



midwest
architecture community
collaboration

Artificial Intelligence

and its Impact on

Business and Society



DavidEspindola.com

SOURCE: Meta



THE NEXT GENERATION OF SMART GLASSES

Ray-Ban | Meta

Courtesy Video

WORLD
ECONOMIC
FORUM

COMMITTED TO
IMPROVING THE STATE
OF THE WORLD



WORLD
ECONOMIC
FORUM

COMMITTED TO
IMPROVING THE STATE
OF THE WORLD

WORLD ECONOMIC FORUM
Annual Meeting
Davos 2023

#wef23

Welcome Session will begin shortly

CC WEF

more productive and find love let's roll
you're in the zone



The Exponential Era

Strategies to Stay Ahead of the Curve
in an Era of Chaotic Changes
and Disruptive Forces

DAVID ESPINDOLA
MICHAEL W. WRIGHT



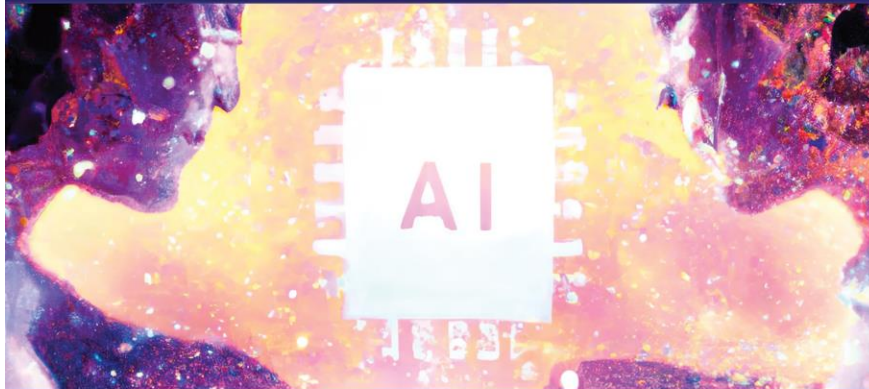
IEEE PRESS

IEEE PRESS SERIES ON
TECHNOLOGY MANAGEMENT,
INNOVATION, AND LEADERSHIP

WILEY

Soulful

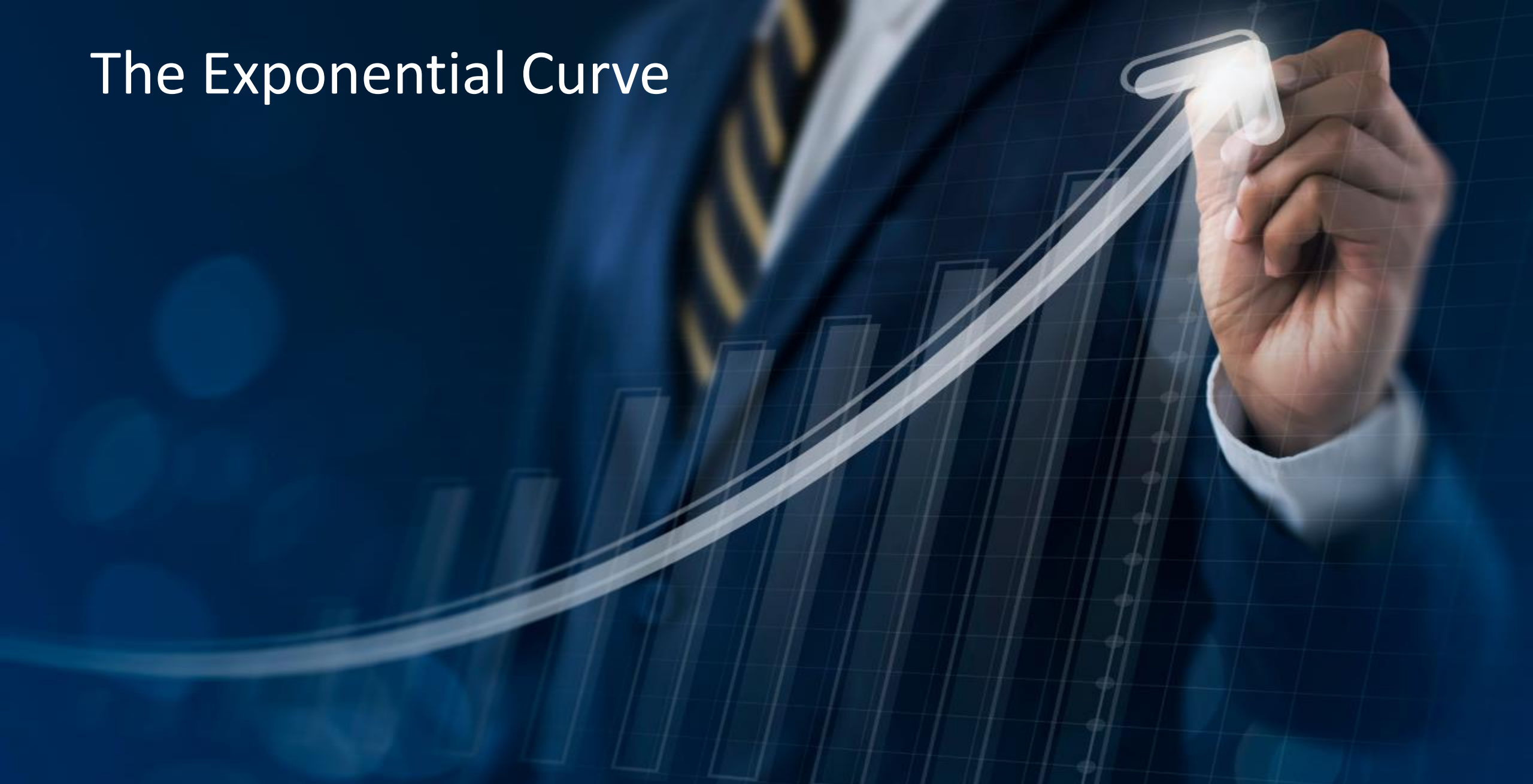
**YOU IN THE FUTURE
OF ARTIFICIAL INTELLIGENCE**



David Espindola

*Co-Author of *The Exponential Era**

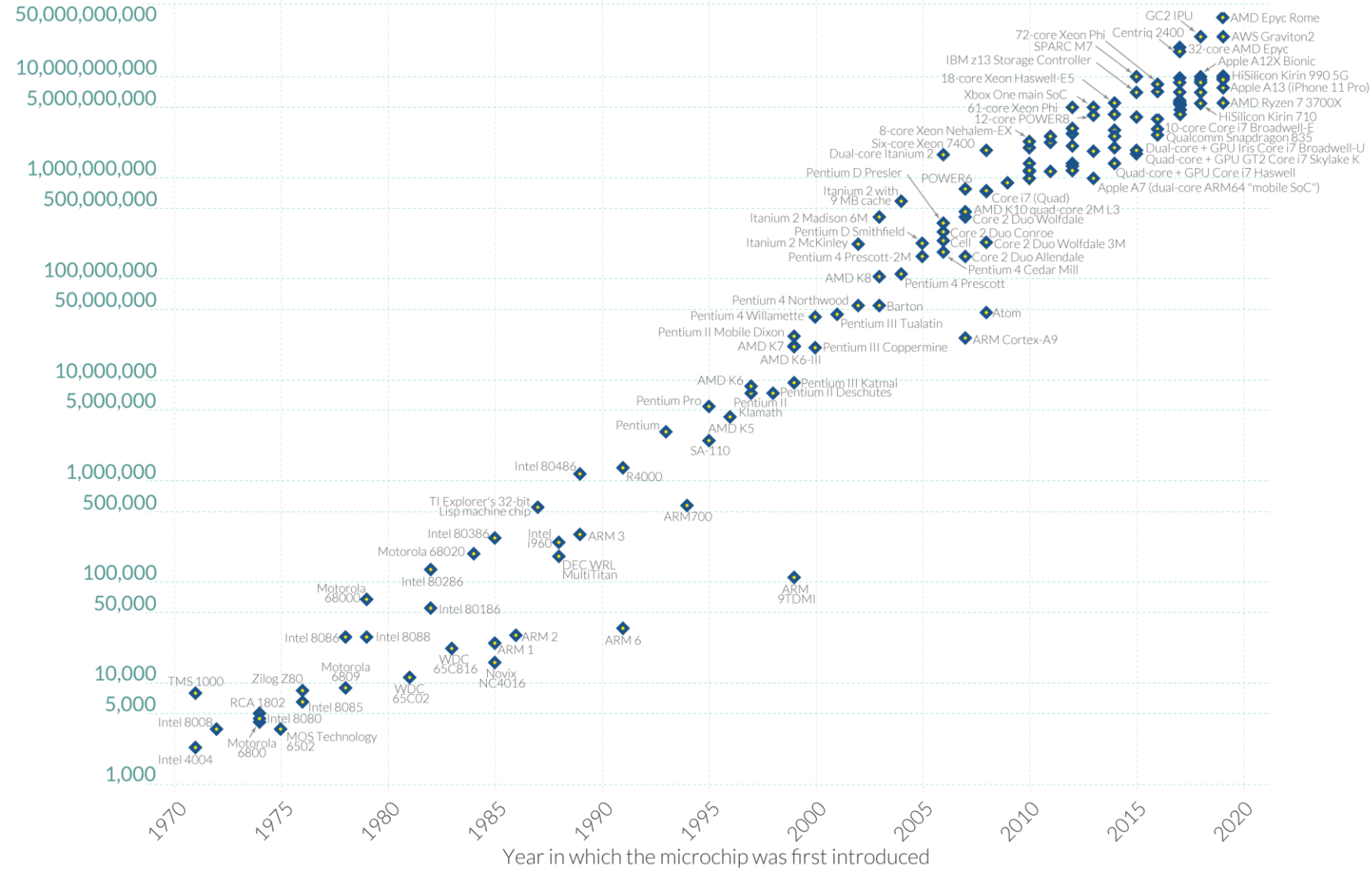
The Exponential Curve



Moore's Law: The number of transistors on microchips has doubled every two years

Moore's law describes the empirical regularity that the number of transistors on integrated circuits doubles approximately every two years. This advancement is important for other aspects of technological progress in computing – such as processing speed or the price of computers.

Transistor count



Data source: Wikipedia (wikipedia.org/wiki/Transistor_count)

OurWorldinData.org – Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the authors Hannah Ritchie and Max Roser.

Platforms that Shaped the Modern World

Telephone



Electricity



Internal Combustion Engine



Photos by Unknown Author is licensed under [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/)

Exponential Platforms that Will Shape the Future



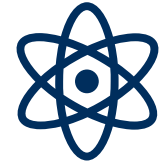
Artificial Intelligence



Quantum Computing



Blockchain



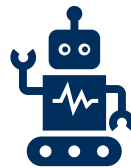
Material Science



Internet of Things



Bio technology

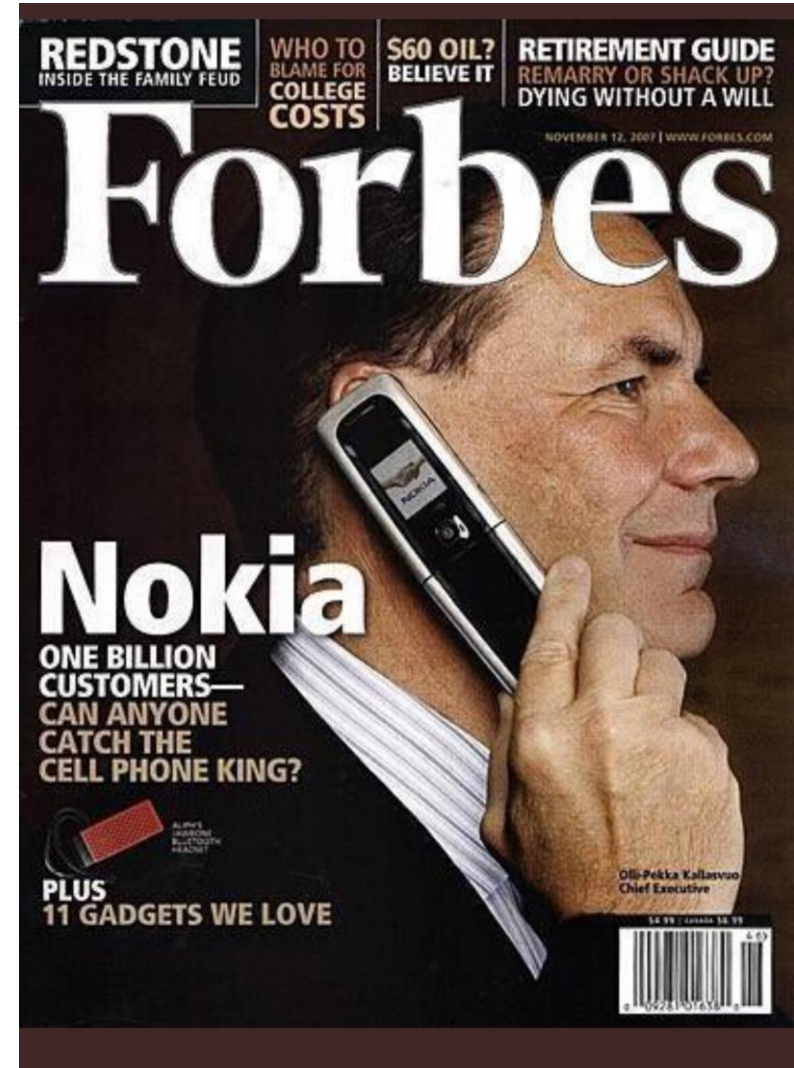


Robotics



3D Printing

Inflection Point:
“Software is Eating the World”



Microsoft

Technology Trends in the Beginning of the 21st Century



Fixed Mindset



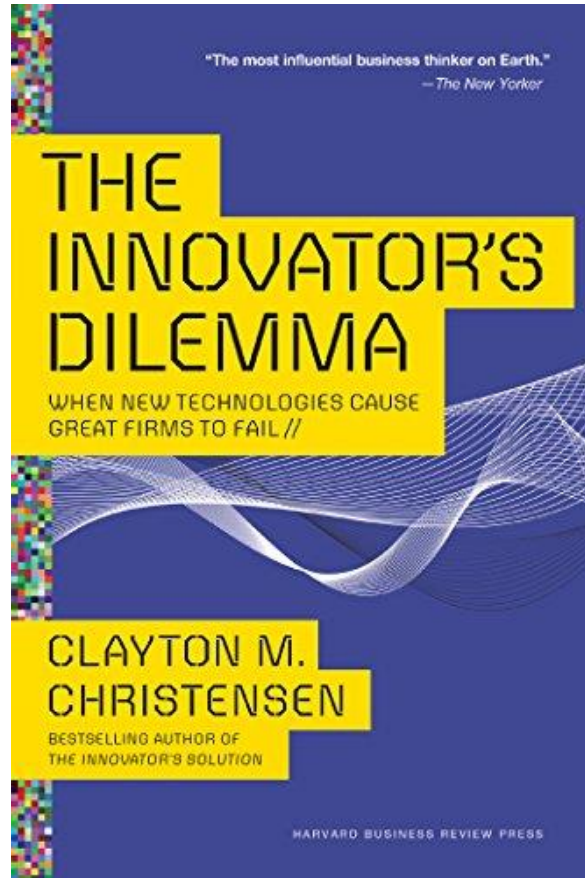
Growth Mindset





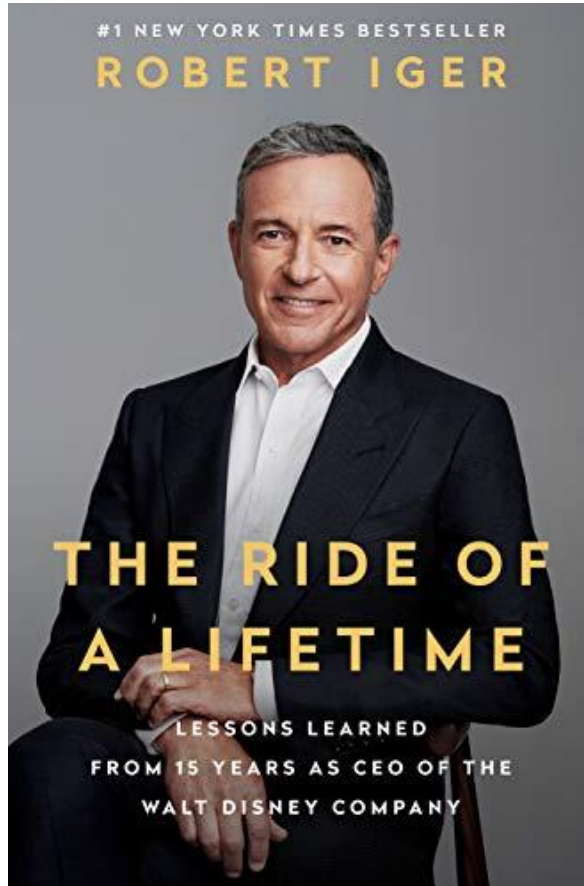
**“Empathy makes you a better innovator.”
Satya Nadella, Microsoft CEO**

The Incumbent's Challenge



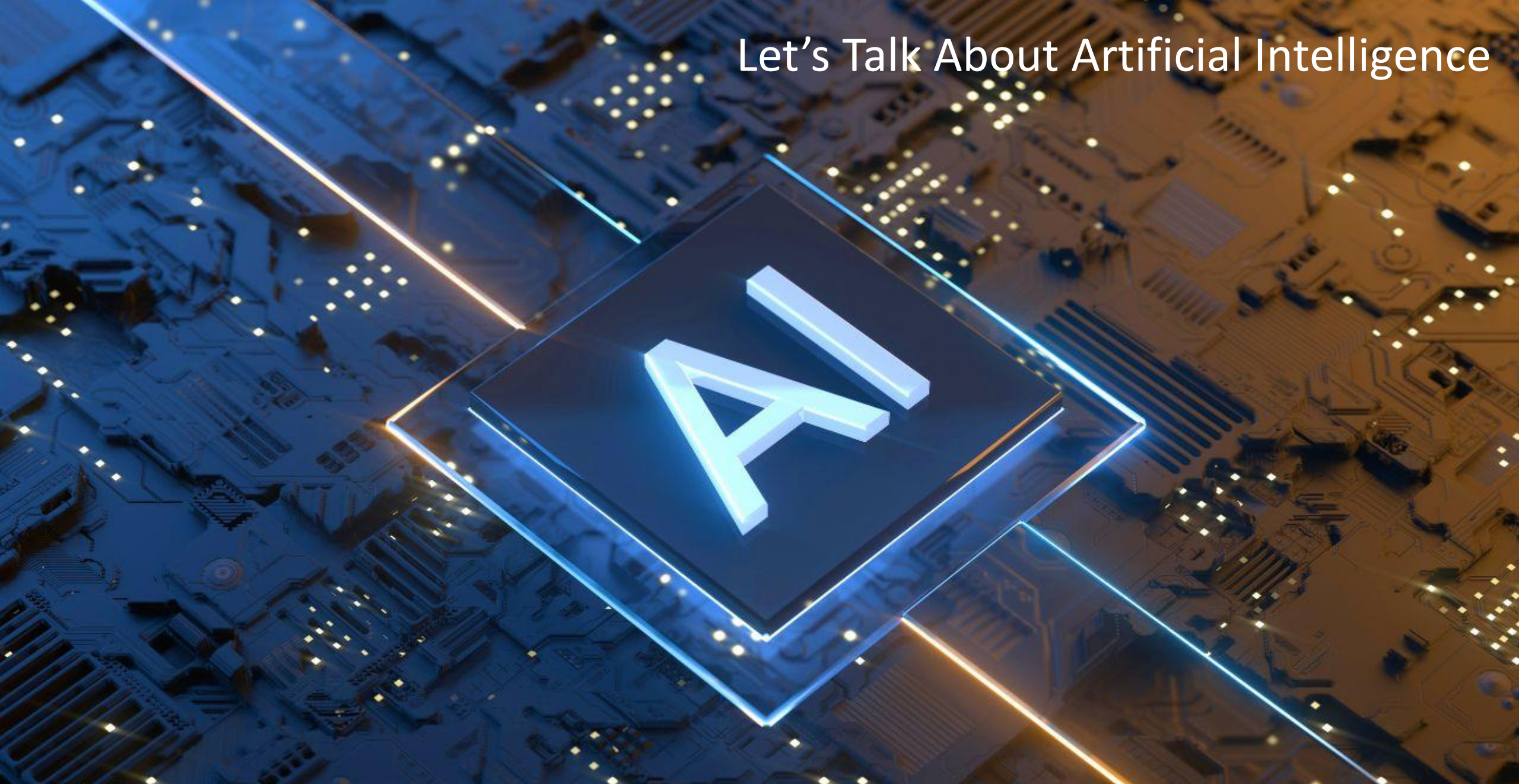
Should you cannibalize your currently profitable business in order to focus on yet unproven opportunities?

Disney's Challenge

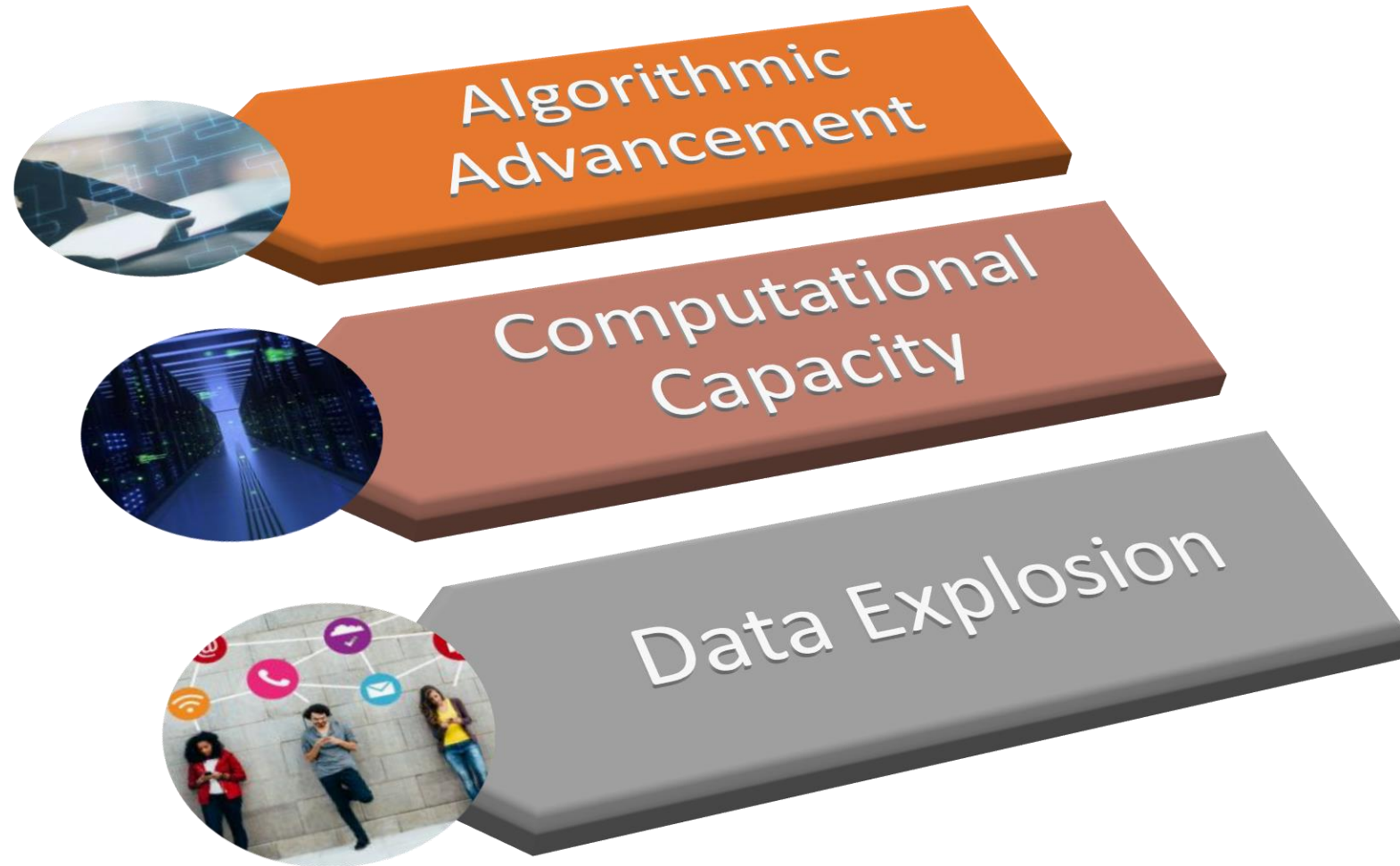


“We were now fully committed to also becoming a distributor of our own content, straight to consumers, without intermediaries. In essence, we were now hastening the disruption of our own businesses.”

Let's Talk About Artificial Intelligence



The Evolution of Artificial Intelligence



1997

- IBM Deep Blue Defeats Gary Kasparov, Chess world champion

2011

- IBM Watson defeats Brad Rutter and Ken Jennings, Jeopardy! champions

2017

- Google Deepmind defeats Ke Jie, the best Go player in the world



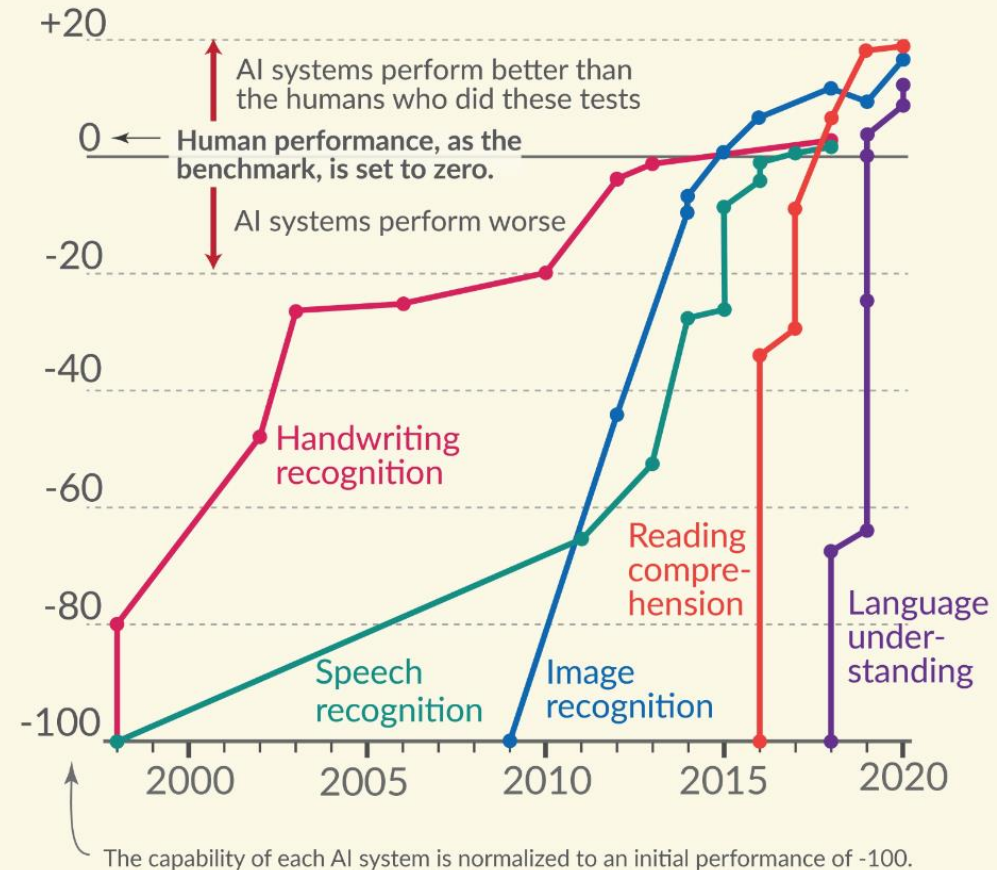
The Chinese government establishes the strategic goal of becoming an AI world leader

In 2017 a seminal paper titled “Attention is all you need” led to the advent of Generative AI.

Since then, AI’s capability has increased at an extraordinary rate.

Language and image recognition capabilities of AI systems have improved rapidly

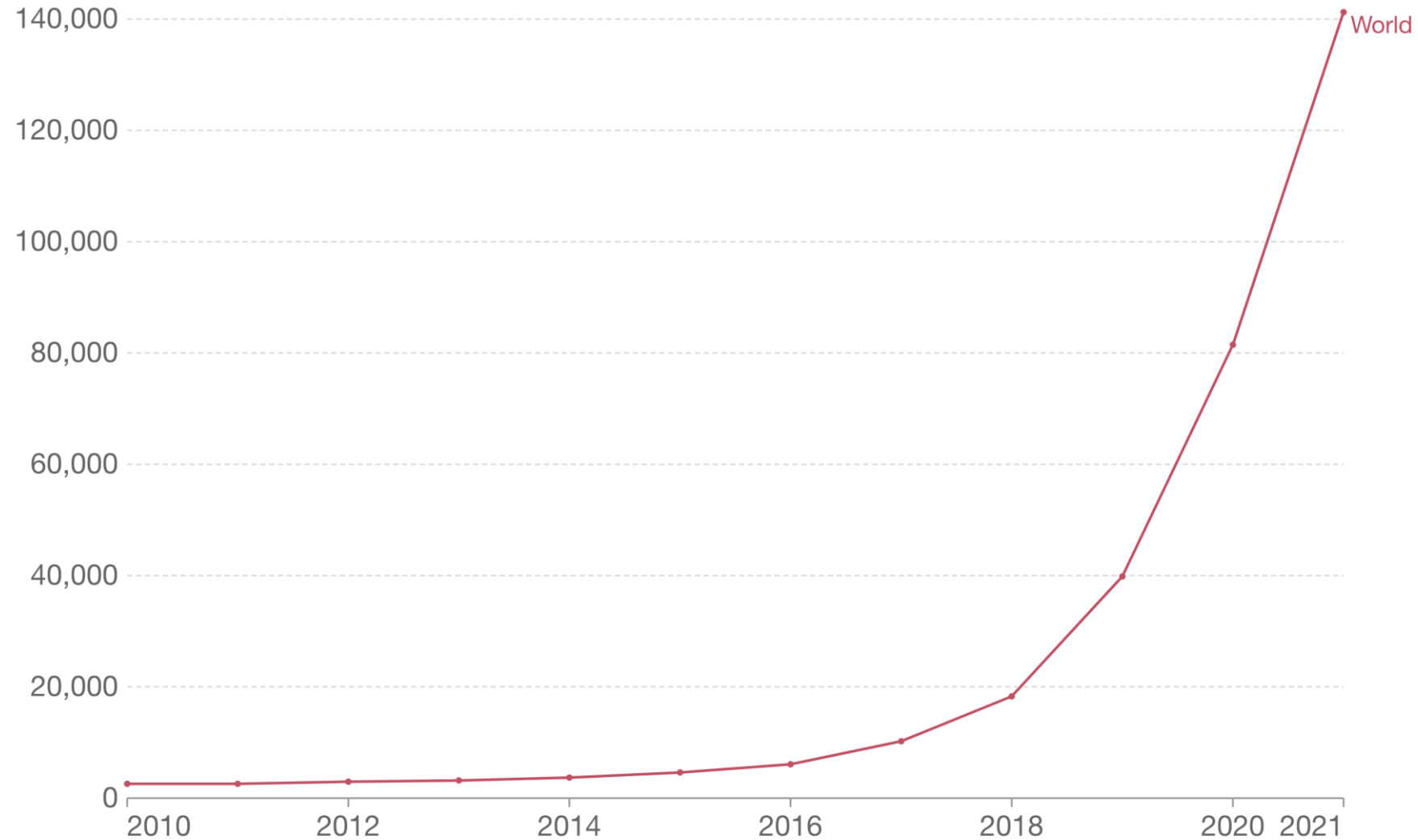
Test scores of the AI relative to human performance



Source:
Kiela et al. (2021) Dynabench: Rethinking Benchmarking in NLP
OurWorldInData.org/artificial-intelligence • CC BY



Annual number of patent filings for artificial intelligence technologies



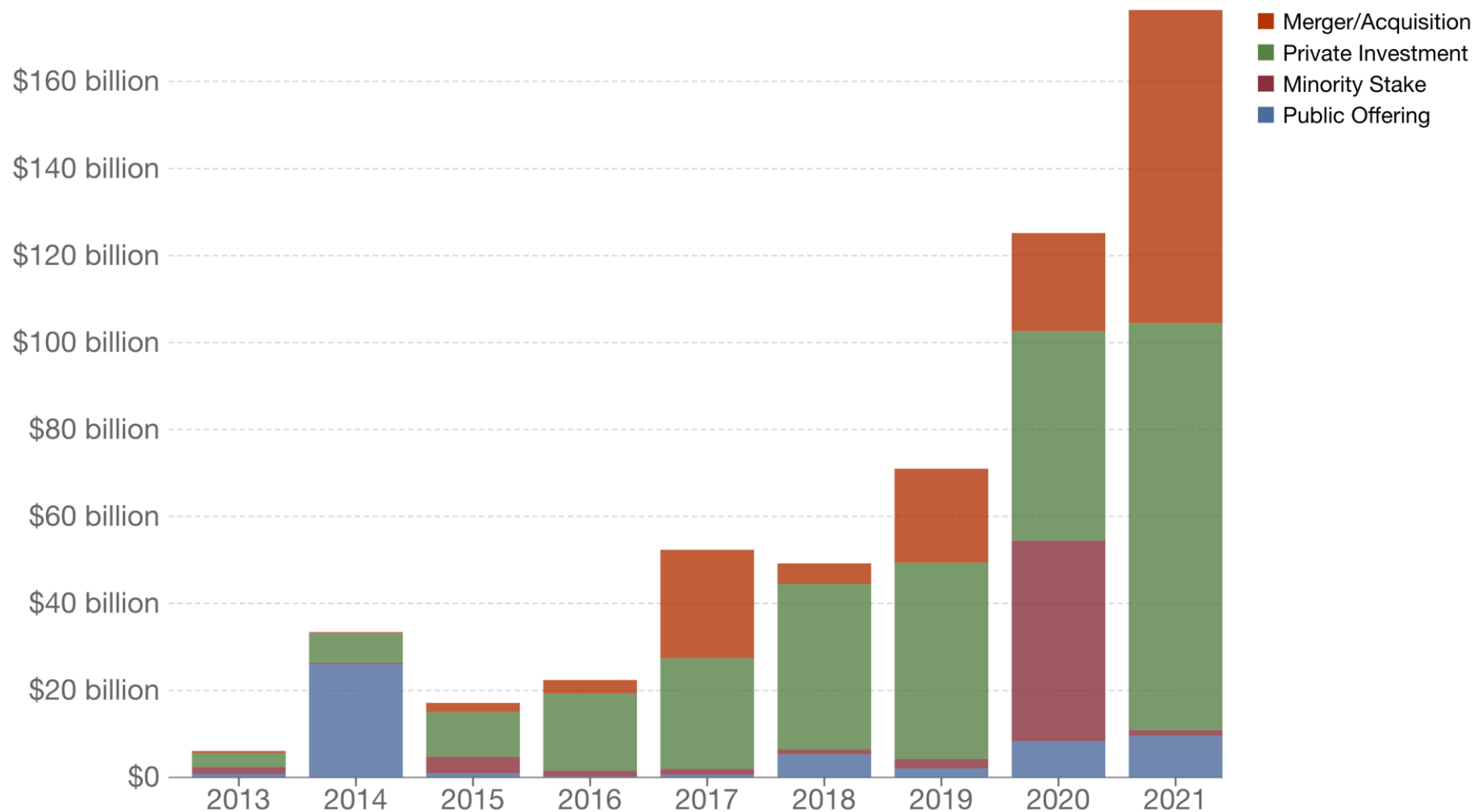
Source: Center for Security and Emerging Technology via AI Index Report (2022)

OurWorldInData.org/artificial-intelligence • CC BY

Note: Based on a search of relevant codes and keywords in the Cooperative Patent Classification and International Patent Classification systems.

Annual global corporate investment in artificial intelligence, by type

This data is expressed in US dollars, adjusted for inflation.






























Source: NetBase Quid via AI Index Report (2022)

OurWorldInData.org/artificial-intelligence • CC BY

Note: Data is expressed in constant 2021 US\$. Inflation adjustment is based on the US Consumer Price Index (CPI).

↻ Repost

text	 ChatGPT  Notion  Jasper
video	 Synthesia  Runway  Luma
audio	 ElevenLabs  Murf  Supertone
face	 Charisma  Bored Humans  Lensa
legal	 DoNotPay  Ferret  Spellbook
voice	 VoiceAI  Resemble  PlayHt
meeting	 Sembly  Attention  Fireflies
productivity	 Productivity Hero  Channel  Heyday
coding	 GitHub Copilot  BlackBox  Tabnine

ChatGPT

- Launched in November 2022
- Shortly after launch it hit more than 100 million users per month
- Now it can search for latest information and can use voice and image

ChatGPT Sprints to One Million Users

Time it took for selected online services to reach one million users



* one million backers ** one million nights booked *** one million downloads

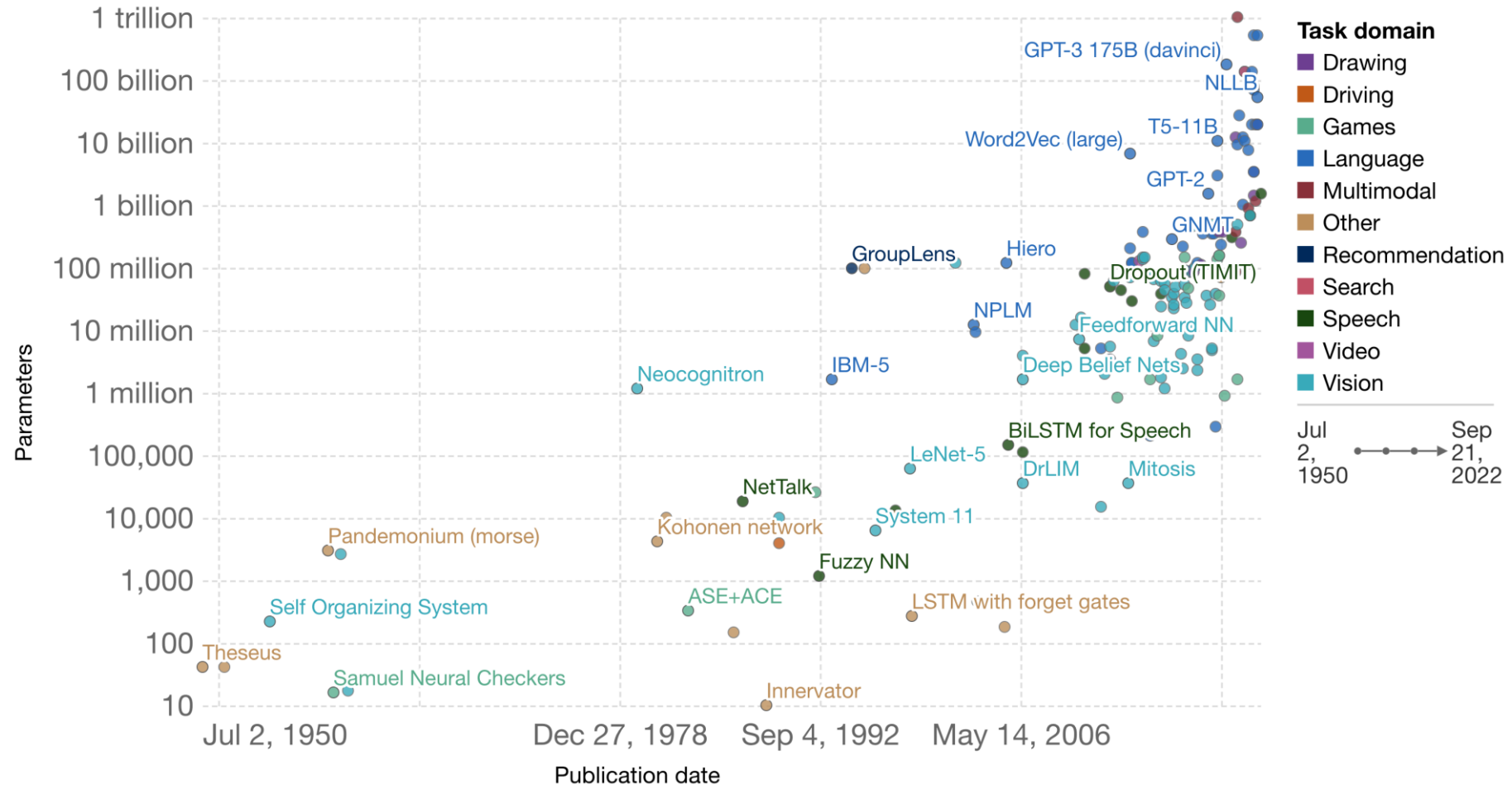
Source: Company announcements via Business Insider/LinkedIn



statista

Number of parameters in notable artificial intelligence systems

Parameters are variables in an AI system whose values are adjusted during training to establish how input data gets transformed into the desired output; for example, the connection weights in an artificial neural network.



Source: Sevilla et al. (2023)

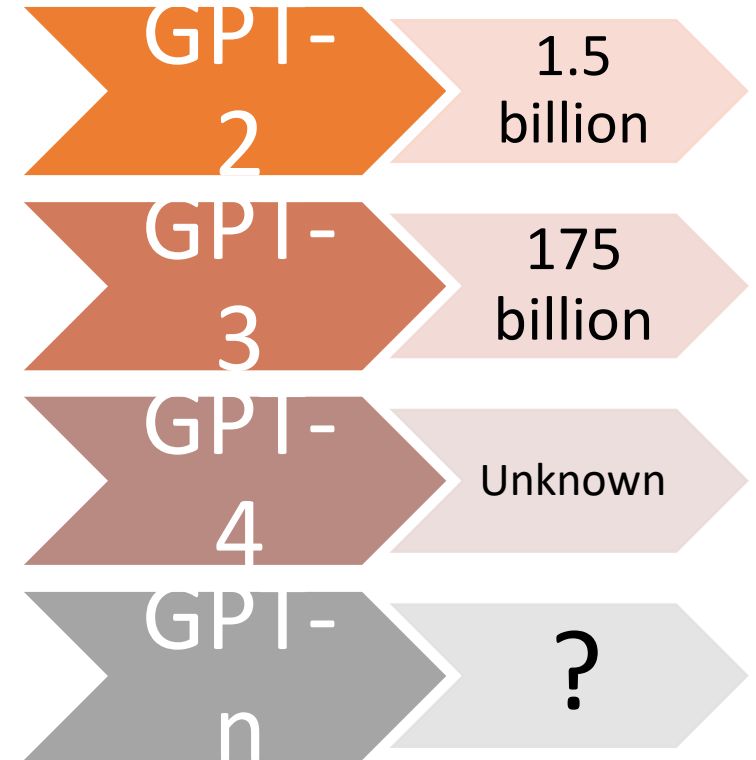
OurWorldInData.org/artificial-intelligence • CC BY

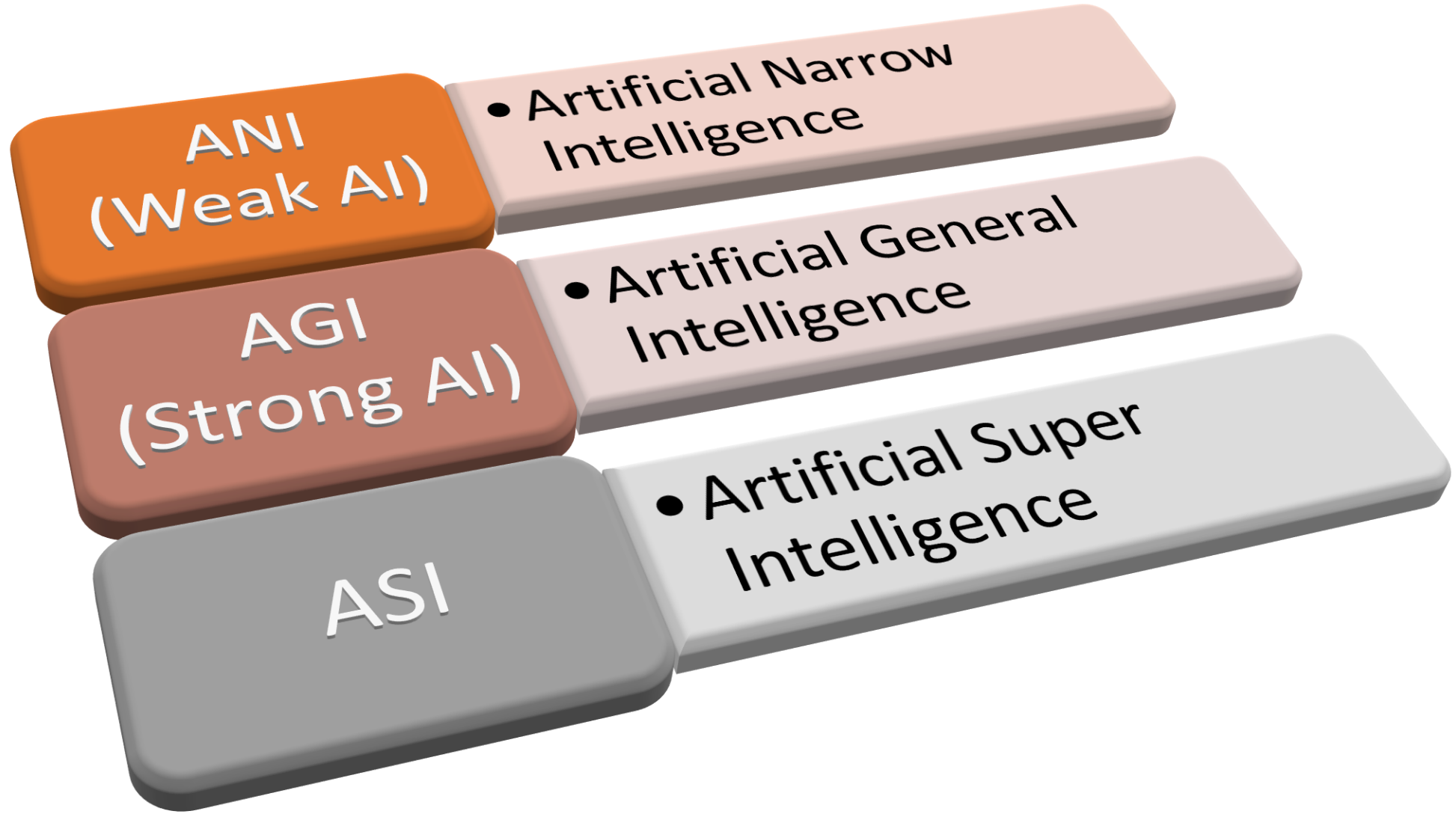
Note: Parameters are estimated based on published results in the AI literature and come with some uncertainty. The authors expect the estimates to be correct within a factor of 10.

The human brain contains 100 trillion connections



The number of parameters in LLM models





The Challenge to Achieve AGI

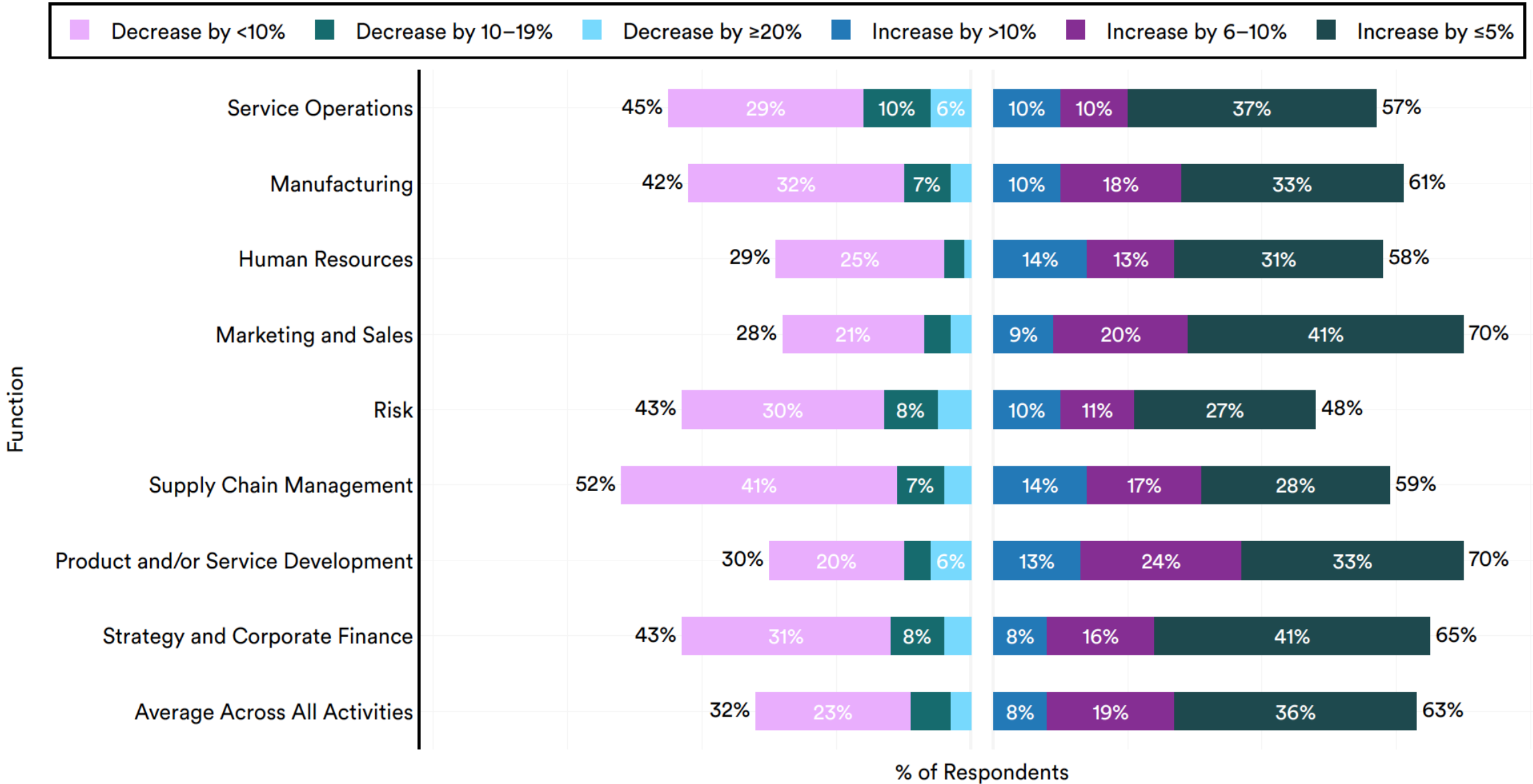
“There are many challenges that we haven't made much progress on and don't even understand, such as how to model creativity, strategic thinking, reasoning, counterfactual thinking, emotions and consciousness.”

Kai-Fu Lee, Ex-President, Google China

We don't need to reach AGI to have a huge impact

Cost Decrease and Revenue Increase From AI Adoption by Function, 2021

Source: McKinsey & Company Survey, 2022 | Chart: 2023 AI Index Report





- Operations and Services
 - Automated customer service
 - Personalized recommendations
 - Problem solving - knowledge base searches
- Human Resources
 - Recruitment
 - Training
- Manufacturing
 - Autonomous factories
 - Image processing and defect detection



- Supply Chain / Distribution
 - Automated storage and packaging
 - Delivery route optimization
 - Autonomous vehicles
- Marketing and Sales
 - Communication / Copyediting
 - Generation of personalized content
 - Customer engagement
- Products (Research and Development)
 - Synthesis of scientific articles
 - Patent research
 - Robots in laboratories

Considerations

Ethical Considerations

- Privacy - employee monitoring; neurotech
- Cognitive liberty – who owns your thoughts?
- Fairness – biases in recruiting practices
- Accountability - who is responsible for decisions made by AI?
- Explainable AI - how to deal with the black box problem?



Technical Considerations

- Data governance and quality
- AI expertise - training
- Priorities
- Risks - how to deal with unexpected problems?
- Infrastructure and costs



Final Remarks

Terminator



Is the science fiction story portrayed in
the movie Terminator representative
of our future?



- There is no evidence that machines will develop consciousness.
- Machines have no desire or will of their own.
- AI experts agree that the danger of an AI-driven arms race is far greater than the Terminator scenario.

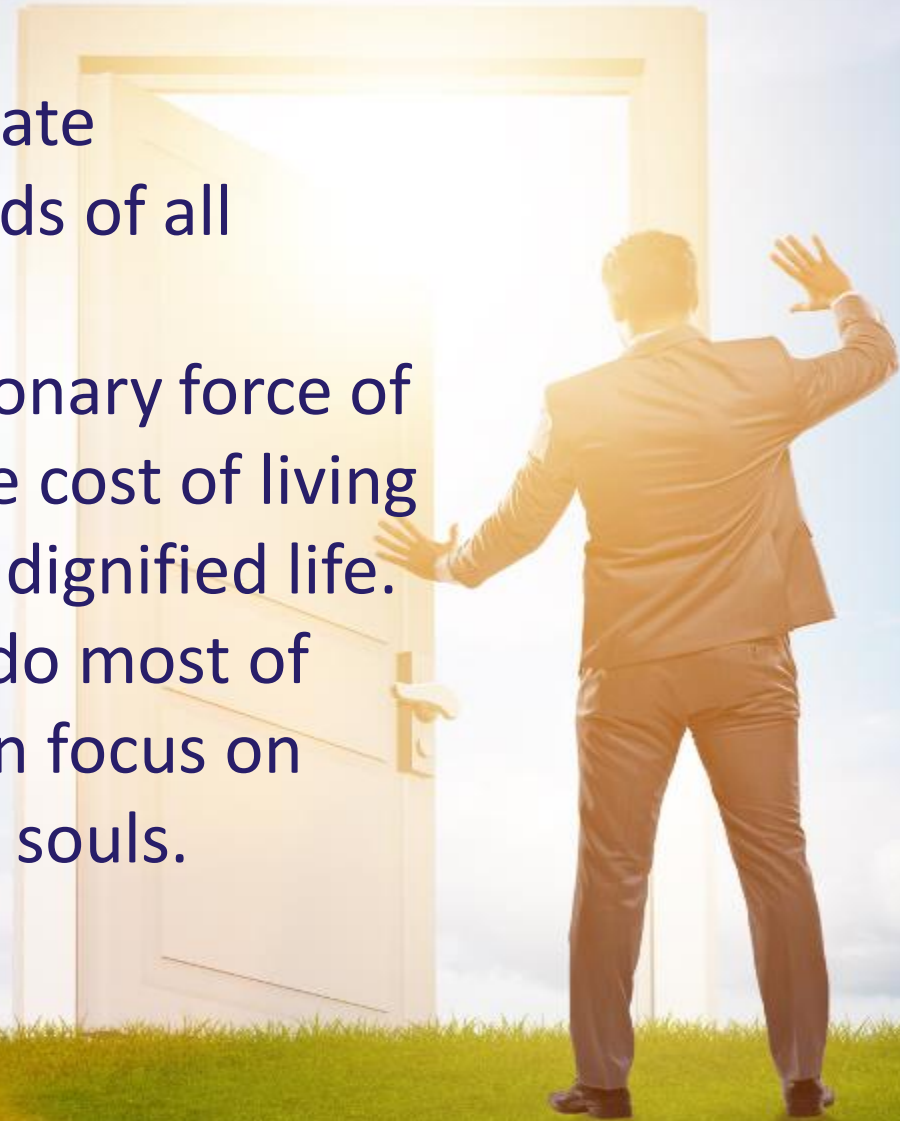
Is Artificial Intelligence
going to take my job?

- Tasks of an algorithmic nature - those that follow a set of instructions - are exposed.
- AI will make workers more efficient, requiring fewer people.
- Other unpredictable jobs will be created. For example, Prompt Engineer is a new role that didn't exist a few months ago.
- It is imperative that you learn to collaborate with AI in order to remain competitive.



Is there hope that AI will create a
better future?

- Imagine a future in which we can create abundance to meet the material needs of all humanity.
- Imagine a future in which the deflationary force of exponential technologies reduces the cost of living so that all human beings can enjoy a dignified life.
- Imagine a future in which machines do most of the manual labor, so that humans can focus on achieving the higher purposes of our souls.



Thank you!