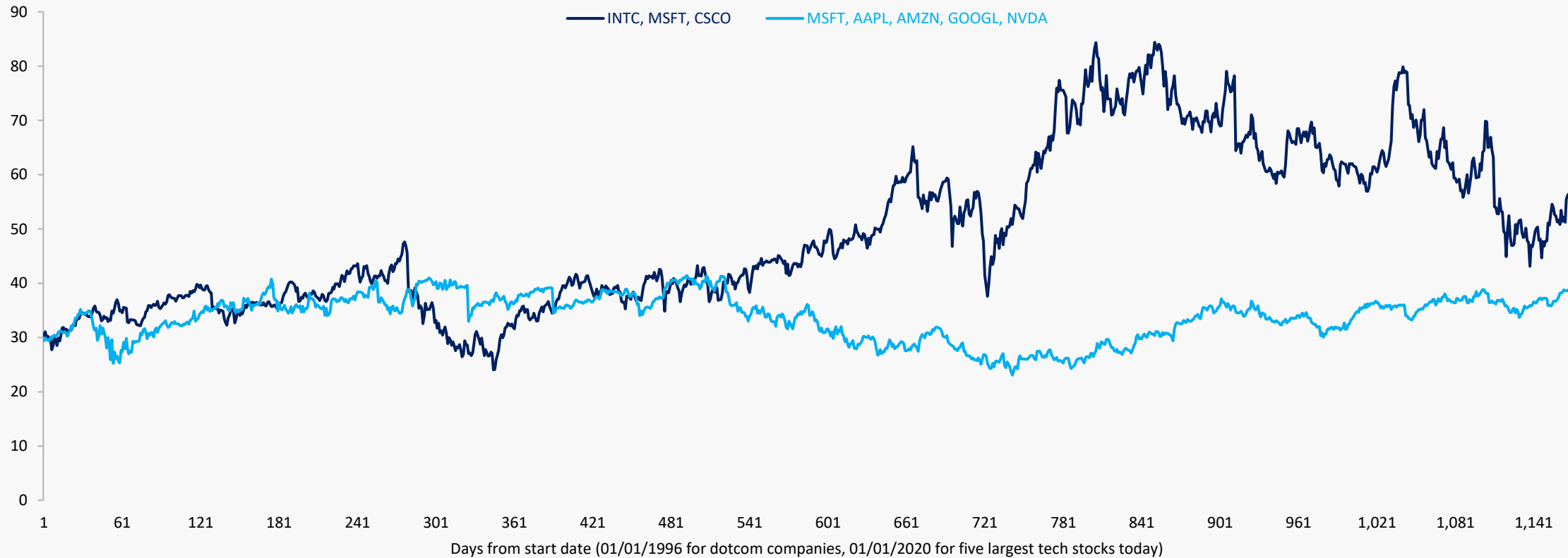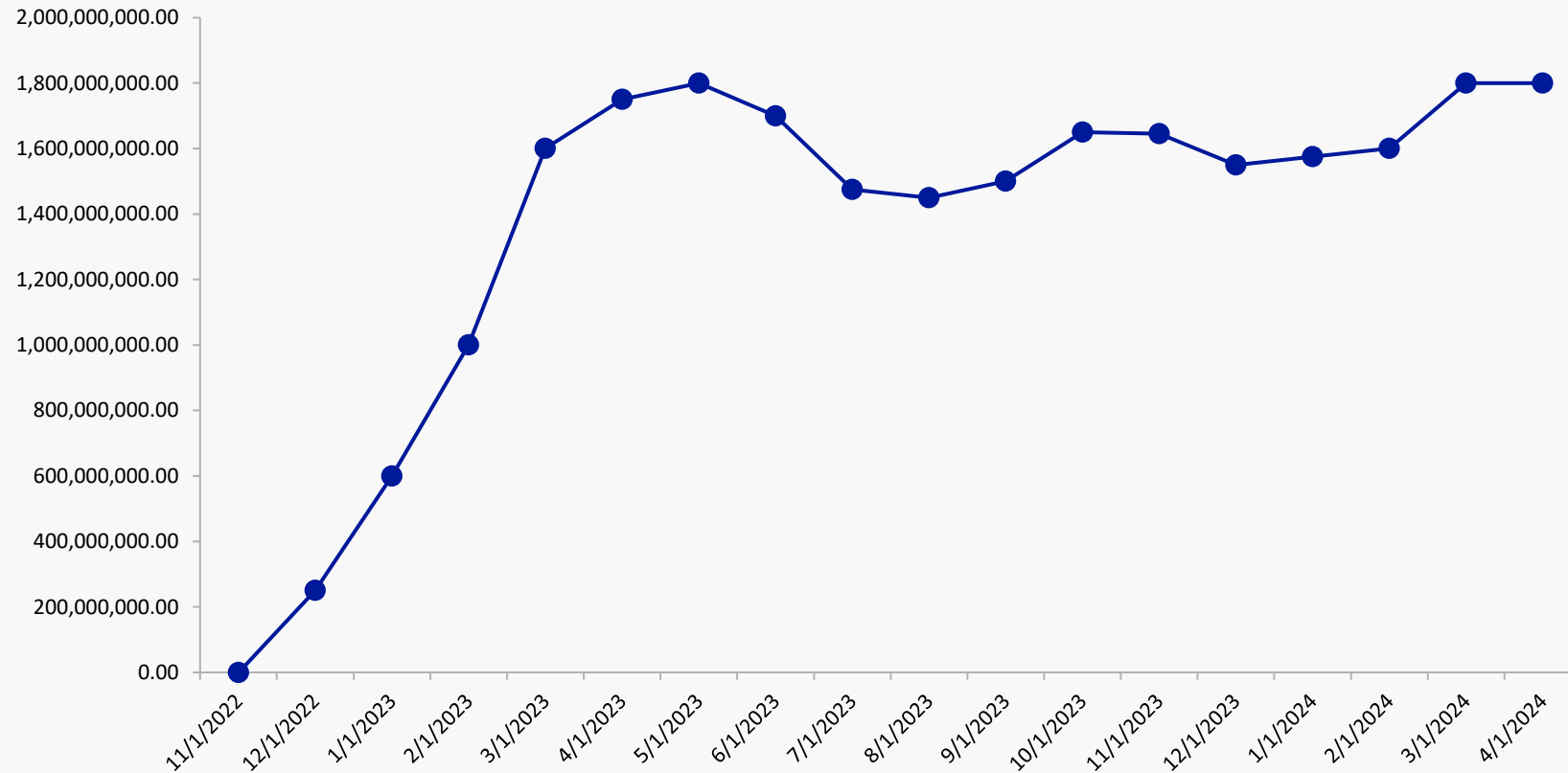
Source: Bloomberg Finance LP, Deutsche Bank

4) Growth is slowing

ChatGPT visits each months since launch

Source: Similarweb
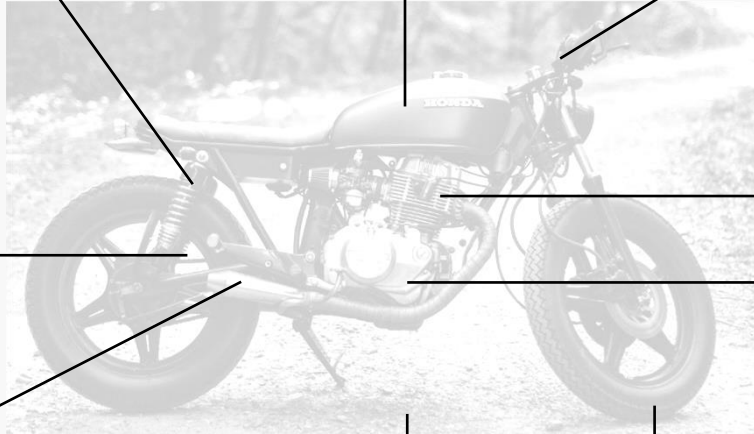
But… technology takes time to roll out

Load balancers: shock absorbers

Data lake (eg PineCone): fuel tank, storing raw data to be used by LLM to generate responses

User interface (UI): handlebars and dashboard

Integration and middleware: drive chain, connects components

Large Language Model (LLM) eg GPT-4): engine

APIs: exhaust system, allowing model to interact with environment
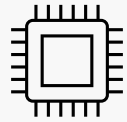
Language model integration framework (eg LangChain): gearbox, manages interaction between LLM and applications

Cloud platform: road
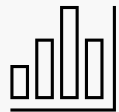
Applications: wheels

Photo by Volkan Olmez on Unsplash; image by DALL-E

Even so, there are bottlenecks

1. Access to GPUs

2. Availability of data

3. Energy and water

4. Regulation

5. Legal and copyright issues

Source: OpenAI

It's not you – it's me

Strengths

Fast
Always on duty
Knowledgeable
Networked

Poor common sense
Flawed knowledge
Correlation vs causation
Weak at transferring

Weaknesses

Human activities   **AI may help**

Defining content ──────▶ Brainstorming, extracting information
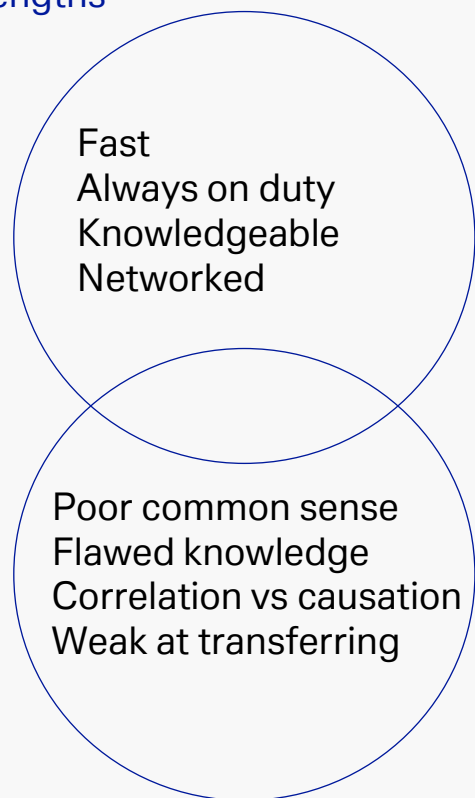
Analysing results

Summarising content, generating first drafts

Finalising report

Marketing ◀────── Editing text

Queue management
• Inc email classification and routing

Digital assistant
• Inc content for Research; software development, eg coding

Anomaly and pattern detection
• Inc fraud detection and adverse media review

Inbound content management
• Inc information extraction from legal docs, smart reply via chat, email etc
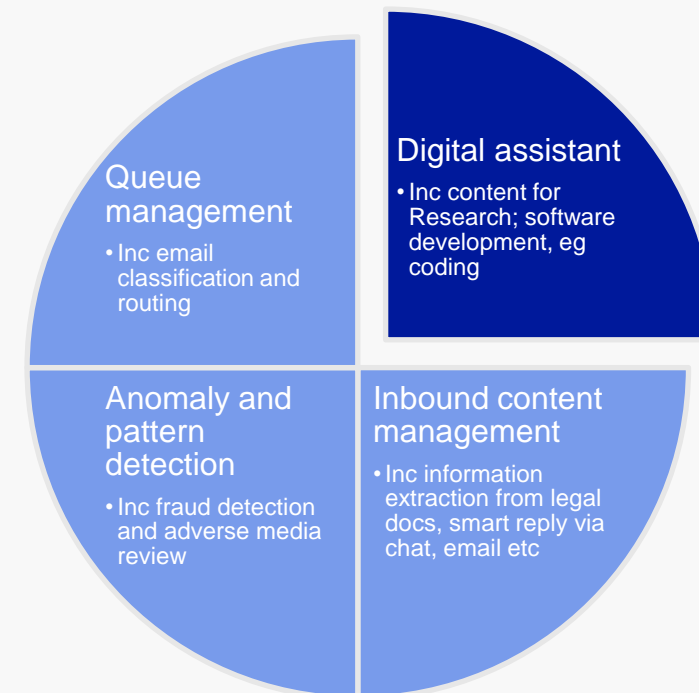
Spotlight: Nascent uses for AI in financial services

	1. Data analysis	2. Content generation	3. Customer service, support
Front office	Investment analysis, research	Research, communications, investor relations, sales notes	Automated/augmented support
Operations	Process optimisation	Coding support	Data retrieval
Risk management	Pattern detection	Compliance reporting	Monitoring

Spotlight: Specific uses for AI in financial services: pros and cons

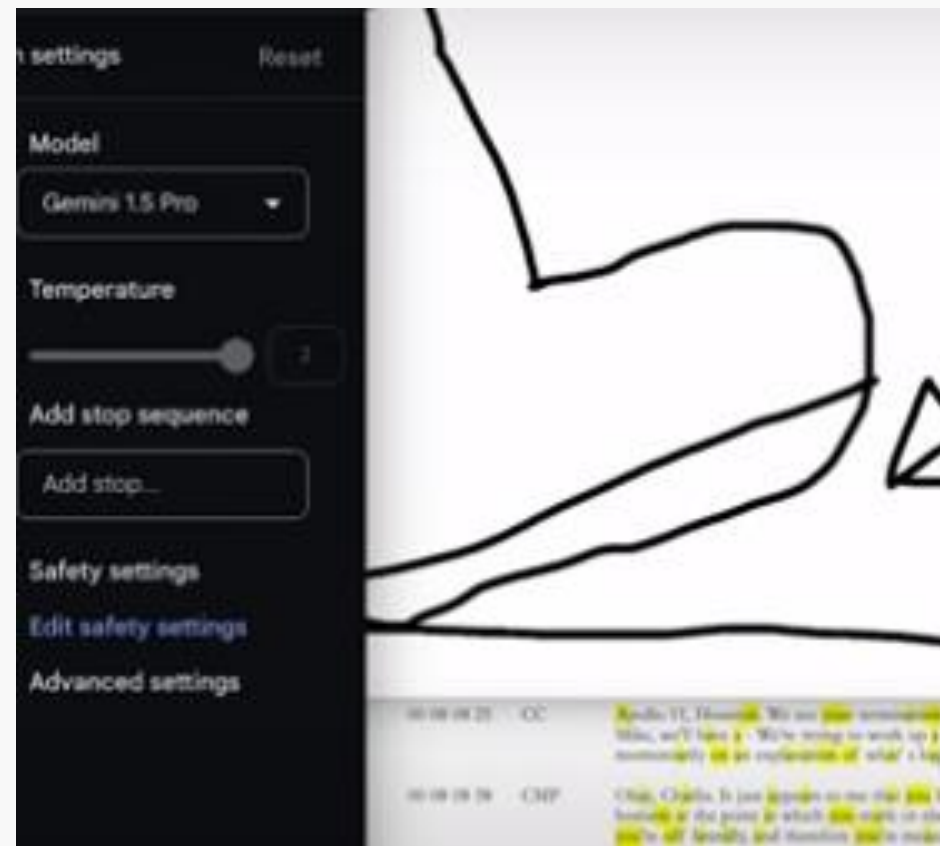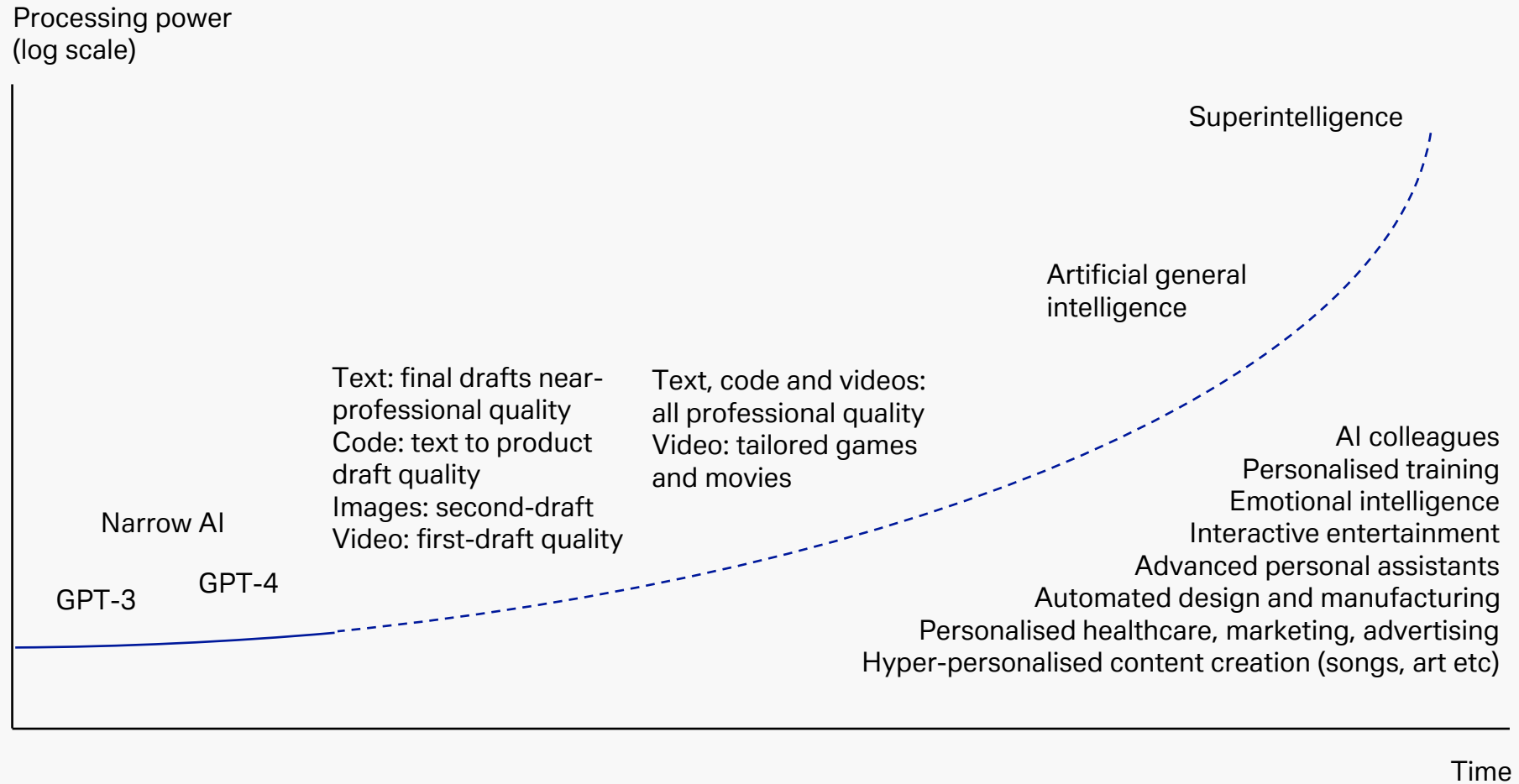|	**1. Data analysis**	**2. Content generation**	**3. Customer service, support**
Predictive AI	Market prediction • Pros: Analysing invisible trends • Cons: Uncertain; flash crashes Credit scoring • Pros: Able to assess big data • Cons: Potential bias in training Fraud detection • Pros: Real-time monitoring • Cons: False positives	N/a	Customer retention • Pros: Predicts churn, suggests retention strategies • Cons: Overreliance overlooks individual customer issues
Generative AI	Financial modelling • Pros: Realistic scenarios inc from unstructured data • Cons: Not suited for black swans Portfolio optimisation • Pros: Tailored strategies • Cons: Too complex to interpret	Sales process automation • Pros: Chats into priceable tickets • Cons: Human required to check Automated report generation • Pros: Time-saving summaries • Cons: Lacks nuanced understanding: errors	Chatbots/virtual assistants • Pros: 24/7 support, esp routine enquiries • Cons: Complex cases need human judgment

Are we nearly there yet?

Image by OpenAI's Sora

Image by Google Gemini 1.5 Pro

This is just the beginning

Processing power
(log scale)

Superintelligence

Artificial general
intelligence

Text: final drafts near-
professional quality
Code: text to product
draft quality
Images: second-draft
Video: first-draft quality

Text, code and videos:
all professional quality
Video: tailored games
and movies

Narrow AI

GPT-3   GPT-4

AI colleagues
Personalised training
Emotional intelligence
Interactive entertainment
Advanced personal assistants
Automated design and manufacturing
Personalised healthcare, marketing, advertising
Hyper-personalised content creation (songs, art etc)

Time

Source: Deutsche Bank.

Thank you: towards an ever more perfect union

"A handshake of a human and robot hand"

Images by DALL-E 3

Relevant research
Click on report titles for links

DB Research AI microsite: www.dbresearch.com/ai : sign up for our "Latest in AI" weekly newsletter

AI Risk and Regulation 101: Bias, bots and battlegrounds (April 22, 2024)

Why twin Sora and Gemini launches mark giant leap towards AI future (Feb 29, 2024)

The AI outlook for 2024 (Jan 16, 2024)

Quantum Computing Chartbook: The Missing Piece in the AI Puzzle? (Oct 31, 2023)

AI of the storm: the companies turning AI into reality (Oct 30, 2023)

AI update: Six key themes you missed while you were at the beach (Sept 14, 2023)

AI in action: how first movers are using ChatGPT (June 28, 2023)

Webinar Replay: Six ways you can use ChatGPT right now: live demo (June 22, 2023)

AI in action: where is the smart money going? (May 25, 2023)

Can AI save high-labour firms? (May 24, 2023)

Generative AI and ChatGPT 101 (May 23, 2023)

Generative AI represents a turning point for humanity – for better and for worse (May 22, 2023)

Data analysis

1. Brainstorming

Give me ideas for raising investment capital with VC companies…
Identify 10 ways a finance company can use AI to… and give me a SWOT analysis
Teach me basic calculus with analogies and a quiz…
Top tip: Have a conversation, give as much context as possible and follow up (eg: "What did I/you miss?")

2. Data processing

Take this data [paste] and put it into a table with columns [a], [b], [c]
Act as a financial analyst and identify six themes from this chart…
Return on [x] is calculated as [y/z]. Calculate it for each of the years shown…
Top tip: Give sample answers in your question ("few-shot prompting") ***Double-check calculations***

Content generation

3. Writing content

Act as a financial analyst: write a report on the market opportunities from AI… Help me rewrite this in the style of… Add examples…
You are a customer service rep. Write an apology for [x]…
Write a business plan and slogan for…
Top tip: Specify goals: act as a "Role", addressing an "Audience", in a "Format"… and change creativity by adding "temperature: [x]" in a range from 0 (conversational) to 1 (most creative)

4. Summarising information

Give me a 500-word executive summary of this financial statement…
Turn this academic report into a conversational 250-word press release…
Give me 10 potential 280-character tweets based on this article…
Top tip: Challenge the chatbot to be better: "use less jargon", "be more concise", "now focus more on [x, y, z]", "in the first person…"

Practical tasks

5. Multimodal tasks

Turn this into a five-slide presentation…
Write code to convert a video file into a smaller format… Debug this snippet…
Write a song on a fund manager, including guitar chords… Create an Impressionist painting of a robot…
Top tip: Specify steps: use chained prompting for complex tasks, ie give me the outline to… Now write three bullets for each of the subsections

6. Personal assistant

Give me a summary of this document [LINK]
[X] is available [when]; [Y] can't meet [when]; set a meeting and compose a note
Write a five-day itinerary in table format for a 30-year-old vegan visiting Berlin… I have this [list]: give me a healthy recipe…
Translate this into Chinese, Hungarian, etc… Write a humorous poem to welcome my wedding guests…
Top tip: Use GPTs to read links, book restaurants, get travel info, order groceries etc

Appendix 1
Important Disclosures
*Other Information Available upon Request