

İyi günler

The Compass Points of Good Governance

Professor Emeritus David R. Beatty C.M., O.B.E., F.ICD, CFA
University of Toronto, Canada



ICGN

International Corporate Governance Network

Lifetime Achievement Award 2018

Please visit: <http://boardchair.com>



You need a compass at sea to navigate – to find your way



You need a compass at sea to navigate + sextant





+ a chronometer

You need a compass at sea to navigate + sextant + clock
+ Sight Reduction Tables

ADMIRALTY

Rapid Sight Reduction Tables for Navigation

Her Majesty's Nautical Almanac Office

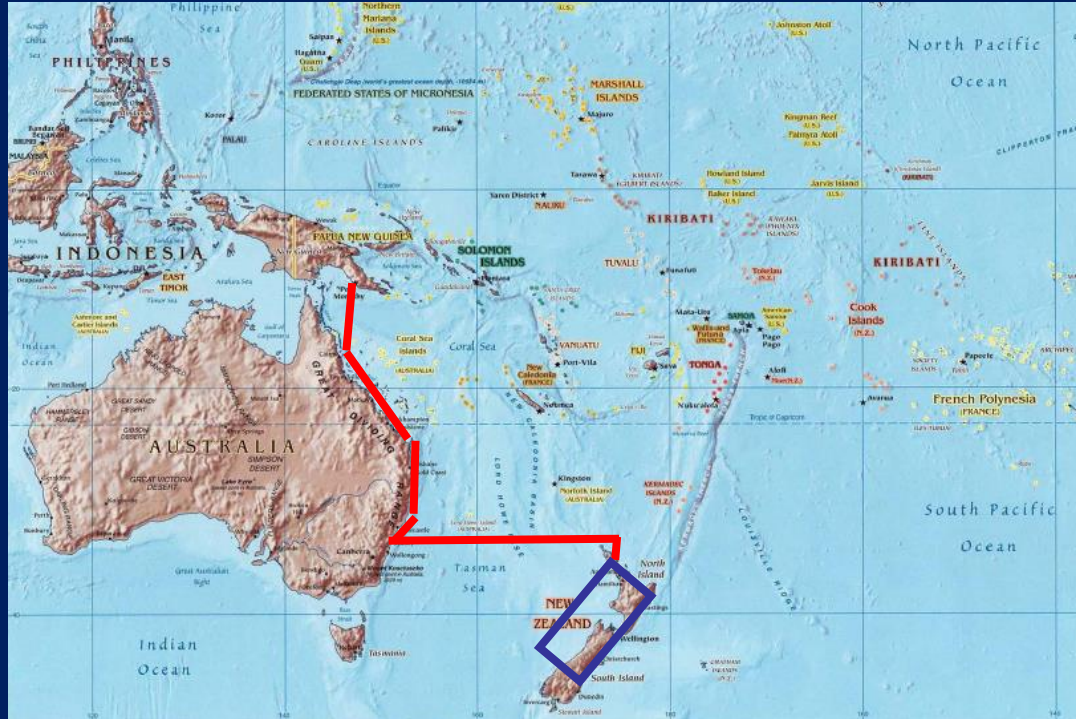

United Kingdom
Hydrographic Office

NP303 (AP3270)
Volume 2
Latitudes 0°–40°
Declinations 0°–29°

Sailed 3,500 miles in the South Pacific
for over a year



November 1977 embarked on 3,500 mile voyage to New Zealand:



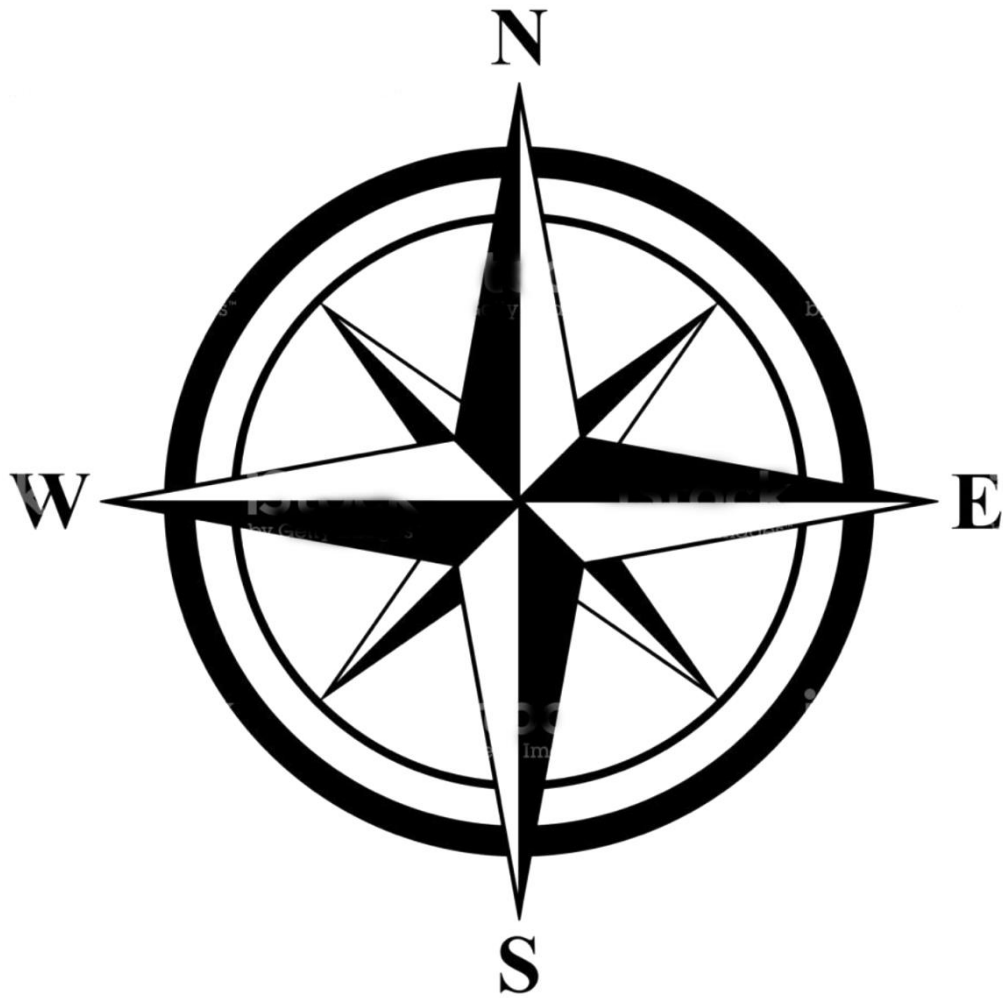
We did survive the SAVAGE SEAS





So, you sailed with 4 kids?
Why would we trust YOUR judgement





Boards that ADD VALUE need a compass

N

W

Keys to Board
Effectiveness

E

S

Boards that **ADD VALUE** need a compass

N

W

Keys to Board
Effectiveness

E

S

Boards that ADD VALUE need a compass

N



HARD: who
SOFT: how – individual behaviour
Collectively: GEL



S

Boards that ADD VALUE need a compass

N



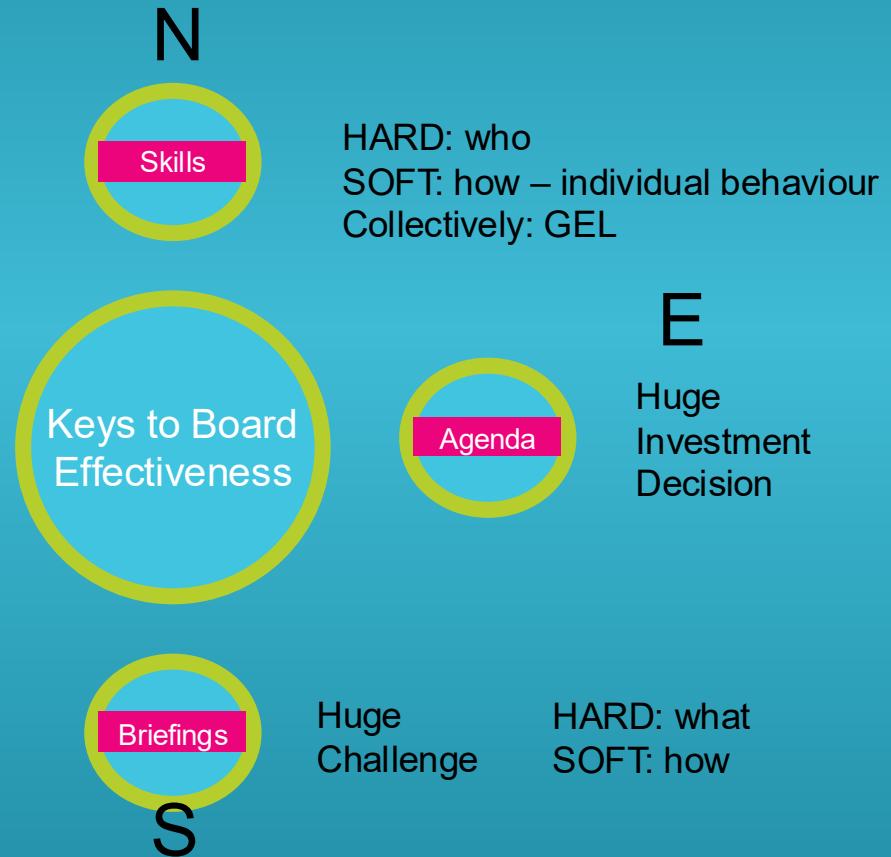
HARD: who
SOFT: how – individual behaviour
Collectively: GEL



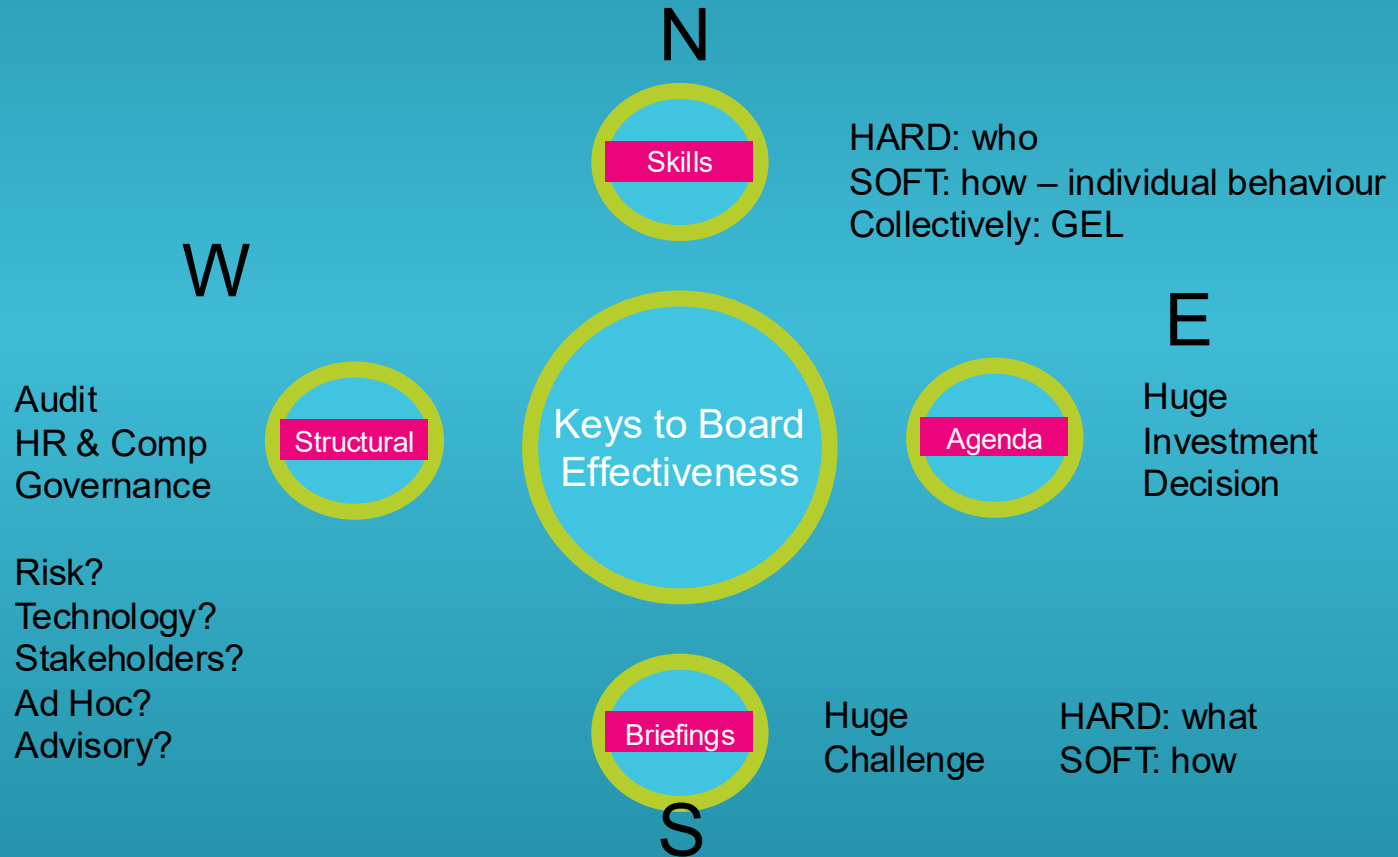
E

Huge
Investment
Decision

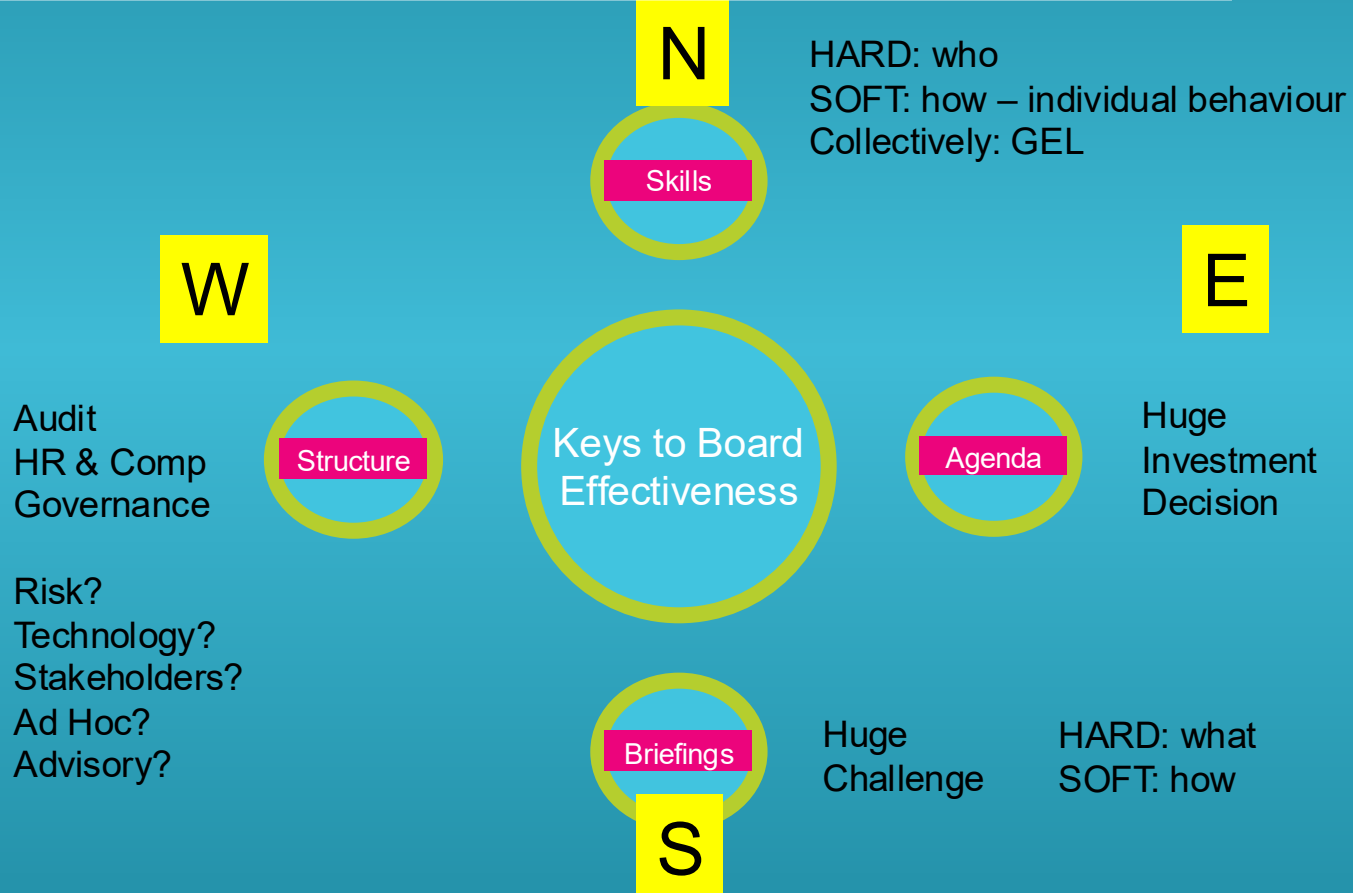
Boards that ADD VALUE need a compass



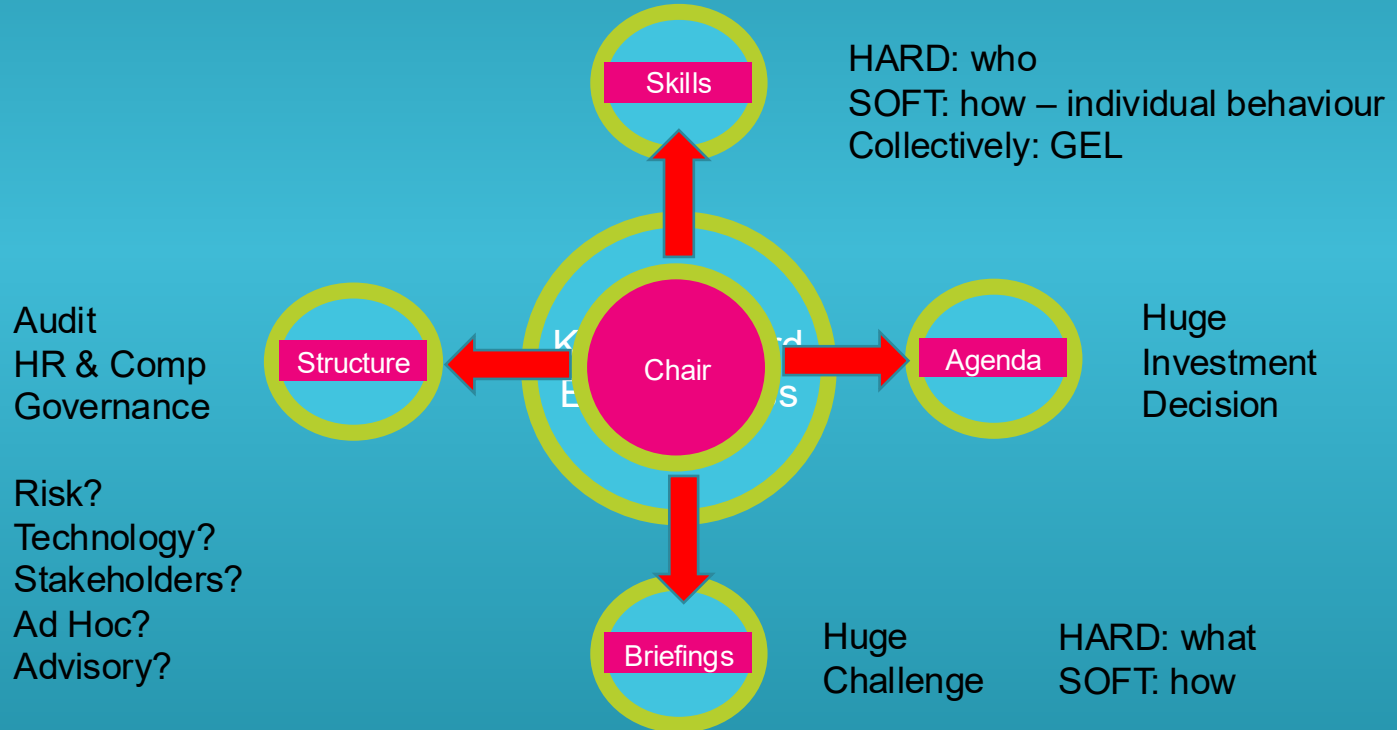
Boards that ADD VALUE need a compass



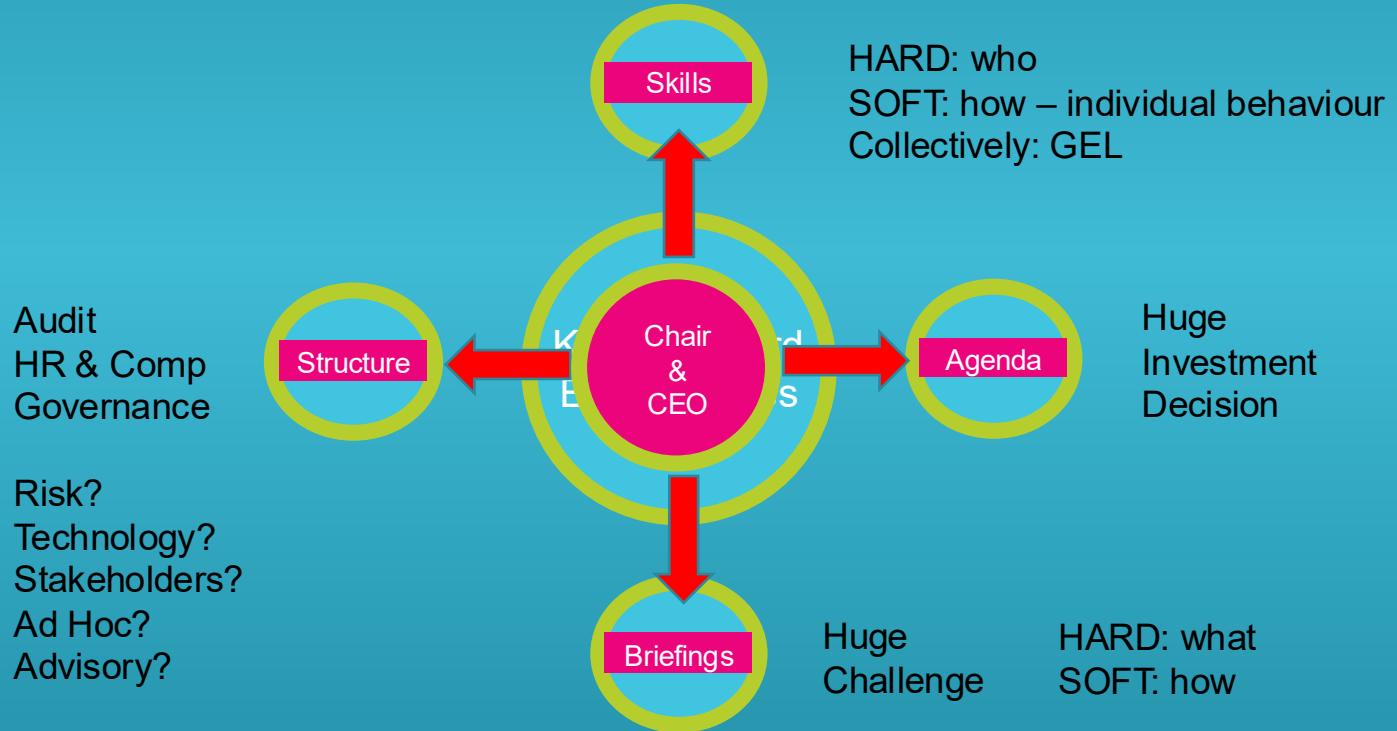
Boards that ADD VALUE need a compass




Value Added Boards need Great Chairs



Great Boards need Great Chairs AND Chair & CEO relationship is KFS



A photograph of Benjamin Zander, an older man with white hair, wearing a dark blue suit jacket over a white shirt and a light-colored tie. He is standing on a stage, facing right, with his arms raised and hands open in a gesture of speaking or conducting. The background is a large, dimly lit audience seated in a theater or lecture hall. The lighting is focused on Zander, with a purple hue in the background.

Benjamin Zander | TED2008

The transformative power of classical music



Role of the Chair:

Orchestrating the Board

Talent

Tone

Time

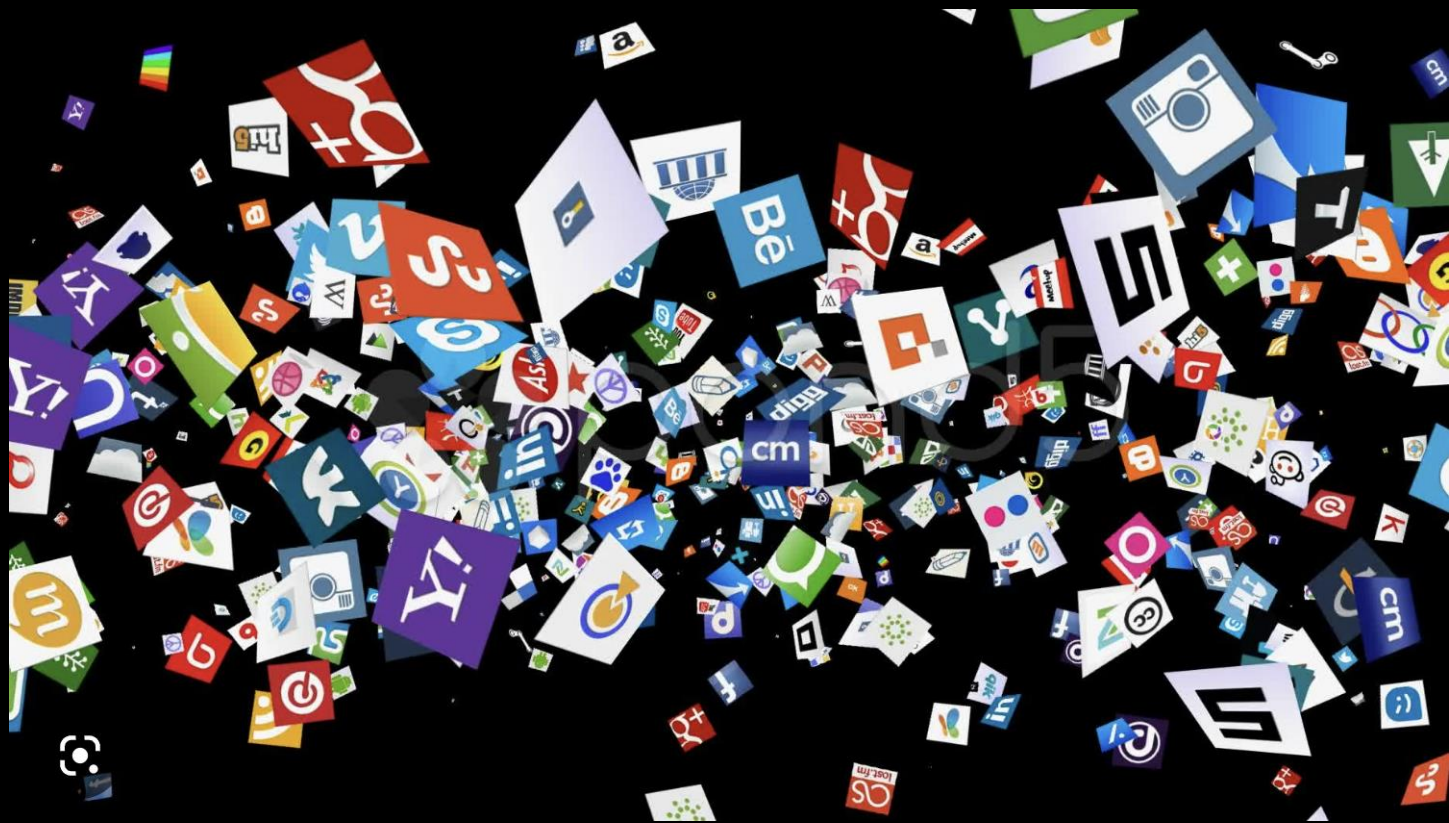
Being a value-added director has
always been HARD but now

REALLY, REALLY HARD

- Stakeholder invasion



Social Media has transformed Boards

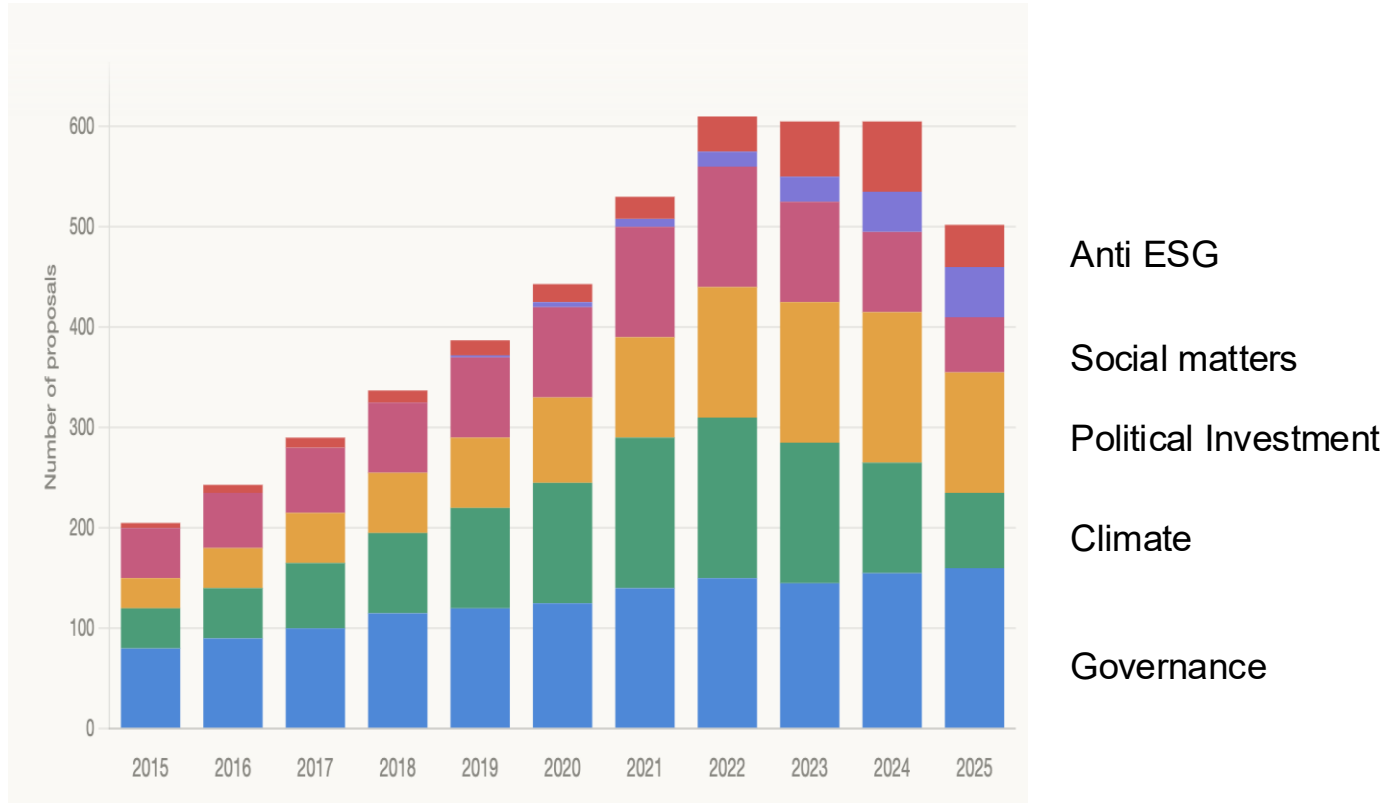


Who is running the show ?

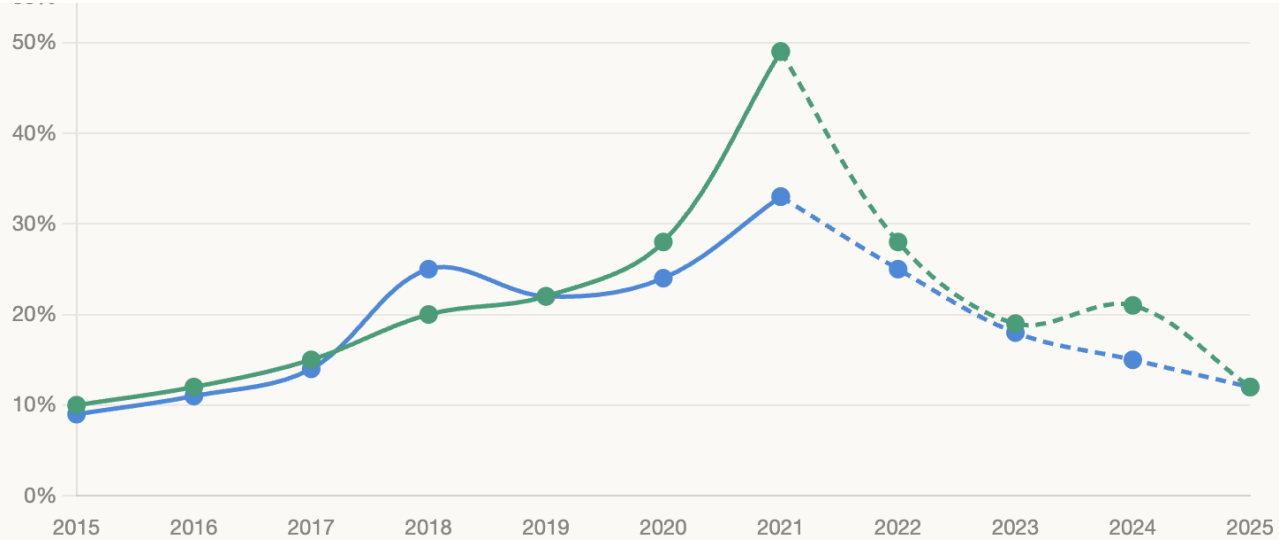


SHAREHOLDERS GAIN SOME GROUND.

~500 Proxy Resolutions Wide Variety of Topics in 2025



Environmental & Social issues have declined significantly from 2021 peak



Sources: ISS-Corporate, Deal Point Data, Farient Advisors, Harvard Law School Forum on Corporate Governance. 2015–2020 interpolated from reported anchor points; dashed region indicates estimated range.



The **CORPORATE COLLABORATIVE** @ UD

JOHN L. WEINBERG CENTER FOR CORPORATE GOVERNANCE
INSTITUTE FOR PUBLIC ADMINISTRATION

Lawrence Cunningham  · 1st

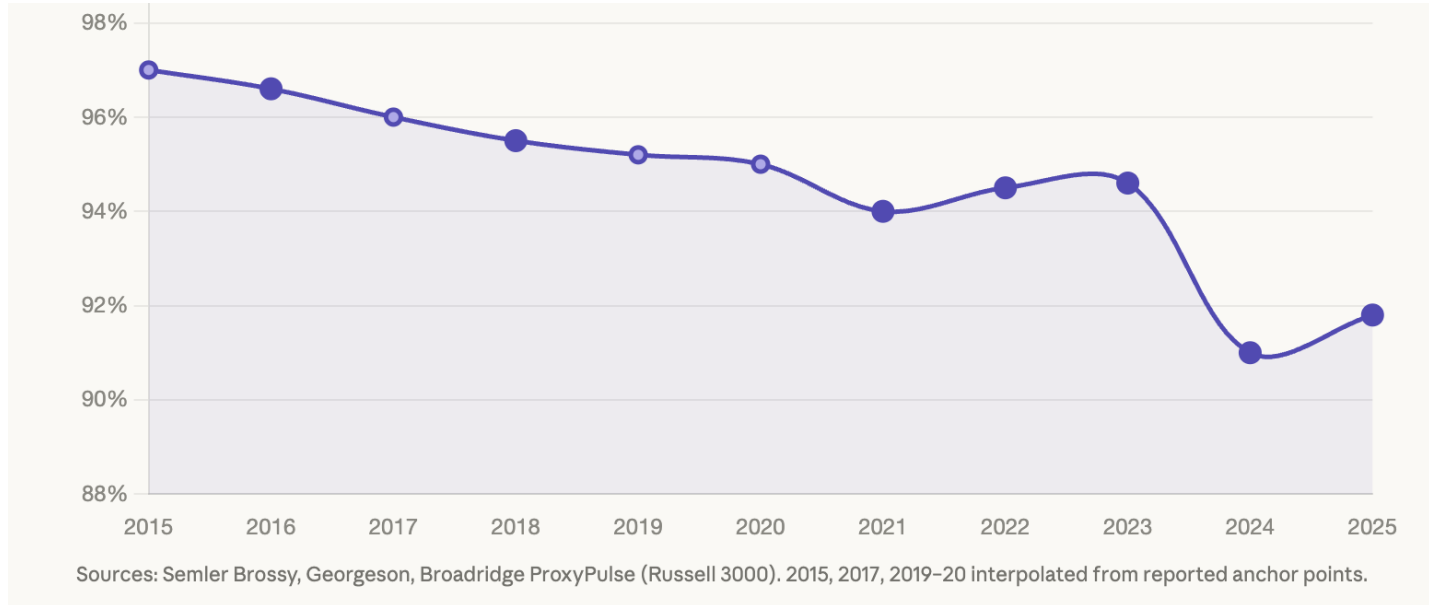
Presiding Director, Weinberg Center | Board Member, Markel & Constellation | Author, "The Essays of Warren Buffett" | Em. Prof. GW



University of Delaware |
Weinberg Center for...

“Corporate America faces enough real challenges—global competition, innovation, technological disruption—without its annual meetings being dueling stages for esoteric or ideological theater. Ensuring discipline in the shareholder proposal process is a modest but valuable step toward letting boards govern and investors invest.”

Director election results have fallen in the last decade but still at 92%



Being a value-added director has
always been HARD but now

REALLY, REALLY HARD

- Stakeholder invasion
- Activist pressures



The number of global activist campaigns - HUGE !!

No. companies publically subjected to activist demands
by year and region

Region	2021	2022	2023	2024	2025
Asia	134	189	221	203	246
Australasia	71	64	56	59	50
Canada	45	55	74	58	54
Europe (including UK)	180	143	128	106	98
Other	22	16	8	13	13
US	462	510	555	596	579

Source: Diligent Market Intelligence / Activism

Number of companies publicly subjected to activist demands by year and company region

		Q1				
		2022	2023	2024	2025	2026
Asia		64	93	89	88	102
Australasia		18	13	16	14	9
Canada		17	26	22	16	17
Europe (including UK)		56	56	29	39	25
Other		9	4	10	6	2
US		223	252	272	265	241
TOTAL		387	444	438	428	396

Being a value-added director has
always been HARD but now

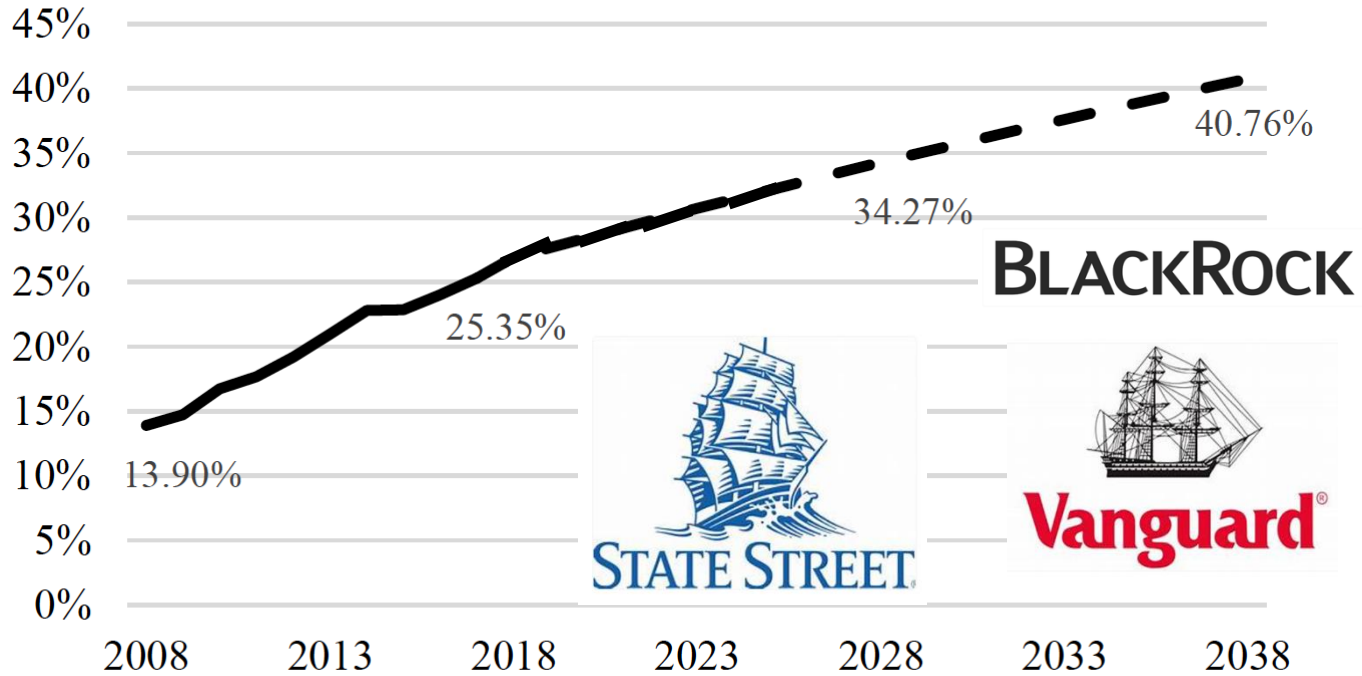
REALLY, REALLY HARD

- Stakeholder invasion
- Activist pressures
- Asset manager pressures



% VOTES of S&P500 by the BIG three asset managersprojected

S&P 500 Companies



Being a value-added director has
always been HARD but now

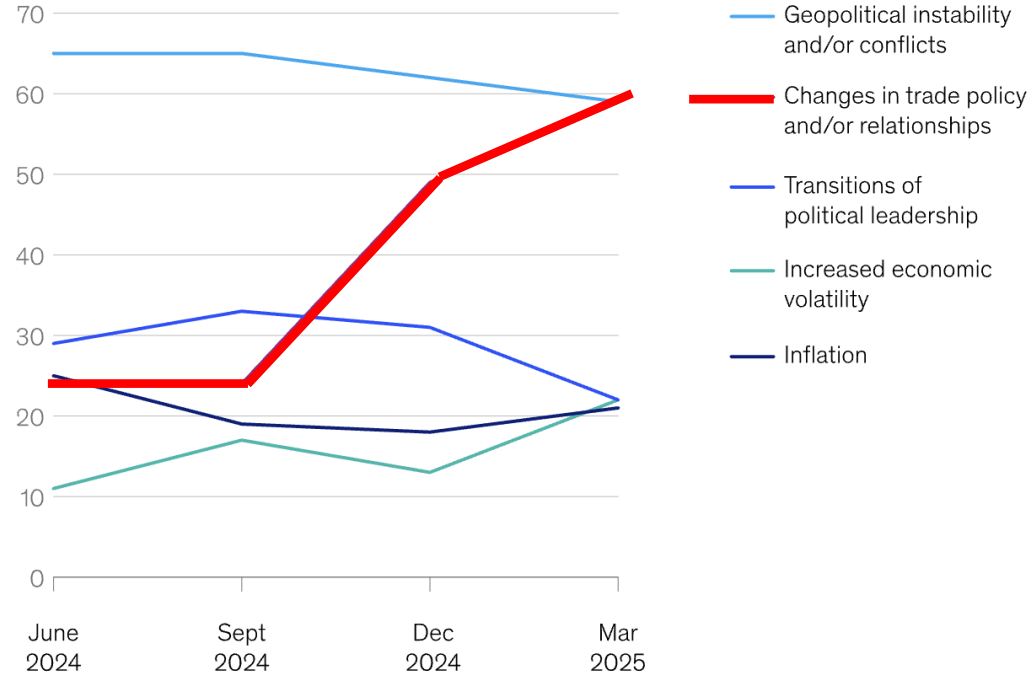
REALLY, REALLY HARD

- Stakeholder invasion
- Activist pressures
- Asset manager pressures
- Geo-political events



Trade policy changes are now on par with geopolitical instability as the biggest perceived disruptive forces in the global economy.

Biggest potential risks to global economic growth, next 12 months,¹
% of respondents

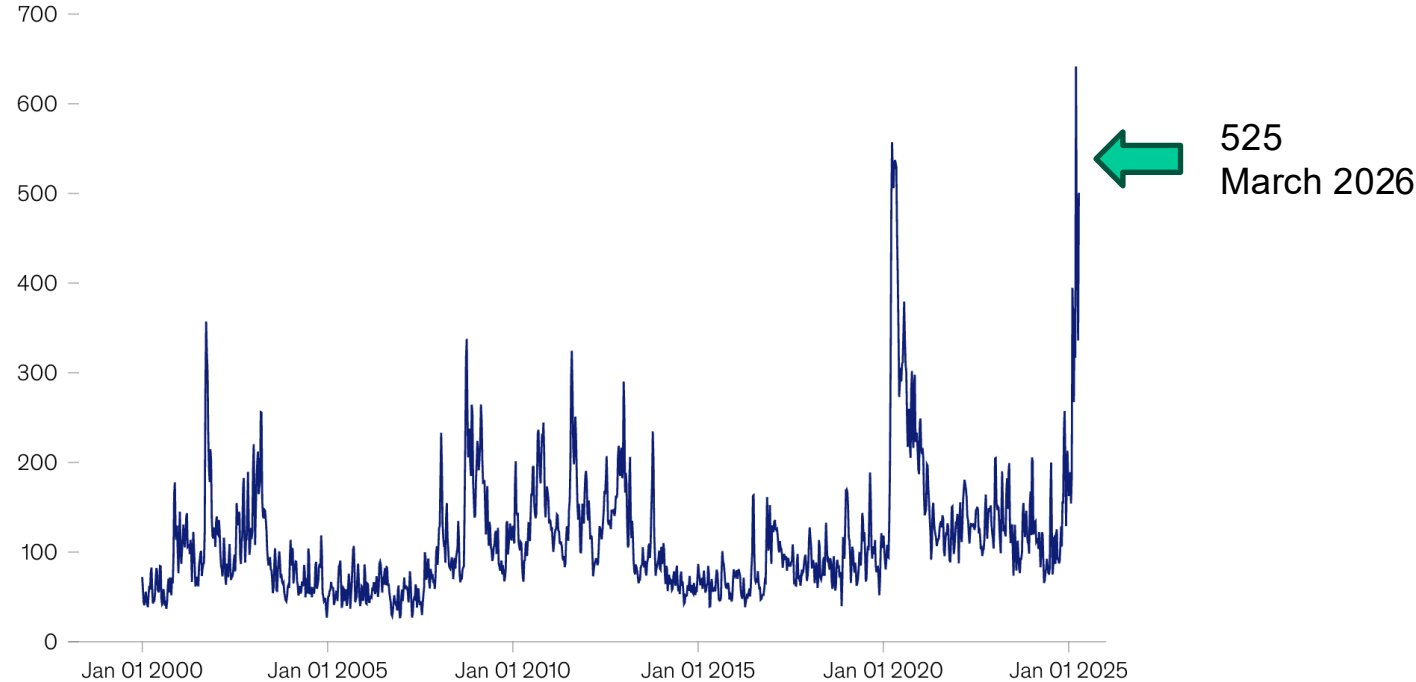


¹Out of 15 risks that were offered as answer choices. June 3–7, 2024, n = 927; Aug 28–Sept 6, 2024, n = 1,203; Nov 27–Dec 6, 2024, n = 912; Feb 26–Mar 7, 2025, n = 988.

Source: McKinsey Global Surveys on economic conditions, 2024–25

Economic policy uncertainty in the United States has eclipsed COVID-19 uncertainty levels, which were the highest readings on record.

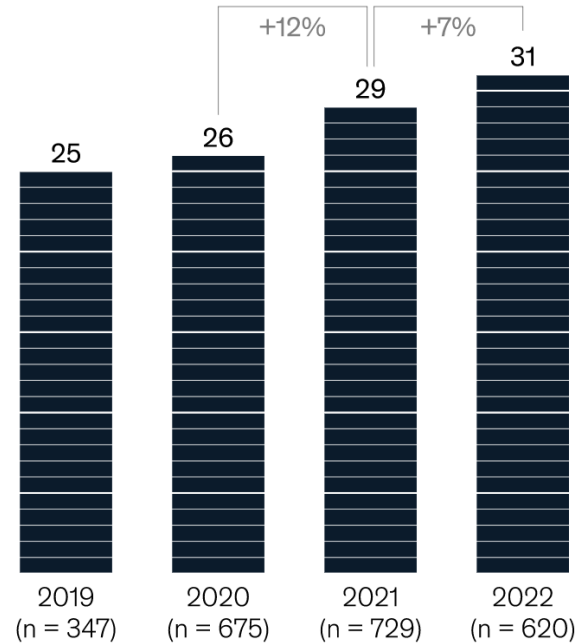
US Economic Policy Uncertainty Index



Source: Economic Policy Uncertainty Index, Economic Policy Uncertainty; Stephen J. Davis, *An index of global economic policy uncertainty*, National Bureau of Economic Research working paper number 22740, Oct 2016; Global Economics Intelligence by McKinsey

On average, directors say they are spending more and more time on board work.

Average number of days per year directors spend on board work¹

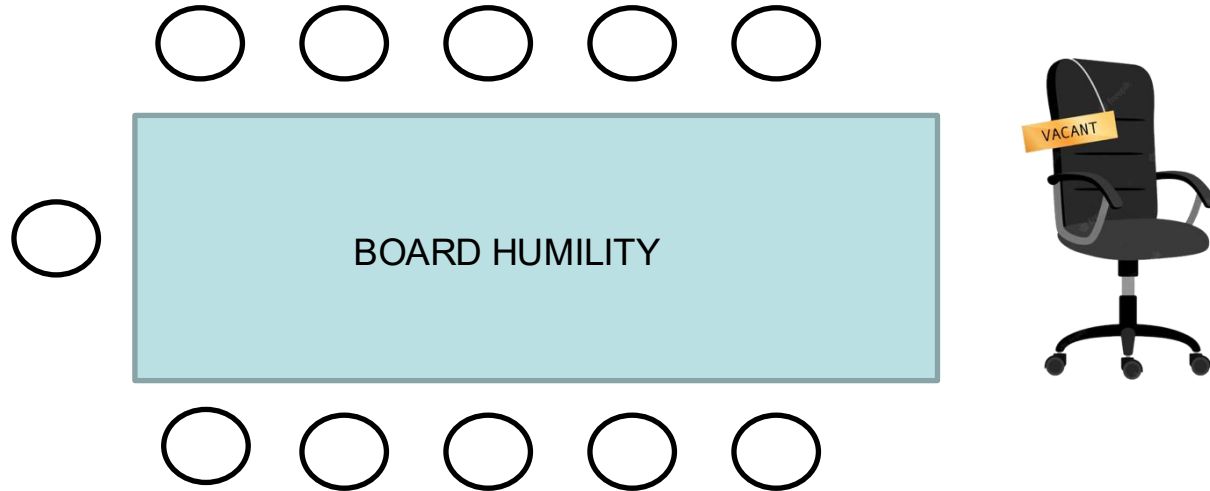


¹The 2019 and 2020 figures reflect responses from directors who were asked about the actual number of days spent on board work in the prior calendar year. For 2021 and 2022, respondents were asked to predict the number of days they expected to spend on board work in each year.

Source: McKinsey Global Surveys of boards of directors, Sept 15–25, 2020, 846 board members and C-level executives; Aug 17–31, 2021, 1,054 board members and C-level executives

“The Empty Chair”

represents all the stakeholders not represented around the Boardroom table
--- and should be thought of for each decision



“The Empty Chair” can represent all the stakeholders not represented around the Boardroom table --- and should be thought of for each decision



“An empty chair, but never unoccupied. A voice inaudible, but always present. This seat reminds us that leadership extends beyond the walls of this room, to those we serve today and those who will inherit it tomorrow.”

Being a value-added director has
always been HARD but now

REALLY, REALLY HARD

- Stakeholder invasion
- Activist pressures
- Asset manager pressures
- Geo-political events
- Digital Tsunami



The Compass Points of Good Governance

David R. Beatty CM, OBE, FICD, CFA
Professor Emeritus, Strategy and Governance
University of Toronto




**ARGÜDEN
GOVERNANCE
ACADEMY**
Good Governance for
Quality of Life

Visit Boardchair.com



The Digital Tsunami

Professor Emeritus David R. Beatty C.M., O.B.E., F.ICD, CFA
University of Toronto, Canada



Lifetime Achievement Award 2018

Please visit: <http://boardchair.com>





4,410 CEOs in 105 countries

Question: If your company continues running on its current path, for how long do you think your business will be economically viable?



4,410 CEOs in 105 countries

Nearly 40% of CEOs don't think their companies will be economically viable a decade from now if they continue on their current path

Question: If your company continues running on its current path, for how long do you think your business will be economically viable?



Note: Percentages shown may not total 100 due to rounding.
Source: PwC's 26th Annual Global CEO Survey



LTSCDA



LTSCDA

becomes

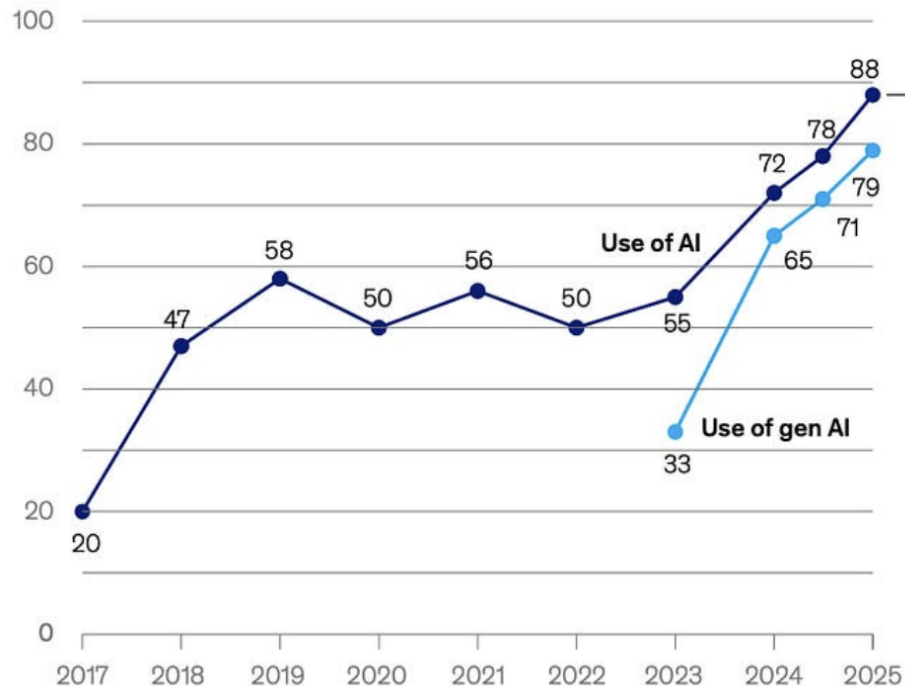
SSSST

Significantly Shortened Strategic Survival Time

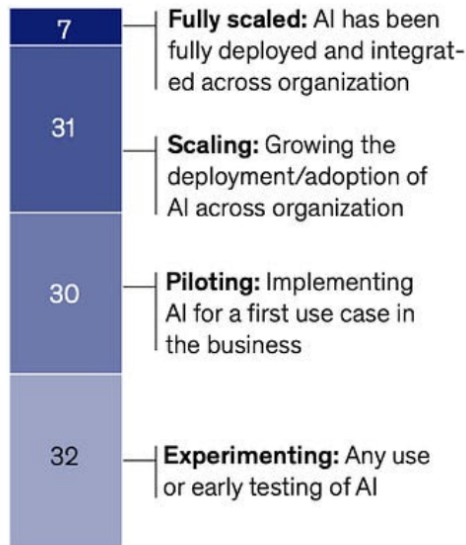
Reported use of AI in at least one business function continues to increase.

Use of AI by respondents' organizations, % of respondents

Organizations that use AI in at least 1 business function¹



Phase of AI use among organizations using AI in 2025



¹In 2017, the definition for AI use was using AI in a core part of the organization's business or at scale. In 2018–19, the definition was embedding at least 1 AI capability in business processes or products. From 2020, the definition was that the organization has adopted AI in at least 1 function, and in 2025, the definition was regular use of AI in at least 1 function.

Source: McKinsey Global Surveys on the state of AI, 2017–25



**We are truly living
during the most
extraordinary
time ever!**

(2025 – 2035)

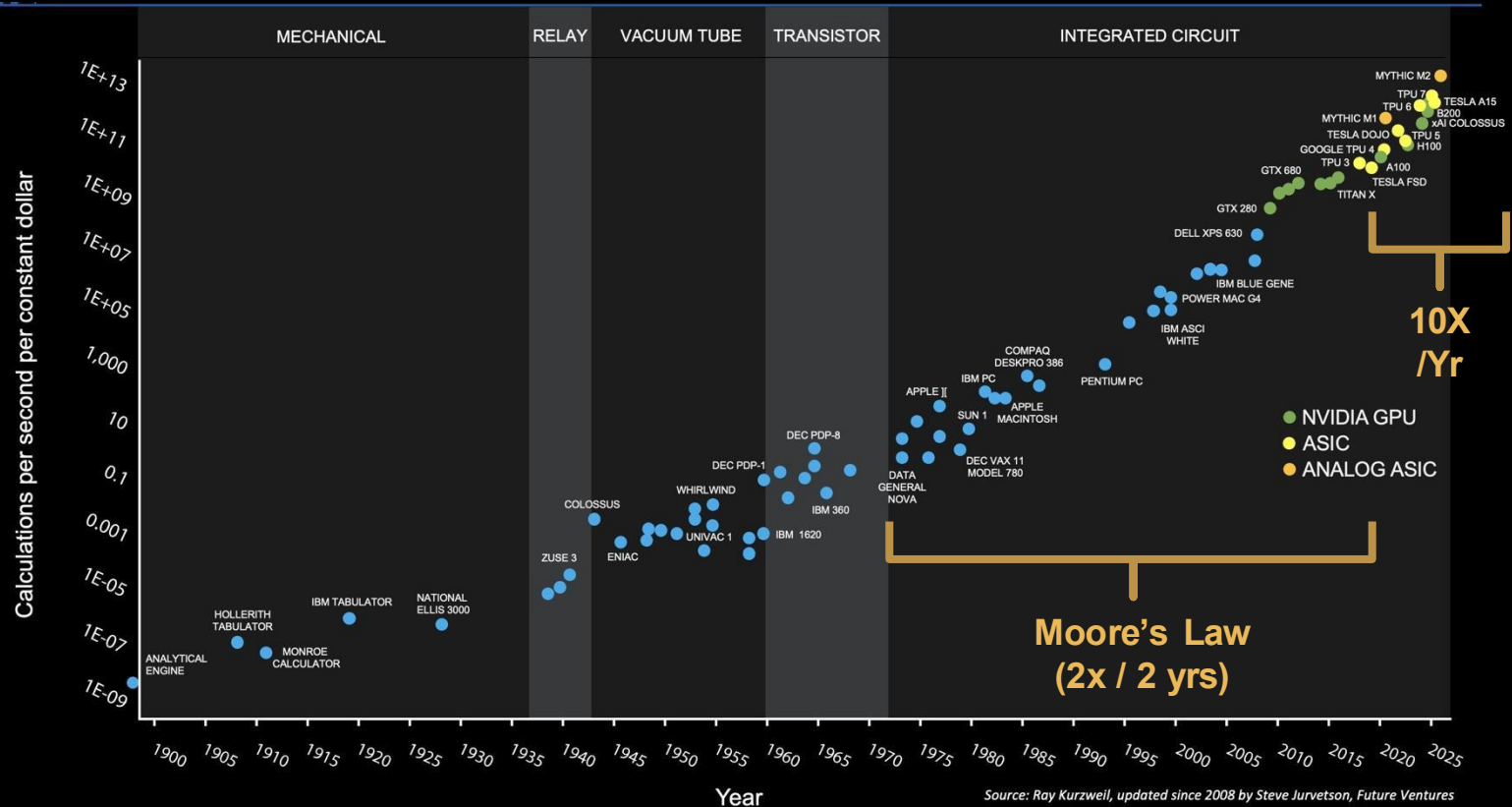
100X over the decade ahead

“We will experience as much change in the next decade (2025 – 2035), as humanity had during the past century (1925 – 2025).”

— Ray Kurzweil

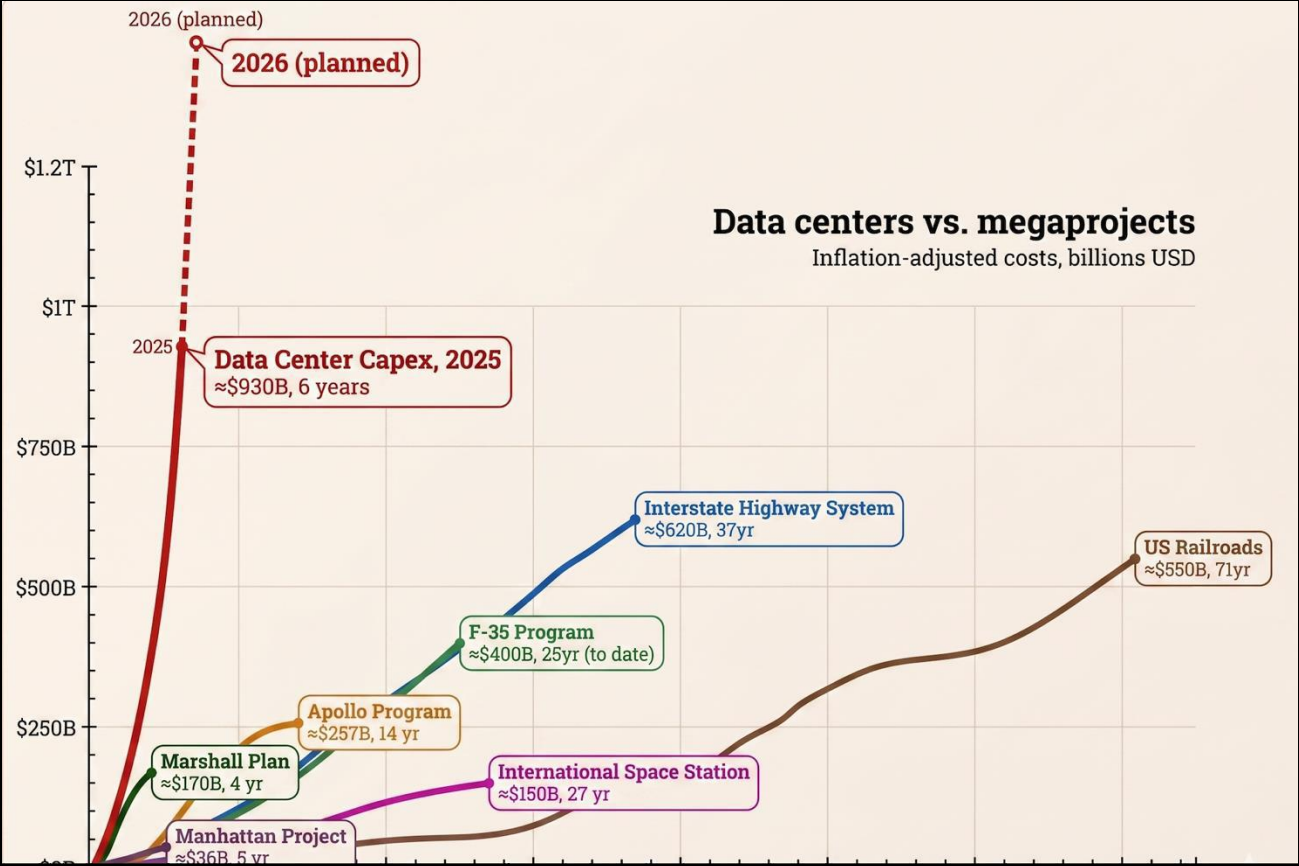


DRIVER: Exponential Growth in Compute



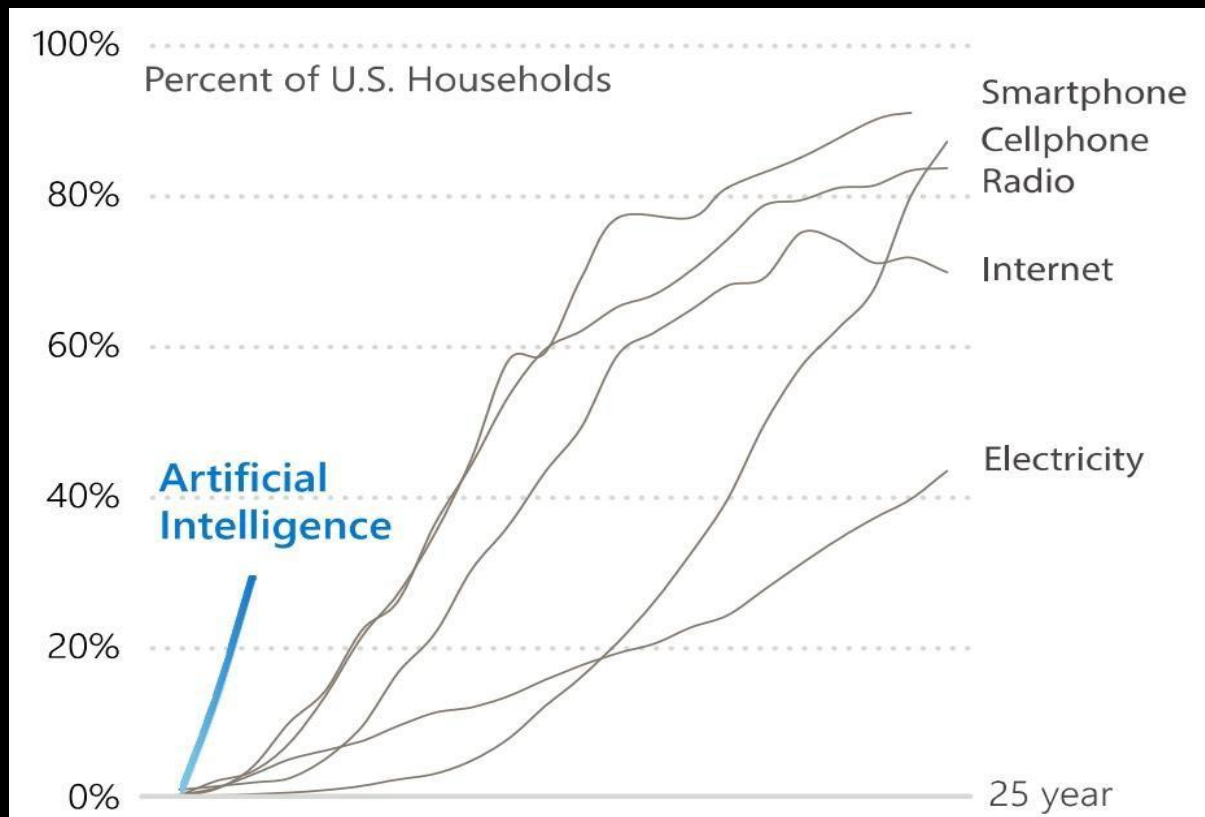
Source: Ray Kurzweil, updated since 2008 by Steve Jurvetson, Future Ventures

HYPERSCALERS vs. US MEGA PROJECTS



• Human experts: ~90%

FASTEST DIFFUSION OF ANY GENERAL TECH, EVER



Deep Blue defeats Kasparov

On May 11, 1997, IBM's Deep Blue became the first computer to defeat a reigning world chess champion in a classical match — beating Garry Kasparov in a six-game rematch in New York City.



FINAL MATCH SCORE

3½–2½

2 wins · 1 loss · 3 draws



DATE OF GAME 6

May 11, 1997

The deciding game



VENUE

New York City

Equitable Center, Manhattan

"A turning point for artificial intelligence — and for chess."

AlphaGo defeats Lee Sedol

On March 15, 2016, DeepMind's AlphaGo defeated 18-time world champion Lee Sedol in a five-game match in Seoul — the first time a computer beat a top professional Go player on a full-sized board without handicap.



FINAL MATCH SCORE

4-1

Lee Sedol won Game 4



MATCH DATES

March 9-15, 2016

Five-game series



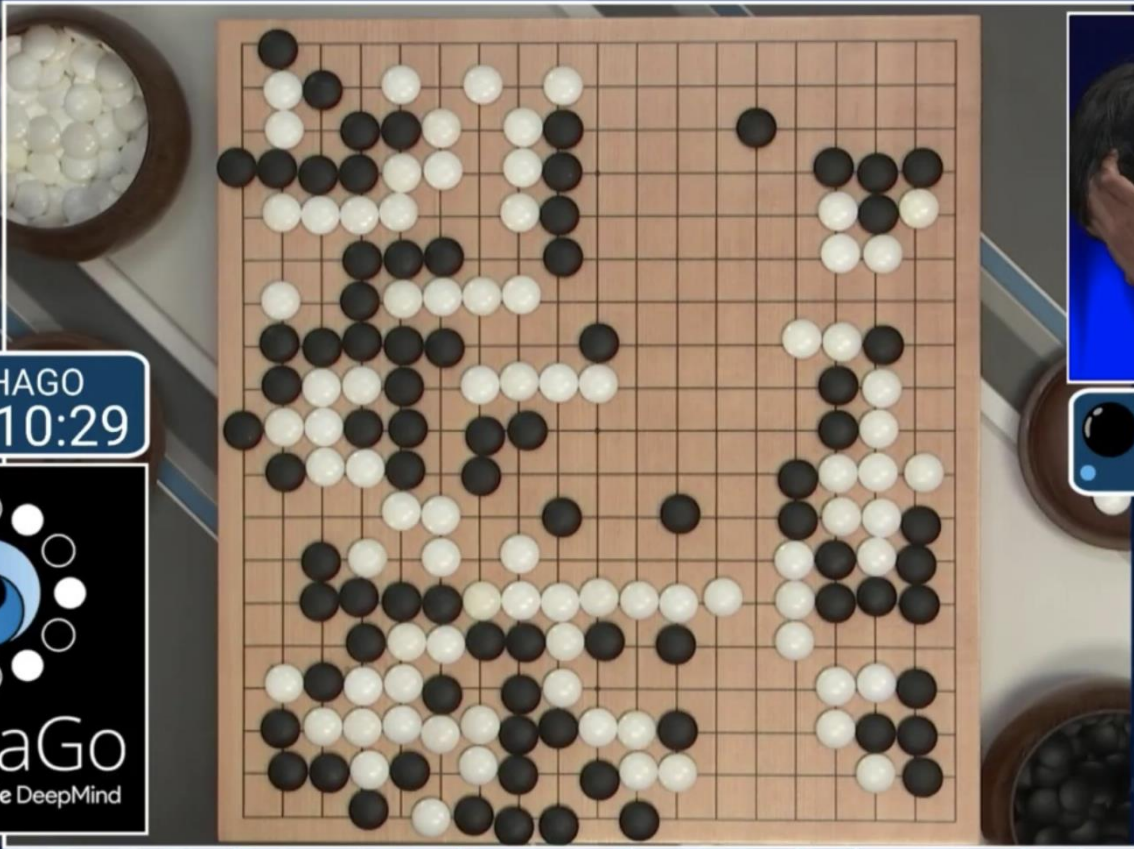
VENUE

Seoul, S. Korea

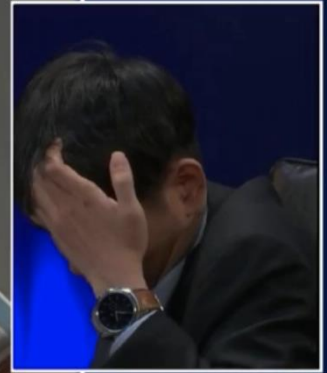
Four Seasons Hotel

"A turning point for artificial intelligence — and for the 2,500-year-old game of Go."

Machine learning: Alpha GO



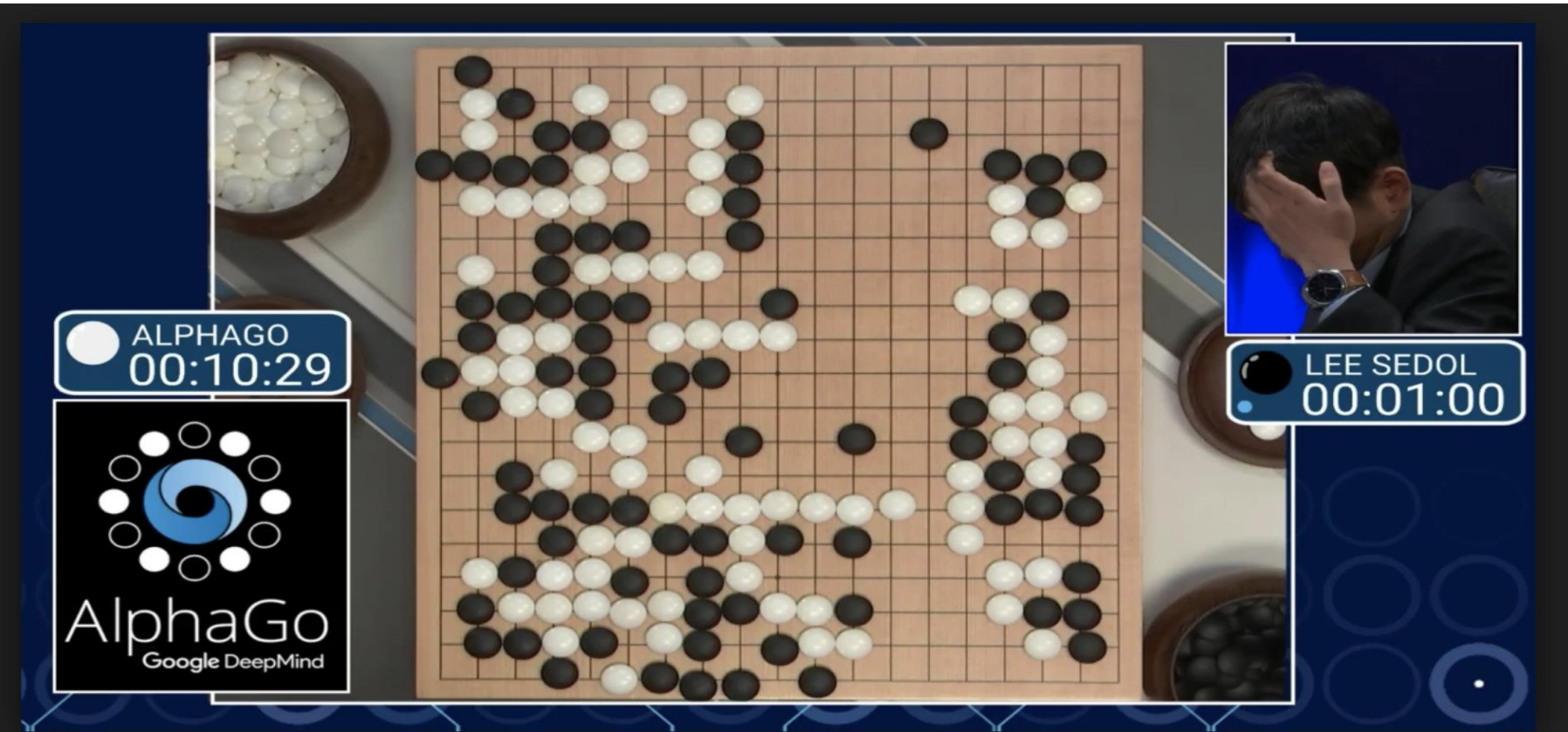
ALPHAGO
00:10:29



LEE SEDOL
00:01:00

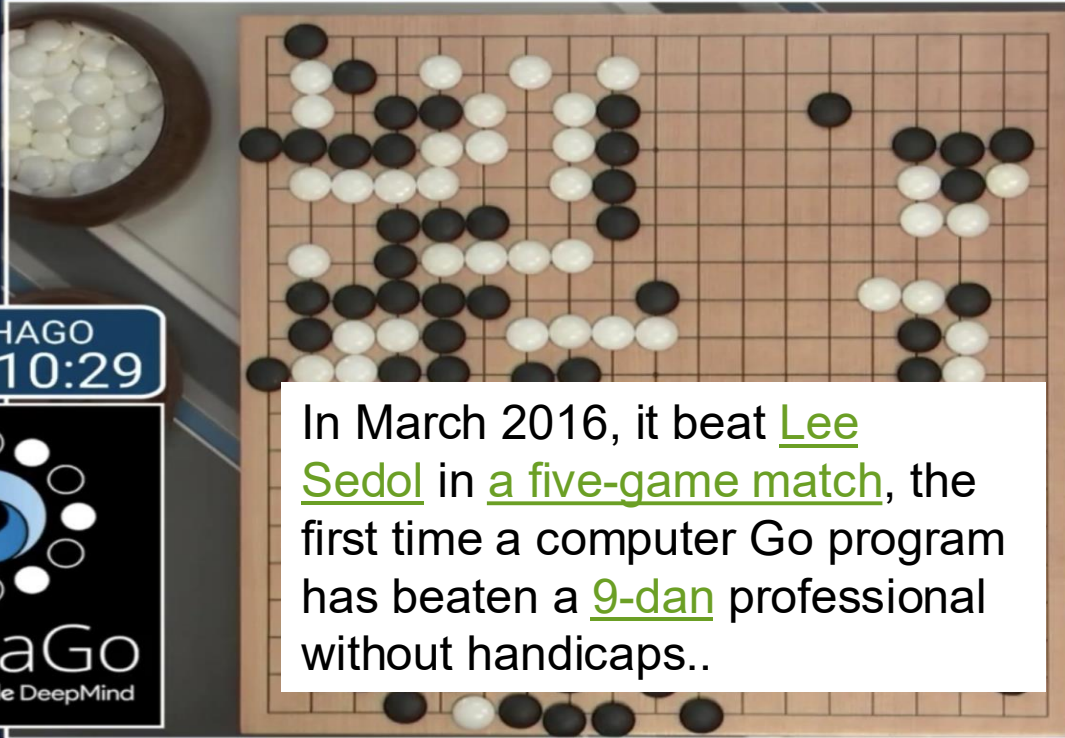
Machine learning: Alpha GO (developed by Alphabet Inc.'s Google DeepMind in London)

Learned by analyzing 100,000 expert games



Machine learning: Alpha GO (developed by Alphabet Inc.'s Google DeepMind in London)

Learned by analyzing 100,000 expert games



ALPHAGO
00:10:29



In March 2016, it beat Lee Sedol in a five-game match, the first time a computer Go program has beaten a 9-dan professional without handicaps..

LEE SEDOL
00:01:00

Go game master quits saying machines 'cannot be defeated'

Lee Se-dol retires from Chinese strategy game after playing against Google algorithm



GAME 2 · MARCH 10, 2016

Move 37

The shoulder hit no human would play.

AlphaGo's 19th stone was a shoulder hit on the fifth line — a move so unconventional that commentators first thought it was a mistake. Lee Sedol, away on a smoke break, returned to the board, took more than twelve minutes to reply, and lost the game.

1 in 10,000

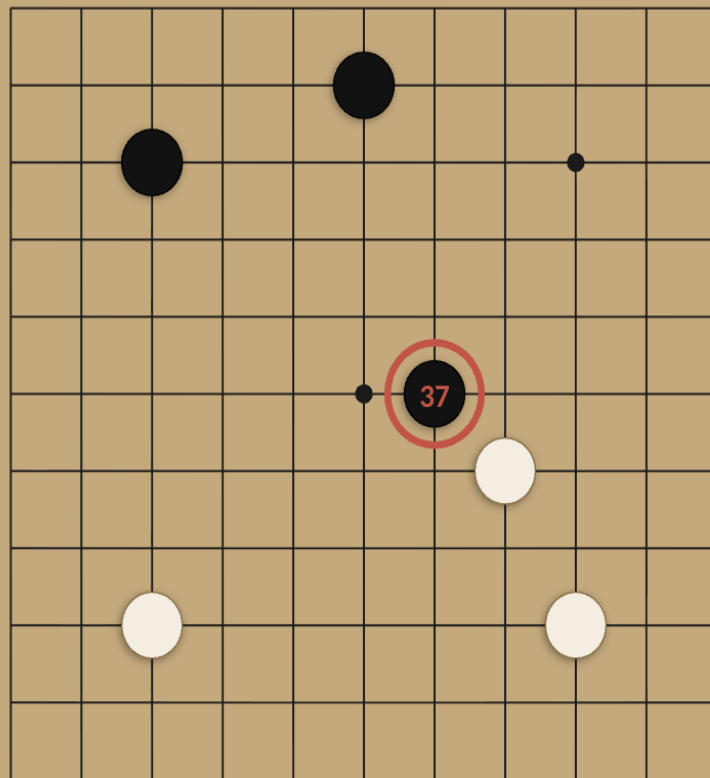
AlphaGo's own estimated probability a human would play this move

12+ min

Time Lee Sedol took to respond after returning to the board

"A rare and intriguing shoulder hit."

— An Younggil 8p, professional commentator



Black 37 · shoulder hit on the 5th line (illustrative)

Machine learning: Alpha GO ZERO

(also developed by Alphabet Inc.'s Google DeepMind in London)

Learned by playing itself



Disclaimer: I was not part of this research project. I am merely providing commentary on this work

ARTIFICIAL INTELLIGENCE · MILESTONE

AlphaFold

A 50-year-old grand challenge in biology — solved by AI.

In 2020, DeepMind's AlphaFold 2 cracked a problem biologists had wrestled with for half a century: predicting a protein's 3D shape from its amino-acid sequence. Within a year, the team released open structures for nearly every known protein. In 2024, Demis Hassabis and John Jumper shared the Nobel Prize in Chemistry.

PROTEIN
STRUCTURES

200M+

in the open AlphaFold DB

PROBLEM AGE

~50 yrs

since Anfinsen, 1972

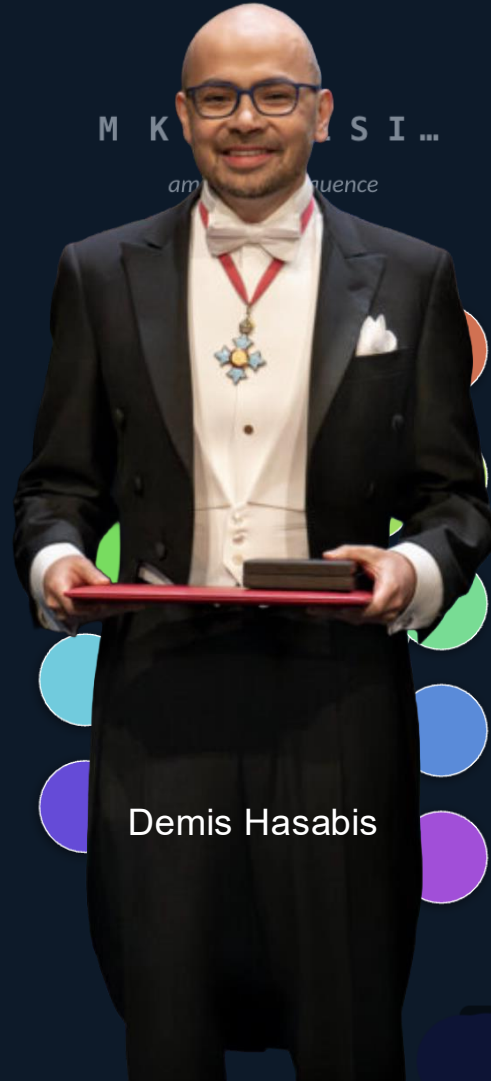
CHEMISTRY
PRIZE

Nobel '24

Hassabis · Jumper

"A complete revolution in structural biochemistry."

— Johan Åqvist, Nobel Committee for Chemistry



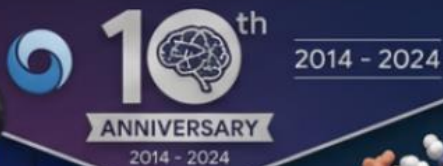
Demis Hassabis

ALPHAGO (2014-2024)

ALPHAGO vs LEE SEDOL
SEOUL, KOREA | 2016



10 YEARS OF ALPHAGO A DECADE OF INNOVATION GOOGLE DEEPMIND



Google DeepMind

ALPHAFOLD

Unlocking the Protein Universe

AlphaFold DB



John Jumper
Demis Hassabis



Transforming Biology

AlphaEvolve's “Move 37” Moment

DeepMind's Gemini-powered evolutionary coding agent discovered a faster algorithm for 4×4 complex matrix multiplication — breaking a 56-year-old record.

WHY IT MATTERS

- First improvement on Strassen's 1969 algorithm for 4×4 complex matrices — unsolved since the moon landing.
- Used a counterintuitive trick humans missed: leveraging complex numbers to create cancellations.
- Surpassed AlphaTensor, the specialized predecessor — despite being a general-purpose system.
- Signals AI moving from synthesizing knowledge to discovering genuinely novel mathematics.

THE BREAKTHROUGH

49

Strassen, 1969



48

AlphaEvolve, 2025

scalar multiplications required for 4×4 complex matrices
— an algorithmic record unbroken for 56 years

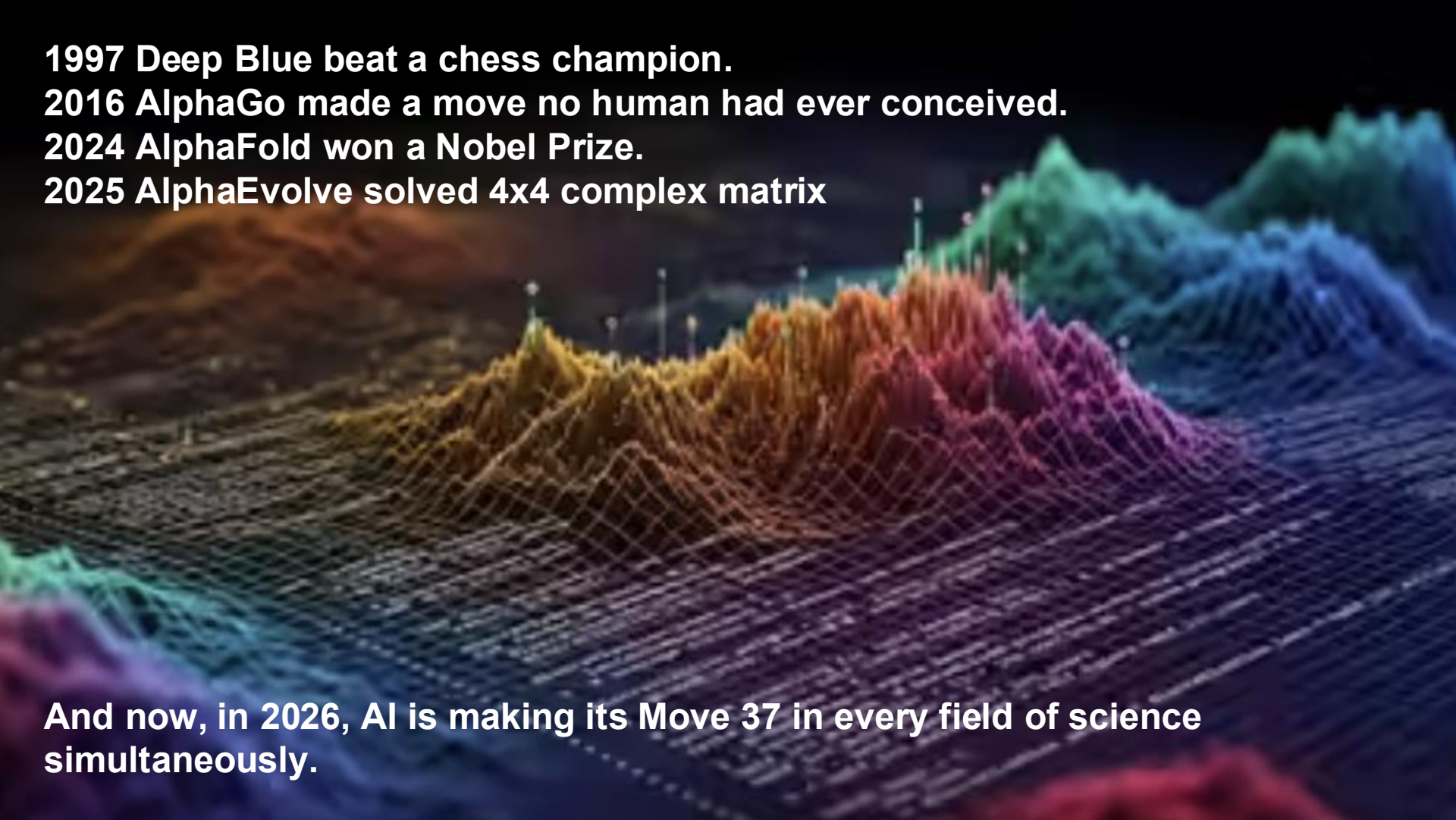
1997 Deep Blue beat a chess champion.

2016 AlphaGo made a move no human had ever conceived.

2024 AlphaFold won a Nobel Prize.

2025 AlphaEvolve solved 4x4 complex matrix

And now, in 2026, AI is making its Move 37 in every field of science simultaneously.





I L A

LILA

• OUR MISSION

Building Scientific
Superintelligence to
solve humankind's
greatest challenges

Founded in 2023

Geoffrey von Maltzahn, PhD

Lila is building what they call “AI Science Factories”: fully autonomous laboratories where AI systems generate hypotheses, design experiments, operate lab equipment, analyze results, and iterate at machine speed with minimal human intervention.

LILA

OUR MISSION

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SCIENTIFIC SUPERINTELLIGENCE

The Deep Blue Moment for All of Science

THE SUPERSONIC TSUNAMI OF CONVERGING EXPONENTIALS: THE NEXT 6 MONTHS

What's Coming, What It Means, and What You Need to Do

Based on Peter H. Diamandis's newsletter



\$2.5 TRILLION
GLOBAL AI SPENDING: 2026

AI: COMPUTE SCALING

MODEL CAPABILITIES

INFRASTRUCTURE
DEPLOYMENT

INTELLIGENCE
AS A UTILITY

AI

AGENTIC AI
(CLAUDE CODE)

NEUROMORPHIC CHIPS
(1000x Efficient)

AUTONOMOUS REASONING
(ALPAMAYO)

DATA CENTERS & GPUS

TESLA TERAFAAB PROJECT
(Breaking Ground Mar 21)

AI ENERGY
DEMAND > JAPAN

COMMERCIAL FUSION READY:
CFS ARC, HELION ENERGY

WHAT YOU NEED TO DO:
Design for **ABUNDANCE**
Own the **INFRASTRUCTURE**
Hire for **IMAGINATION**
Collaborate with AI (Students)



Nick Darveau-Garneau
Google's Chief Evangelist

Nick spoke to Elon Musk a couple of months ago:

“Elon,

10 years from now what will be TESLA’s competitive advantage?”

Nick was thinking to himself:

1. Batteries?
2. Self driving capabilities?
3. Charging network?

NO ONE ELSE WILL BE AS FAST



Sundar Pichai
CEO

Google culture is:

- GROW constantly
- IMPROVE 1% per day
- INNOVATE – 600 PhDs in ML



Sundar Pichai
CEO

“...the only sustainable
competitive advantage is...”

SPEED

Google culture is:

- GROW constantly
- IMPROVE 1% per day
- INNOVATE – 600 PhDs in
ML



Sundar Pichai
CEO

“...the only sustainable
competitive advantage is...”

SPEED

Google culture is:

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ML

Half the S&P500 will be GONE
in the next decade



1. Hunter Gatherers – several million years



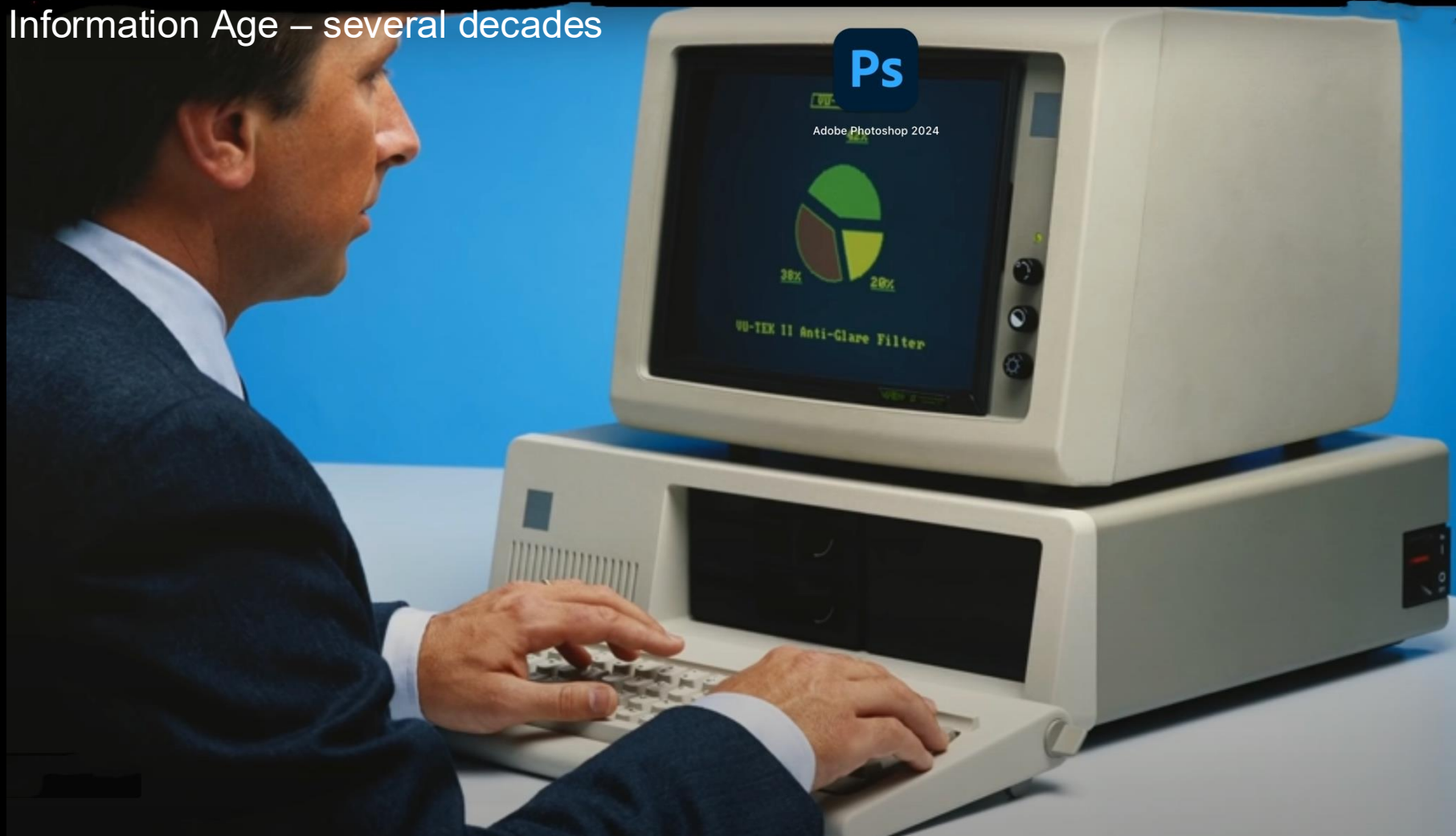
2. Agricultural age— several thousand years



3. Industrial Age – couple of centuries



4. Information Age – several decades



5. Augmentation Age – just emerging



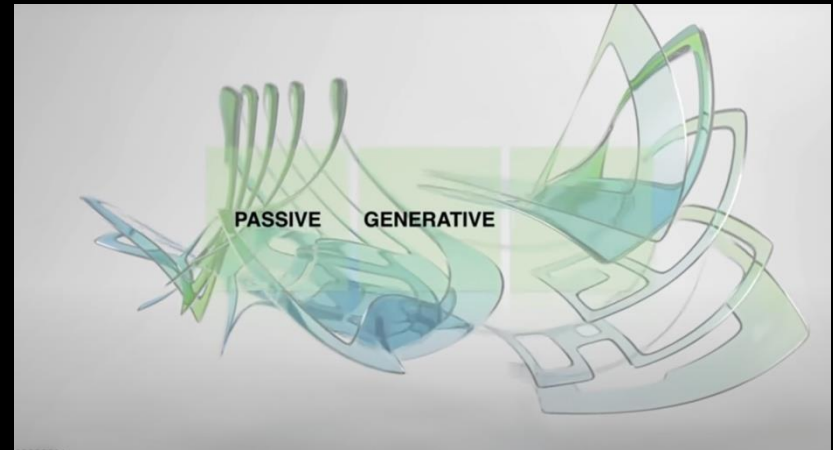
COGNITIVE AUGMENTATION

5. Augmentation Age – just emerging

Moving from PASSIVE TOOLS...



...to generative tools



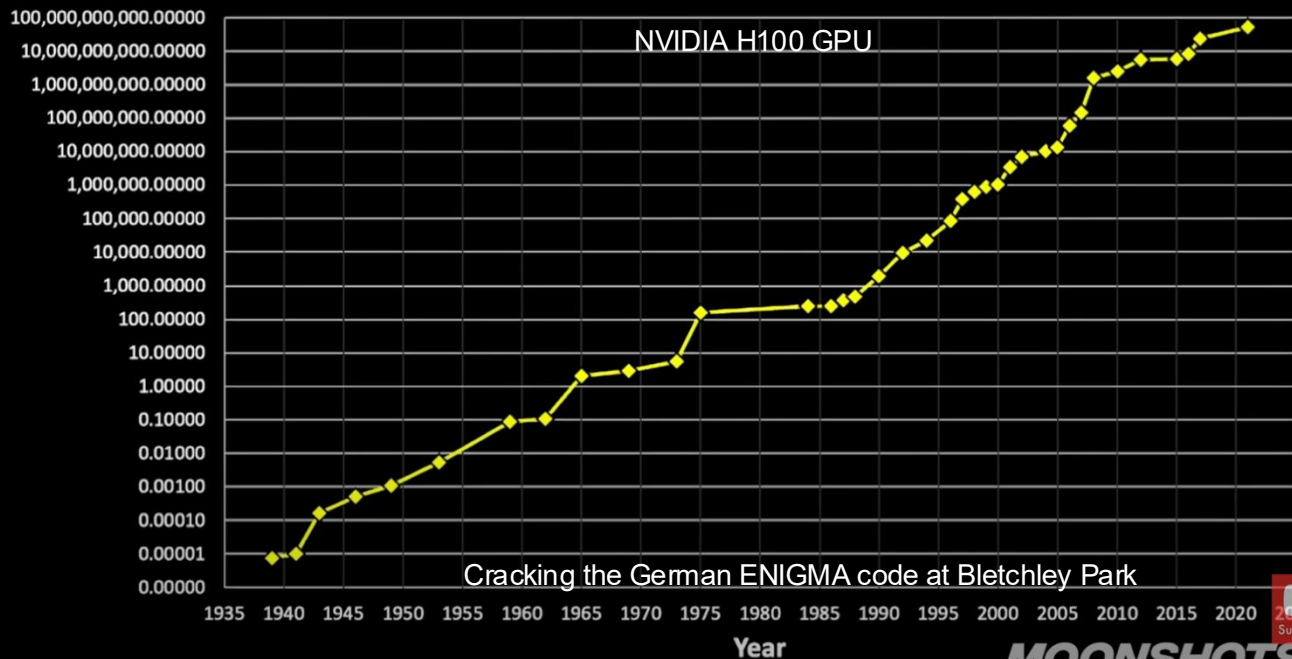


Not going to stop

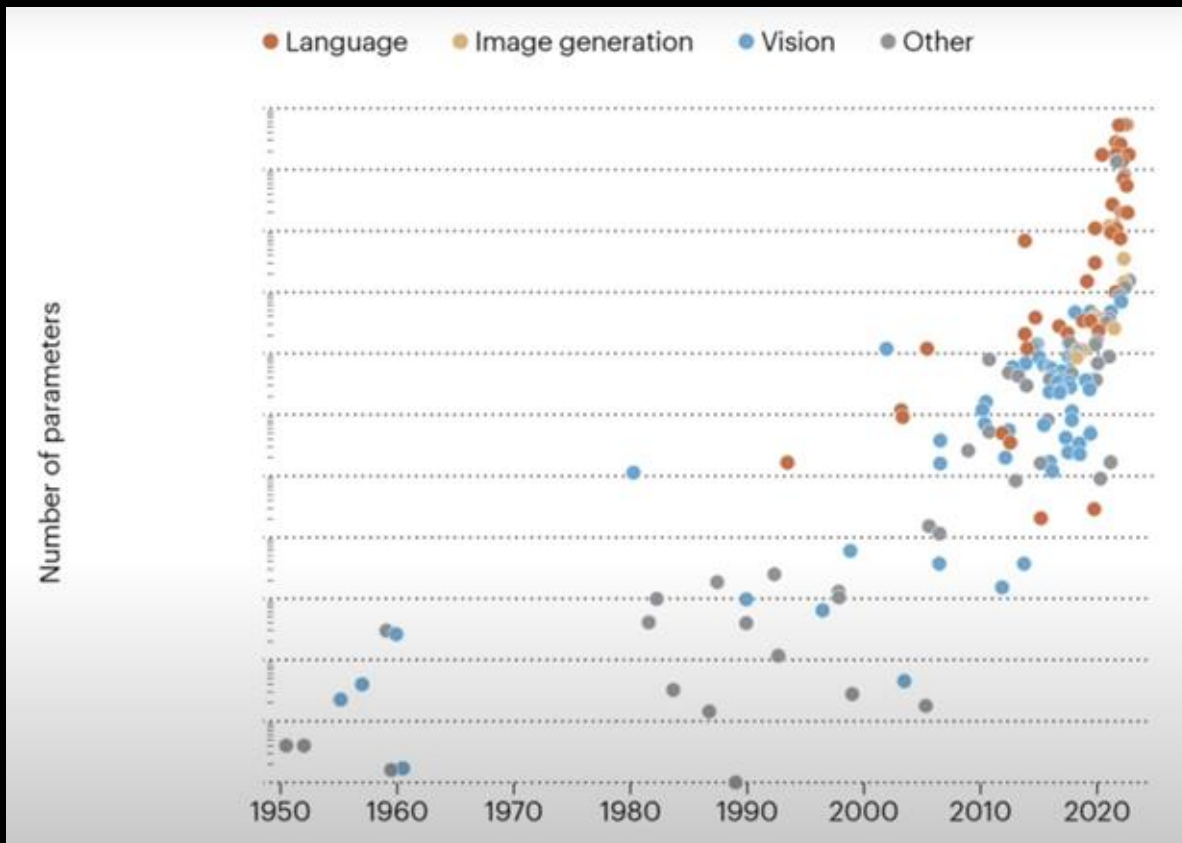
Ray Kurzweil on the exponential increase in Computing Power over the last 80 years

Price-Performance of Computation, 1939-2021

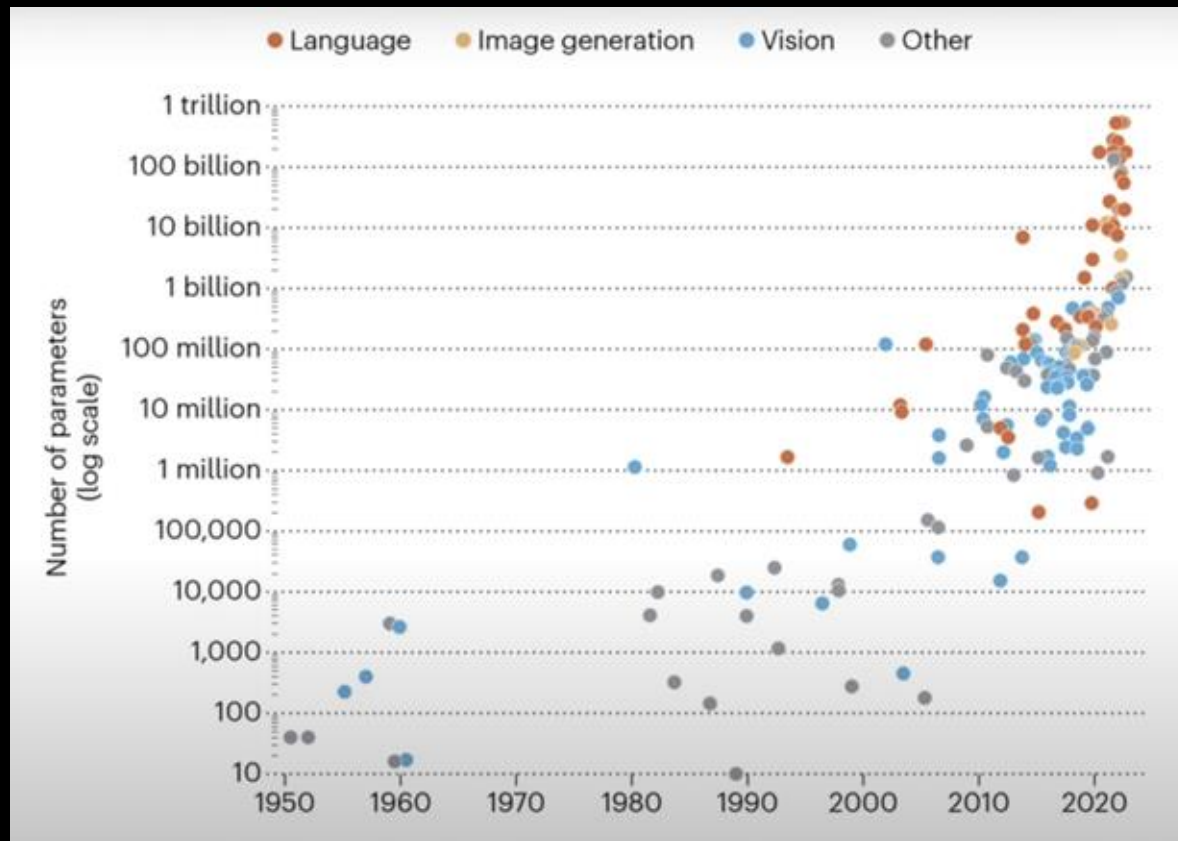
Best achieved price-performance in computations per second per constant dollar

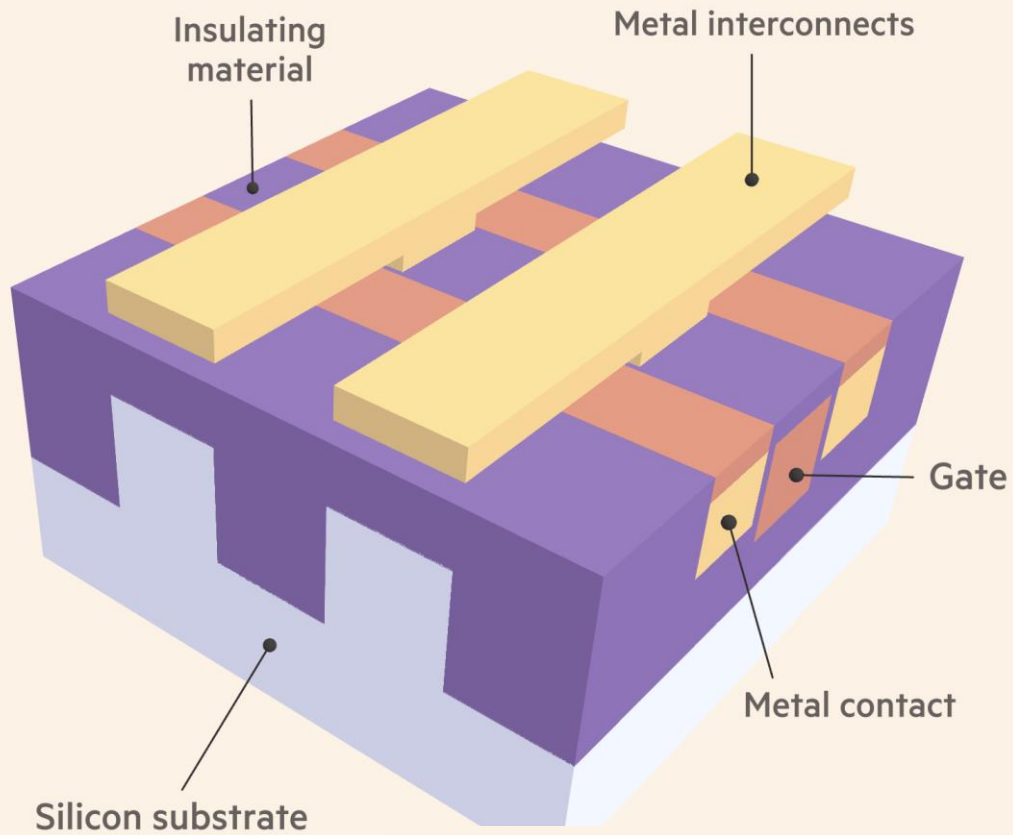


Exponential improvement



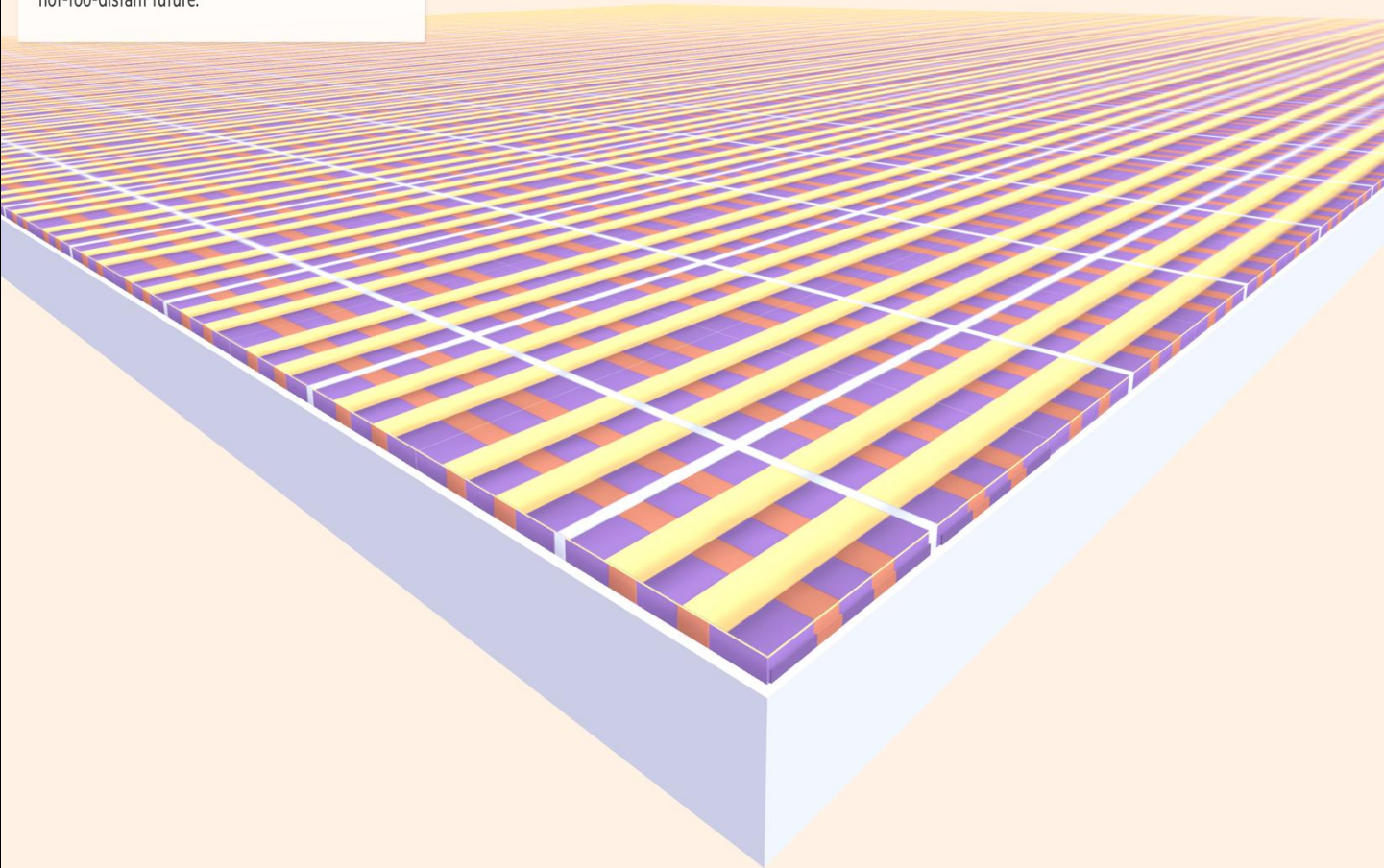
Exponential exponential improvement





Many advanced **transistors** are now built atom-by-atom. Some of the smallest are 50nm tall — and turn on and off billions of times a second.

Just one square millimetre can be home to 200 million transistors, with tens of billions across a chip. Manufacturers plan to cram in a trillion in the not-too-distant future.



Nicholas Kristoff
NY Times Aug 4/24

“...most revolutionary
technology since
Prometheus brought us
fire.”



For businesses this is in an extinction event



An unprecedented opportunity as we all start in the same place



“OPPORTUNITIES
don't happen.
You create them.”

Prompt: The Glenfinnan Viaduct is a historic railway bridge in Scotland, UK, that crosses over the west highland line between the towns of Mallaig and Fort William. It is a stunning sight as a steam train leaves the bridge



Prompt: Several giant woolly mammoths approach treading through a snowy meadow, their long woolly fur lightly blows in the wind as they walk, snow covered trees and dramatic snow-capped mountains in the



GET MOVING

ON

AI!



From openAI

ChatGPT V4.o

Artificial intelligence chatbot developed by OpenAI



Gemini

From Google

Claude

From Anthropic

perplexity

From Perplexity

ABUNDANCE SUMMIT 2024

Dr. Peter Diamandis
diamandis.com

Grok

From Elon Musk

Copilot

From Microsoft

DeepSeek
Into the unknown

From China

ChatGPT to DeepSeek: The Field at a Glance

Seven leading AI chat & answer engines compared on maker, model, strength, pricing, and best fit.

Engine	Maker	Flagship Model	Core Strength	Consumer Price	Best For
ChatGPT	OpenAI	GPT-5 family	Versatile all-rounder; image & video gen	\$20/mo Plus	General-purpose default
Claude	Anthropic	Opus 4.7	Writing, coding, long-document analysis	\$20/mo Pro	Professional & technical work
Gemini	Google	Gemini 3 Pro	1M-token context; native multimodal	\$19.99/mo	Google Workspace users
Copilot	Microsoft				
Perplexity	Perplexity				
Grok	xAI				
DeepSeek	DeepSeek				



AI OR DIE

AI

EMBRACE AI
EMBRACE AI TO
SURVIVE AND THRIVE



AI

AI



 <p>AI is a technology that can learn from data and perform tasks that would normally require human intelligence. It is used in a wide range of applications, from recommendation systems to self-driving cars.</p>	 <p>AI is a technology that can learn from data and perform tasks that would normally require human intelligence. It is used in a wide range of applications, from recommendation systems to self-driving cars.</p>	 <p>AI is a technology that can learn from data and perform tasks that would normally require human intelligence. It is used in a wide range of applications, from recommendation systems to self-driving cars.</p>
--	--	--





*"The single most important
release of software,
probably ever."*

— Jensen Huang

[Why OpenClaw Changes Everything](#)

Abundance 360

Baidu had 1,000 people attend a free install and use party





**CHINESE CITIES ARE OFFERING FREE
HOUSING, OFFICE SPACE, AND
UP TO \$720,000 IN SUBSIDIES FOR
STARTUPS BUILDING ON OPENCLAW**

The Way We Use AI Is About to Change

OLD

~~Ask Question~~ → ~~Get Answer~~

NEW

Give Goal → **Receive Result** → **Iterate**



*The shift isn't better answers.
It's AI that takes action — and keeps going.*

AI Today Is Missing Three Things

NO GROWTH

Doesn't learn from
its own work.

Doesn't build skills.
Doesn't get smarter.

Same capability on
day 1,000 as day 1.

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NO BODY

Can't use your computer.
Can't browse the web.
Can't send messages.

It can think, but
it can't do anything.

All brain, no hands.

All wrapped in apps nobody operates

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Can't browse the web.
Can't send messages.

It can think, but
it can't do anything.

All brain, no hands.

NO AGENCY

Never takes initiative.
Only responds when asked.

Doesn't monitor.
Doesn't scan.
Doesn't act.

Purely reactive.

All wrapped in apps nobody opens.

OpenClaw

Open source. Free. The missing piece.

Turns AI from a chatbot into an employee.

SELF-IMPROVING

Creates skills on the fly.
Updates its own knowledge.
Gets smarter every day.

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Gets smarter every day.

BODY

Uses your computer.
Browse, code, message,
manage files.

AGENCY

Works 24/7 autonomously.
Monitors, scans, acts
without being asked.

A Category Change

BEFORE

AI as Tool

You ask, it answers.
You prompt, it responds.
You close the tab.



AFTER

AI as Worker

It plans. It executes.
It monitors. It reports.
It works while you sleep.

This is not an incremental improvement. This is a category change.

How I Run It

My home office. 24/7.

MAC STUDIOS

2x Mac Studio

512GB RAM each

Local models for routine tasks

Cost: \$0 per query

Cloud models for complex reasoning. Only when needed.

DGX SPARK

NVIDIA DGX Spark

128GB unified memory

100 TFLOPS

Personal AI supercomputer

\$4,000 — on my desk

Runs heavy models locally with zero cloud dependency.

THE MODEL

Brain / Muscle Architecture

Brain: Premium AI orchestrates and delegates to specialists.

Muscle: Local models handle routine execution.

Same output. Fraction of cost.

Imagine This

A team that works **24/7**

Never calls in sick. Never takes a vacation.

Costs a

fraction of one salary.

Gets

better every week.

What To Do Today

01

Install OpenClaw

Free, open source, takes 5 minutes

02

Tell it about yourself

Your goals, your company, what you're trying to achieve

03

Ask how it can help

Let it propose ways to move you toward your goals

04

Do one single thing

Pick the best suggestion and let it run

05

Expand from there

Add more agents, more tasks, more autonomy

...AND your future as a Director ????

UAE's biggest company is adding an AI-powered observer backed by Microsoft to its board

BY [FARAH ELBAHRAWY](#) AND [BLOOMBERG](#)
February 27, 2024 at 5:36 AM EST



Abu Dhabi's International Holding Co. is adding an AI-powered observer to its board, a move that the \$238 billion firm said will help human board members make better strategic decisions.

GETTY IMAGES

Abu Dhabi-based International Holding Company (IHC) has created a new non-voting board observer position for an Artificial Intelligence (AI) Observer, named Aiden Insight. The strategic initiative highlights IHC as a pioneer in leveraging AI for corporate governance and decision-making.

Subscribe to one of :

The logo for CBINSIGHTS, featuring a stylized 'C' icon composed of blue and orange squares, followed by the text 'CBINSIGHTS' in a blue, sans-serif font.

CBINSIGHTS

The logo for PitchBook, featuring a stylized blue icon of a book or document, followed by the text 'PitchBook' in a blue, sans-serif font.

PitchBook

These guys are HUGE : Total market cap = ~US\$20 TRILLION



Jenson Huang



\$2.6 Trillion

These guys are HUGE : Total market cap = ~US\$20 TRILLION



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\$2.6 Trillion



Tim Cook



\$3.2 Trillion

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Satya Nadella



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\$2.7 Trillion

\$1.9 Trillion



Andy Jassy



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Andy Jassy

\$3.8 Trillion



Sundar Pichai

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Satya Nadella



\$2.7 Trillion

\$1.9 Trillion



Andy Jassy



\$3.8 Trillion



Sundar Pichai



\$1.5 Trillion



Mark Zuckerberg



These guys are HUGE : Total 2025 sales = ~US\$2 TRILLION



Jenson Huang



\$216 Billion



Tim Cook



\$416 Billion



Satya Nadella



\$282 Billion

\$717 Billion



\$100 Billion



\$200 Billion



Andy Jassy



Sundar Pichai



Mark Zuckerberg

These guys are HUGE : 2025 Free Cash Flow = ~US\$400 BILLION



Jenson Huang



\$97 bn



Tim Cook



\$99 bn



Satya Nadella



\$72 bn

\$11 bn



Andy Jassy

\$73 bn



Sundar Pichai

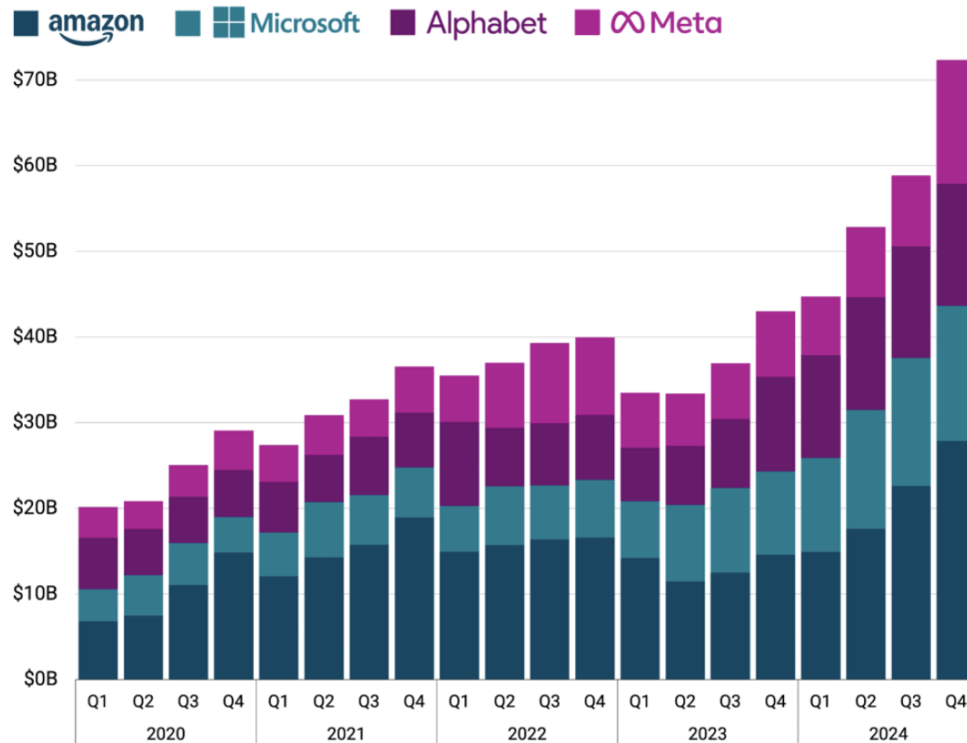
\$44 bn



Mark Zuckerberg

Big tech's AI-fueled spending spree

Combined capital expenditures per calendar quarter

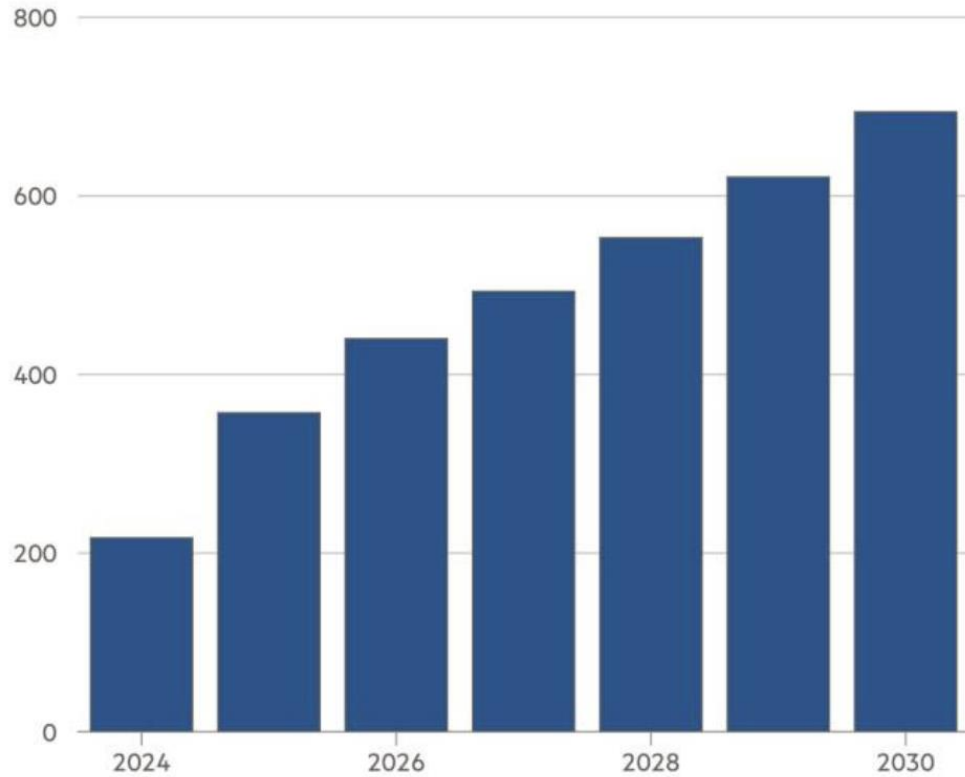


Source: Company filings via CB Insights. Note: Reflects purchases of property and equipment.

SCALE

Hyperactive

Forecast capital expenditure by AI 'hyperscalers' (\$bn)



©FT Source: BNP Paribas • Includes Google, Meta Platforms, Amazon and Microsoft

FORTUNE

**Inside the \$22 trillion
world of private capital, an
asset class so big it would
be the world's second-
largest economy**



BY NICK LICHTENBERG
BUSINESS EDITOR



October 26, 2025 at 9:00 AM EDT



LANCIUM

LANCIUM CLEAN CAMPUS | ABILENE, TEXAS | MARCH 2025



Amazon's new facility will consume 2.2 gigawatts of power and a million gallons of water



Meta, which owns Facebook, Instagram and WhatsApp, is building a 2-gigawatt data center in Louisiana. OpenAI is erecting a 1.2-gigawatt facility in Texas and another, nearly as large, in the United Arab Emirates.



Oracle has signed a 15-year lease for a 2GW data centre in Abilene, Texas, from which it will partly provide OpenAI with 4.5GW of computing power © OpenAI

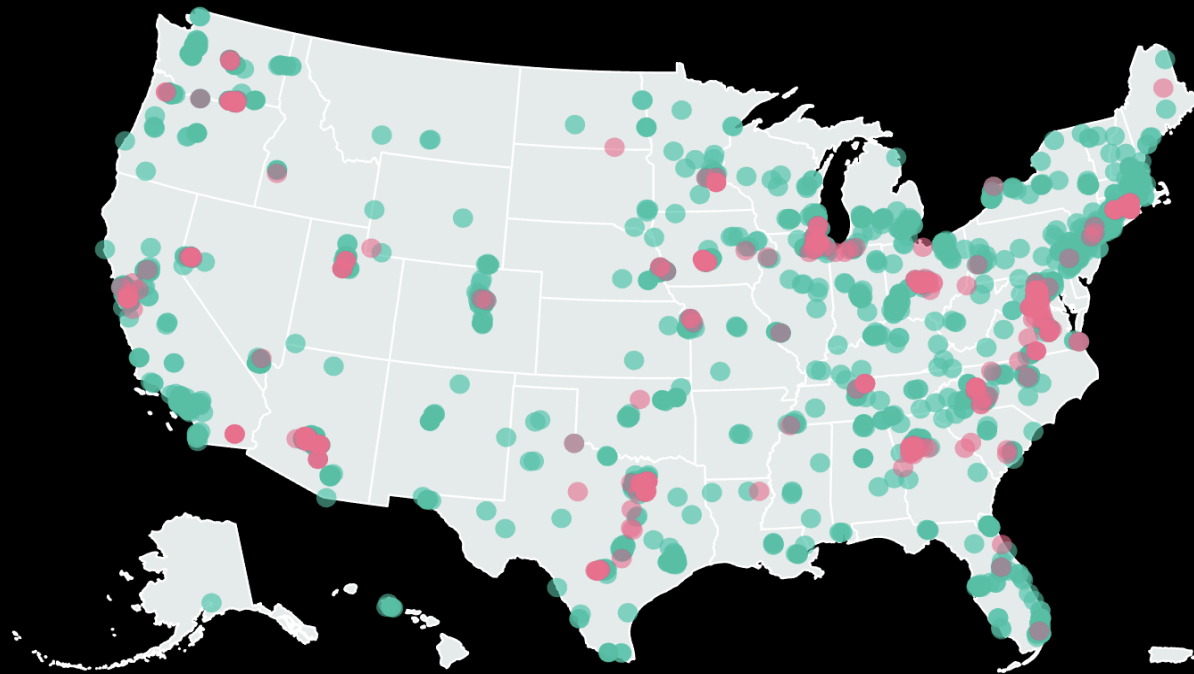
Meta's \$72bn Prometheus data center near Columbus, Ohio



Locations of data centers in the United States

Hundreds of new data center projects are being developed across the country.

Operational Planned*



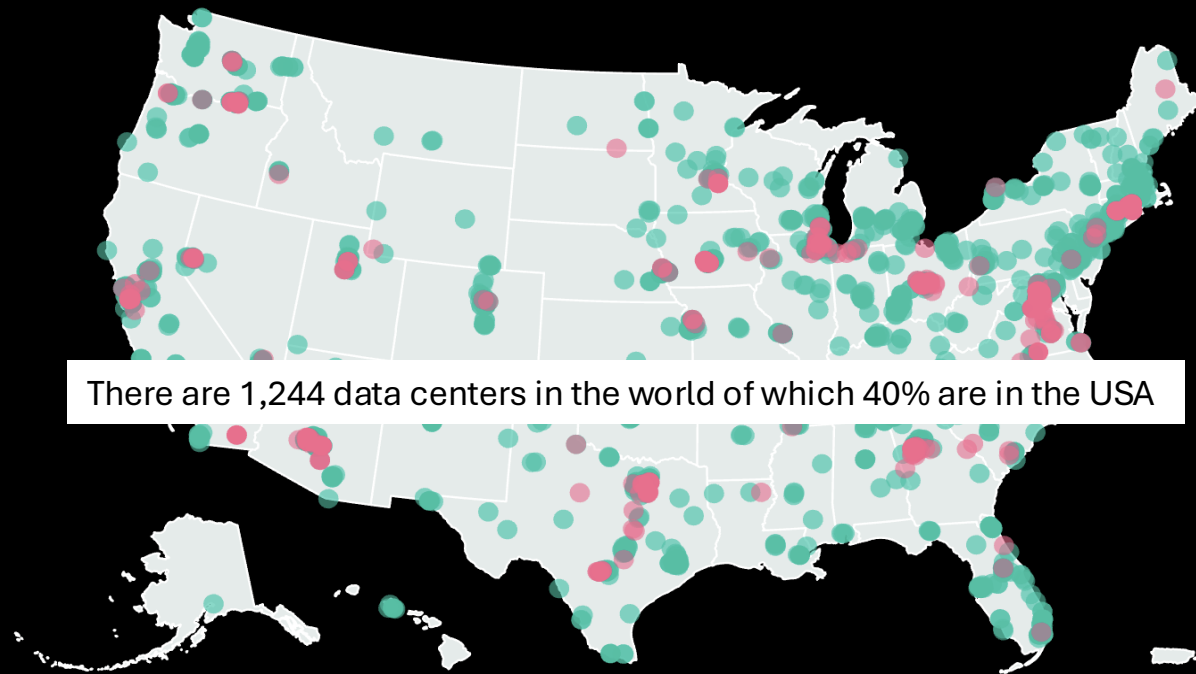
Source: [U.S. Census Bureau, Data Center Map](#) *

*Includes sites which are land-banked, under construction, or in other stages of planning.

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There are 1,244 data centers in the world of which 40% are in the USA

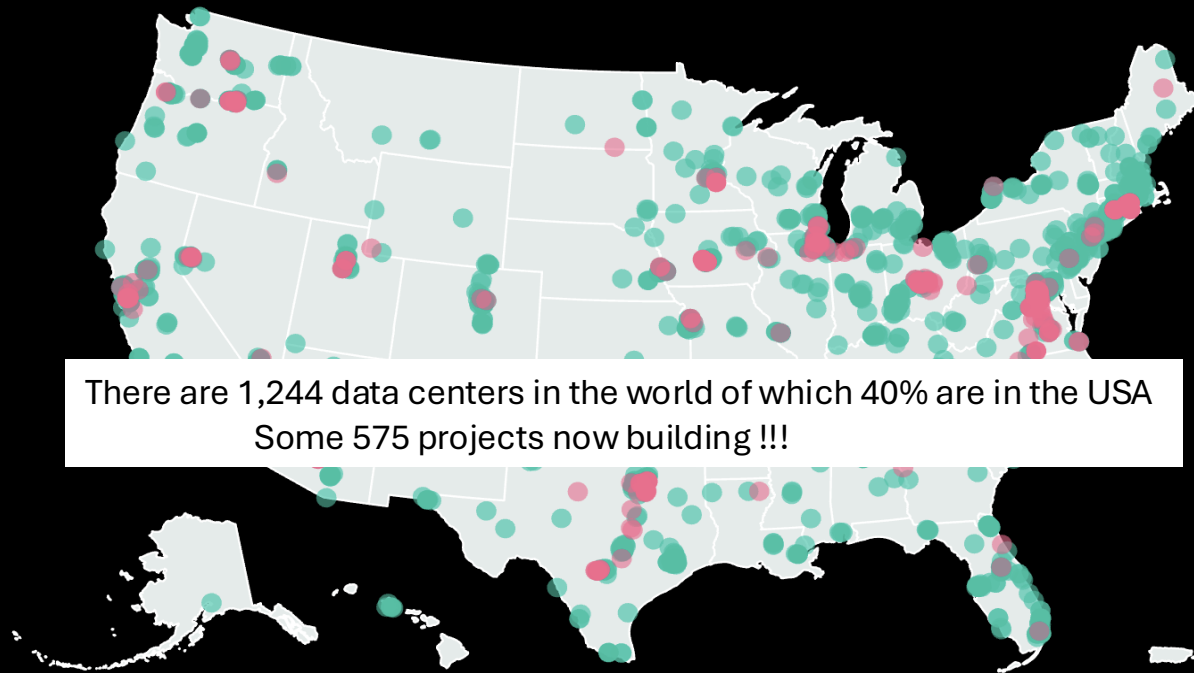
Source: [U.S. Census Bureau, Data Center Map](#) *

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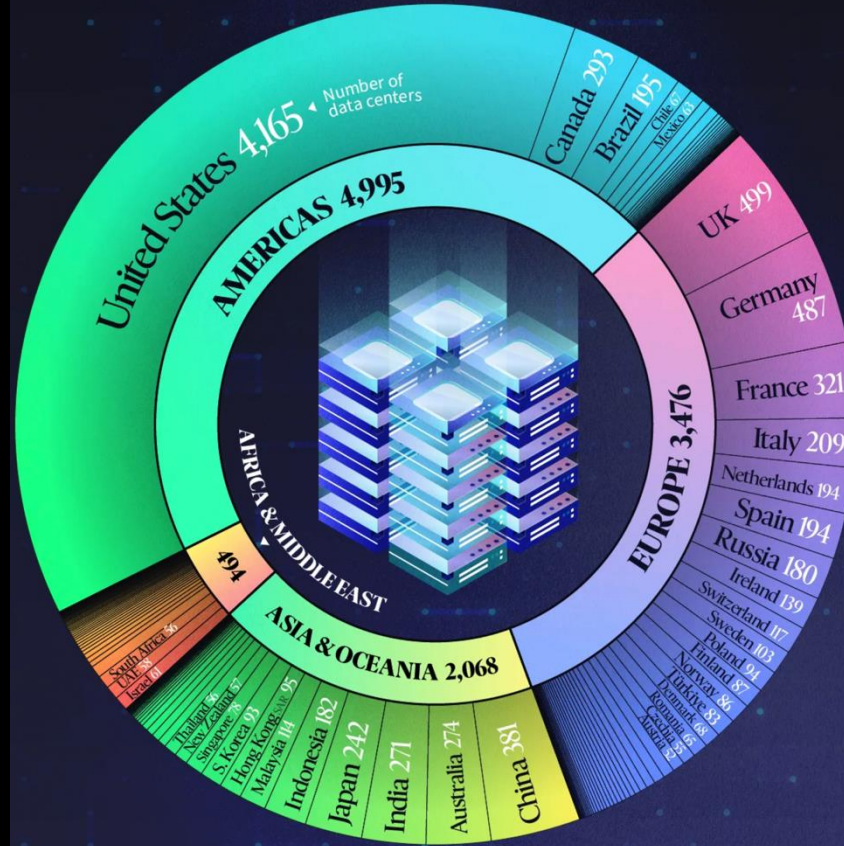
There are 1,244 data centers in the world of which 40% are in the USA
Some 575 projects now building !!!

Source: [U.S. Census Bureau, Data Center Map](#) *

*Includes sites which are land-banked, under construction, or in other stages of planning.

The World's Data Centers

As of November 2025



Source: Statista

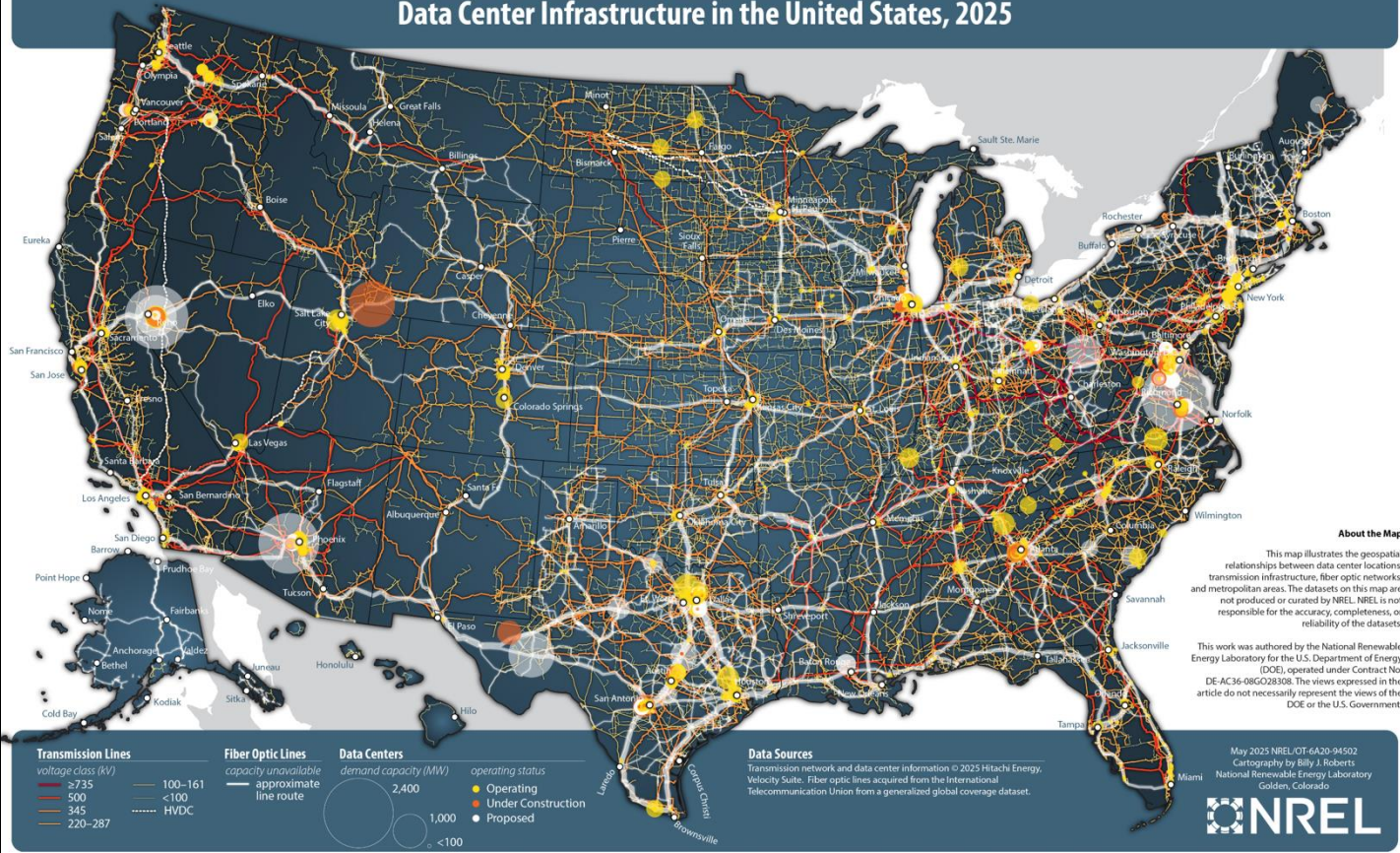


Where Data Tells the Story

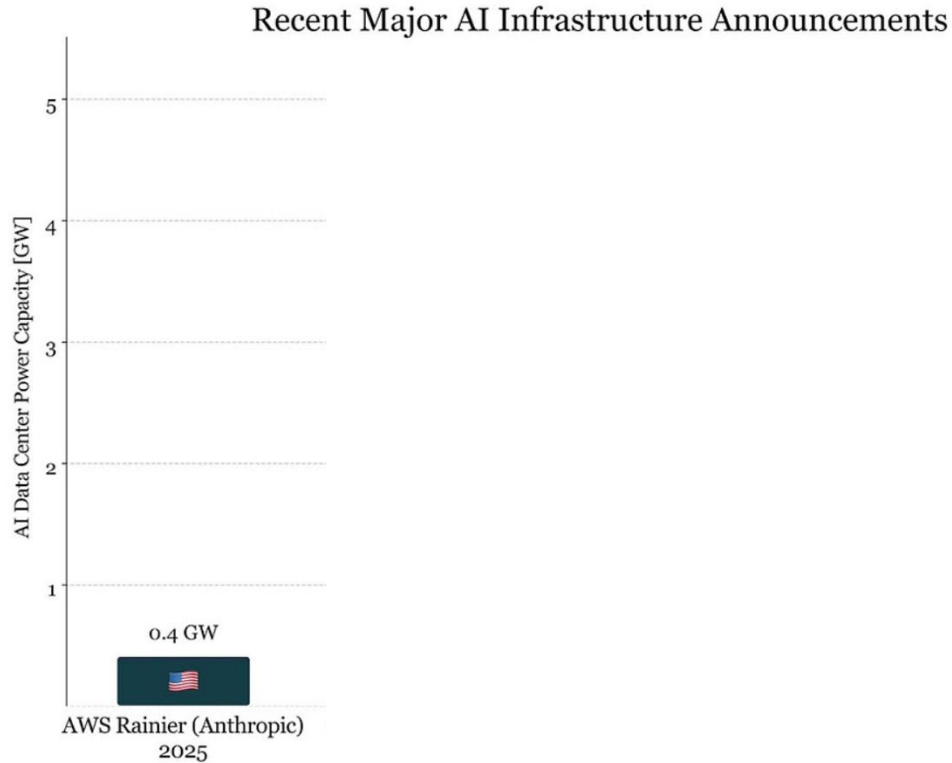


Big AND complex

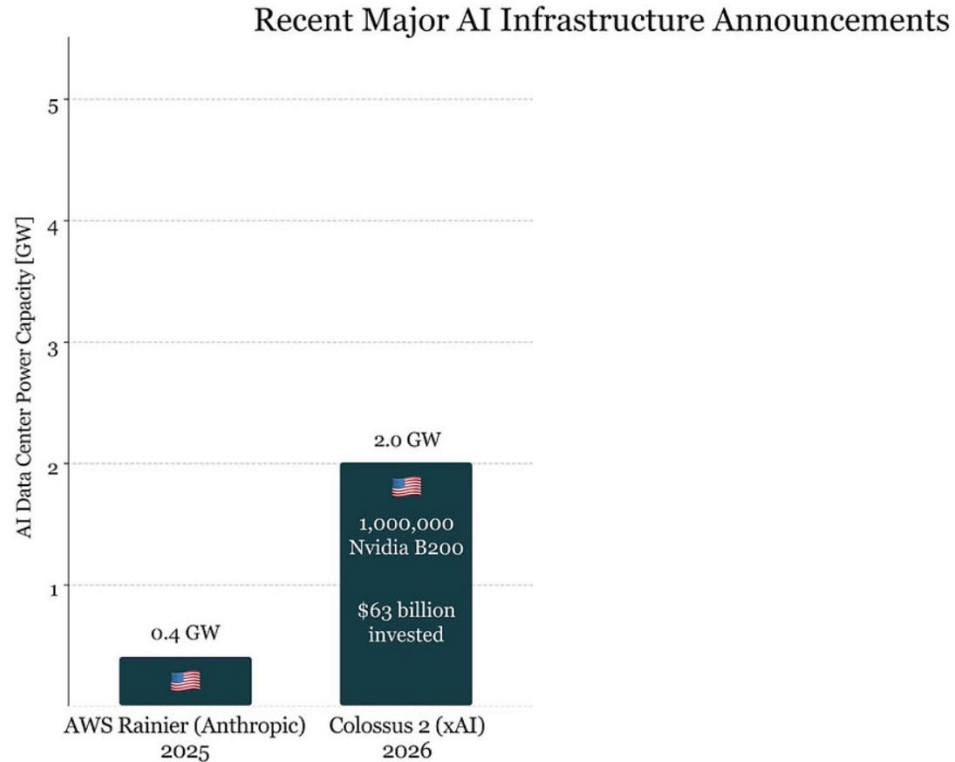
Data Center Infrastructure in the United States, 2025



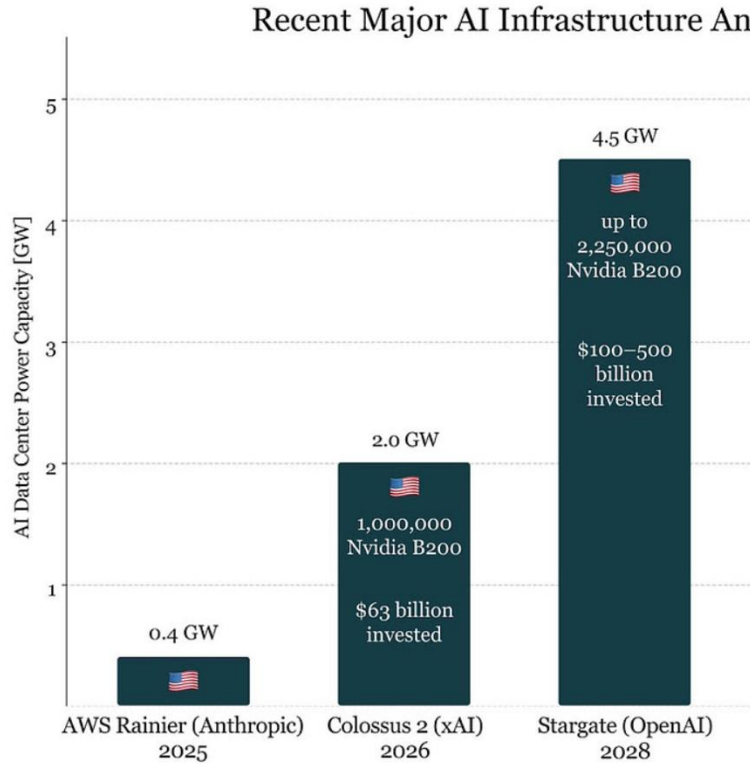
The UAE is turning its optimism into a physical footprint: building the largest AI datacenter on Earth, a five-gigawatt campus that dwarfs every other announced project.



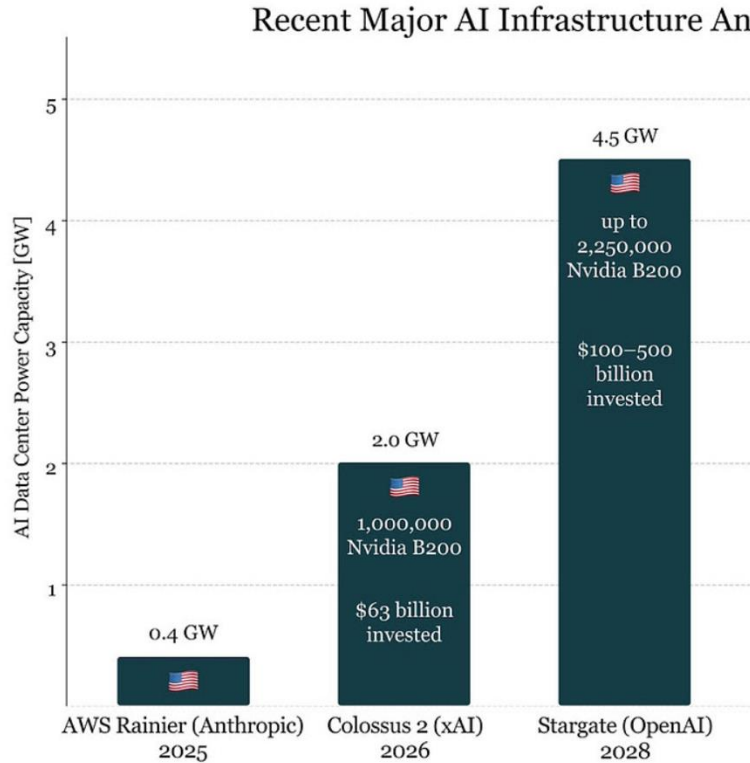
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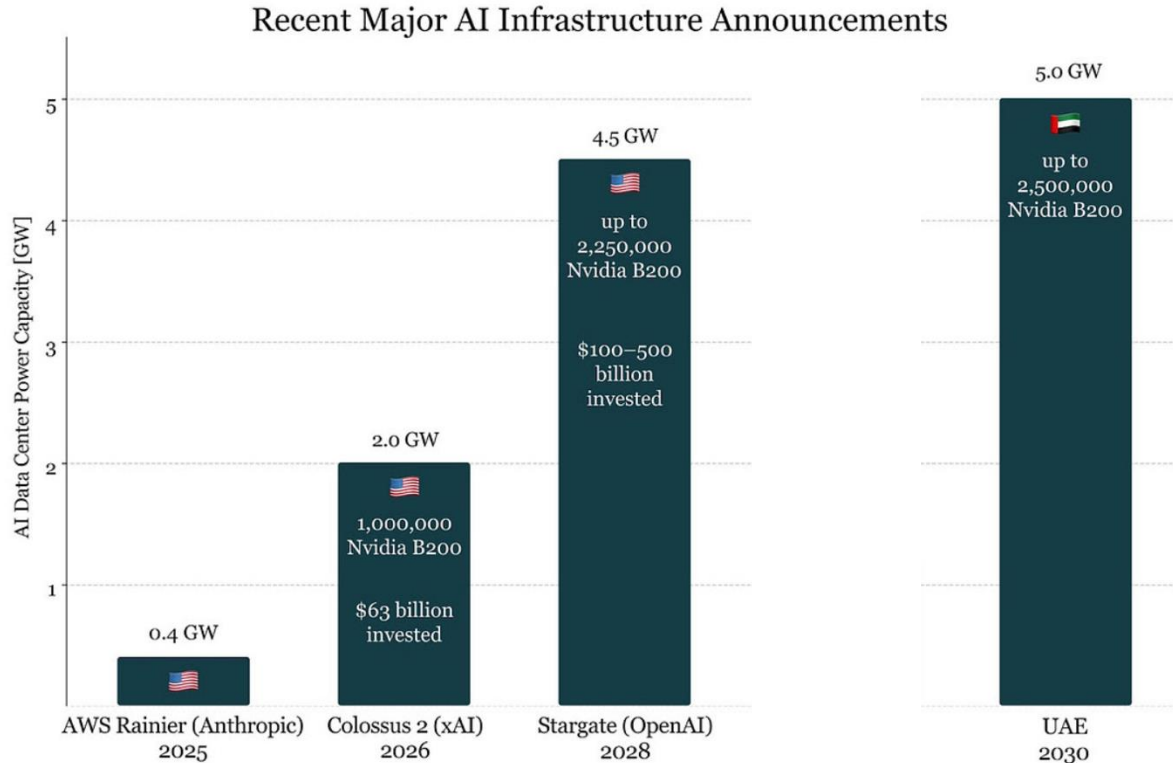
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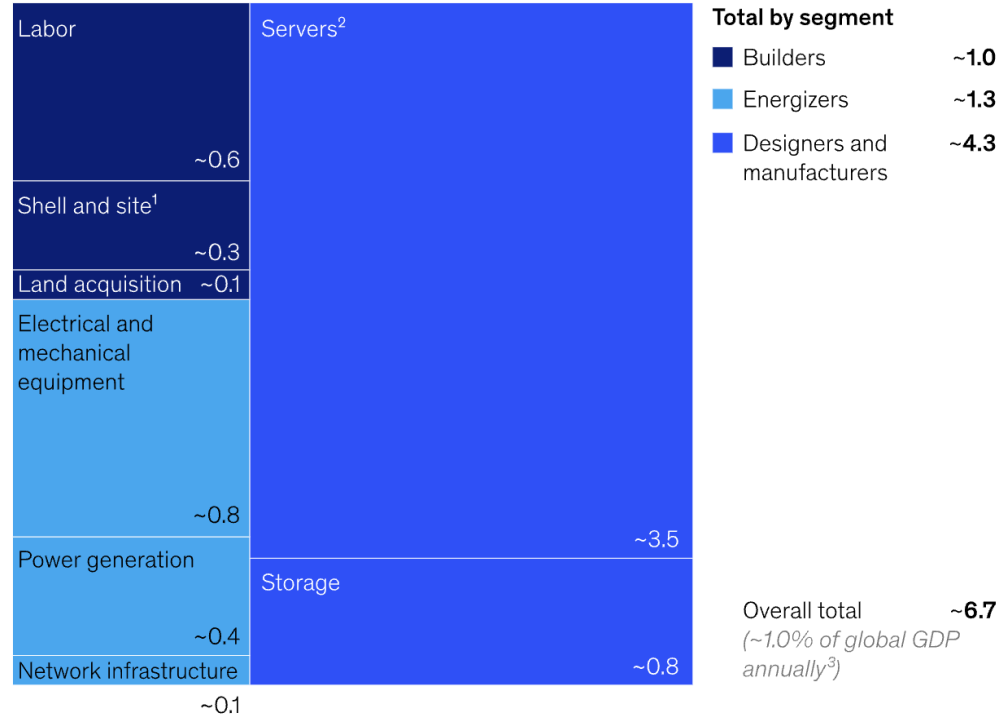


The UAE is turning its optimism into a physical footprint: building the largest AI datacenter on Earth, a five-gigawatt campus that dwarfs every other announced project.



\$6.7 trillion of capital expenditure will be cumulatively deployed for data center infrastructure through 2030.

Global distribution of capital investments across data center value chain, by segment, 2025–30, \$ trillion



¹Includes mechanical, electrical, and plumbing.

²Including graphics processing units and central processing units.

³Global GDP in 2023: \$106 trillion.

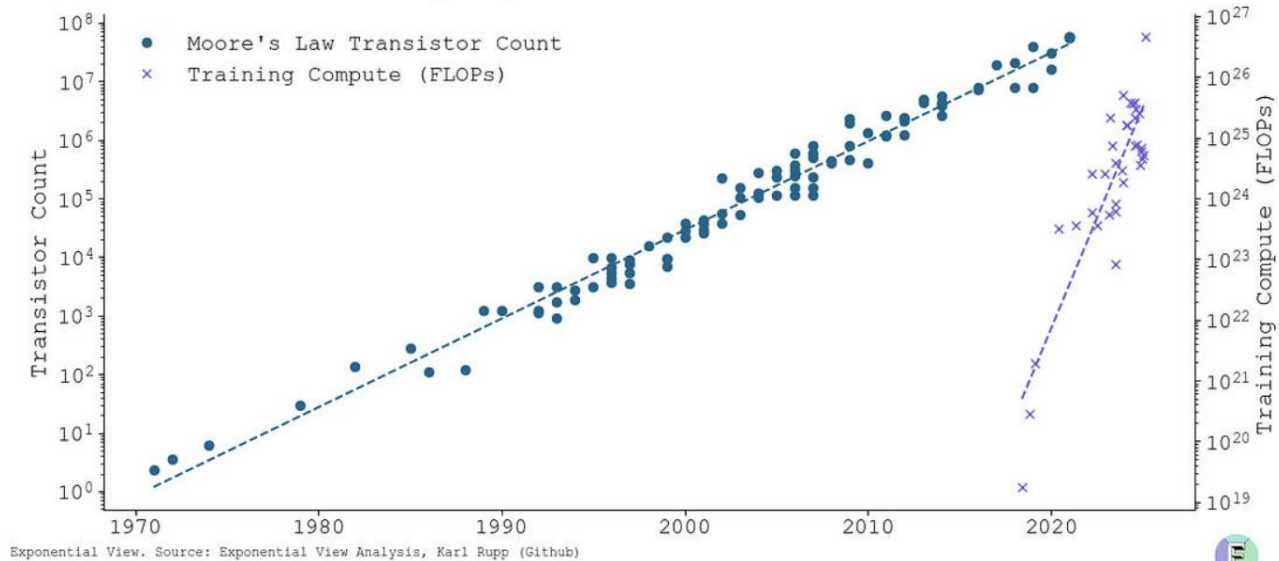
Source: Goldman Sachs; S&P Capital IQ; McKinsey analysis

Training times using the H100 chips halving every 5 months

Moore's law was a double every 18 months

Training compute used is increasing faster than Moore's Law

Moore's Law vs. Training Compute



...and the chips keep getting better and better – 2.5 times

Nvidia H100

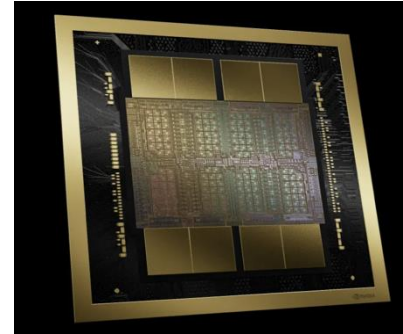


80 billion transistors

2 years



Nvidia B200



208 billion transistors

2,000-fold increase in compute availability by 2030

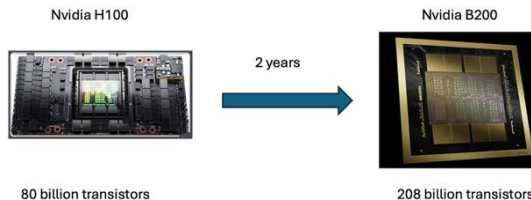
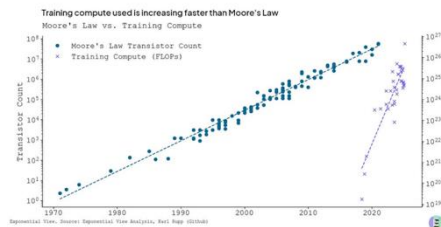
Raw compute power growing rapidly

X

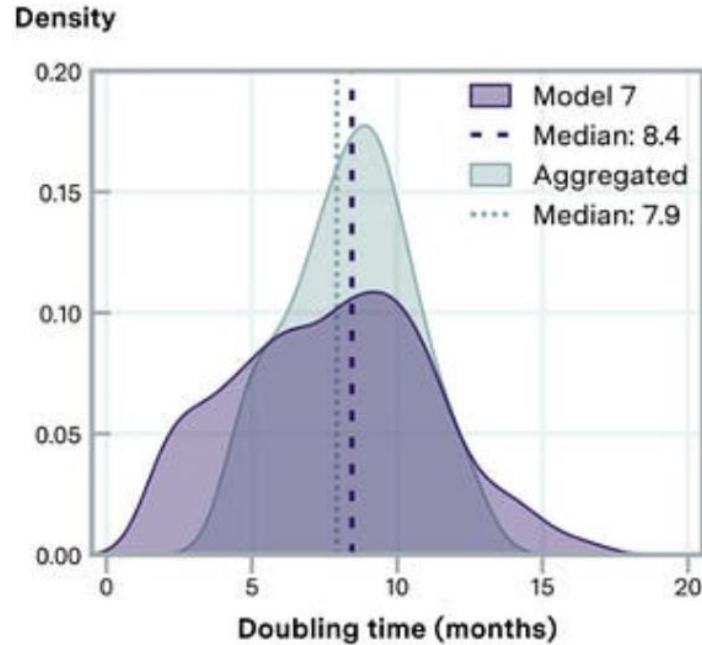
Training time halves every 5 months

X

Chips doubling in capacity every 2 years



AND, at the same time, efficiency in the ALGORITHMIC WORLD is enormous:
Doubling efficiency every 8 months

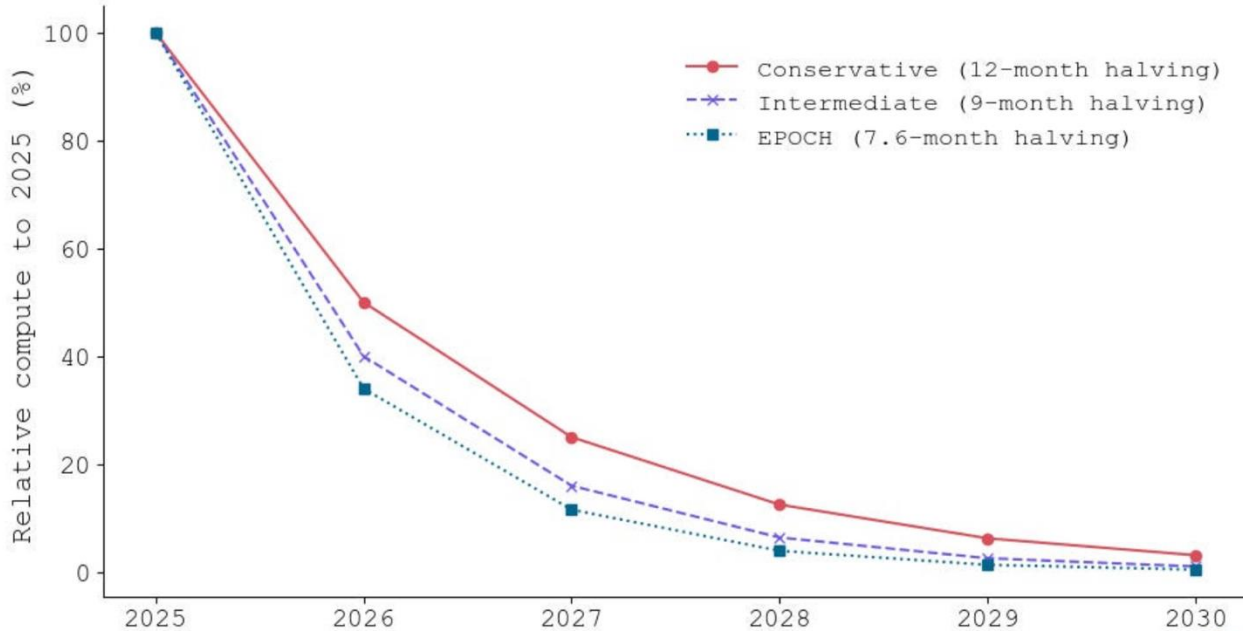


Just as Moore's Law did not rely on a single set of optimisations, AI efficiencies are improving because of a portfolio of approaches, such as sparsification, low-precision arithmetic and model distillation.

Putting these improvements in a forward-looking estimate....

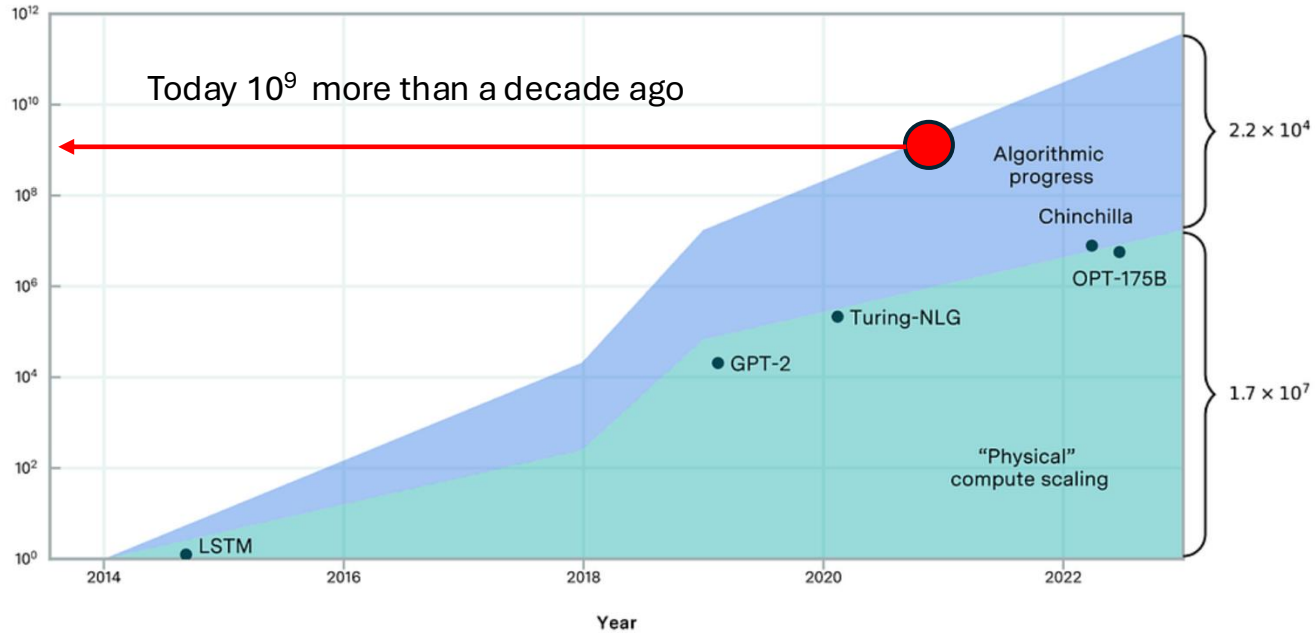
Algorithmic efficiency could improve by 30–240x in five years

Projected reductions in compute required under different scenarios



PHYSICAL and ALGORITHMIC progress combined yield incredible results

Effective compute (Relative to 2014)



That's a BILLION times better than 10 years ago – a BILLION !

THE NEW ENGINE OF CIVILIZATION (THE AI ERA)



**SUNLIGHT /
FUSION**



ELECTRICITY



COMPUTE
(Data Centers & GPUs)



AI & ROBOTS
(Intelligence &
Automation)



VALUE
(Innovation, Solutions,
Wisdom)

THE KEY CONTRAST:

We don't feed energy
into stomachs anymore.
We feed it into GPUs.

THE MOST IMPORTANT SHIFT (THE A-HA!):

For most of human history, intelligence was scarce.
Today, we feed watts into a data center...
and out comes a token — a unit of thought.
We are, quite literally, turning watts into wisdom.

Use AI as your THINKING PARTNER

F PROFILE

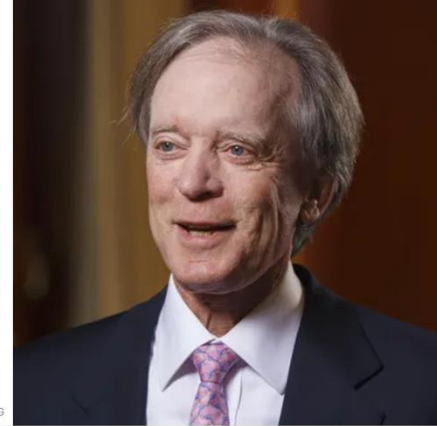
Bill Gross

Cofounder And Co-Chief Investment Officer, Pacific Investment Management Company LLC

\$2B Real Time Net Worth
as of 4/11/26
#2063 in the world today



PHOTO BY PATRICK T. FALLON/BLOOMBERG

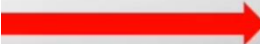


F From the Editor

Last Updated Mar 10, 2026, 1:01am EDT

- Bill Gross cofounded PIMCO, an investment management firm, in 1971 and became known as a superstar bond fund manager.

What shocked me wasn't what AI did,

 **it was how close I came
to forgetting to use it.**



Why does prompting matter so much?

- You are talking to a brain that has digested much of human knowledge
- **You need to give it direction**



Help me think.



Help me think this through without telling me what to do

Sometimes the most valuable help is *not* an answer, but a process of thought

This prompt often surprised me because it reframes AI as a thinking partner, not an advice machine

What am I missing?

2

What am I likely misunderstanding about this?

This prompt is great because people (me included) rarely ask AI to challenge them.

Most of us ask AI to confirm what we already think. This prompt that breaks that habit and flips the relationship from “assistant” to “intellectual mirror” and can be very helpful.

3

Give me 3 unconventional solutions to this problem.

AI usually provides obvious answers —
this command makes it think outside the box. →
Perfect for brainstorming and innovation.

The “blank line” prompt, a sentence with one thing missing. Credit: Amanda Caswell

4

I’m putting together a cozy gift basket with a candle, mug, tea and _____

The moment I stepped off the plane, I knew this trip would change everything because _____

One idea no one’s thought of yet for solving this problem is _____

This prompt is unusual because it feels more like a thought you didn’t finish, but that’s exactly why it works so well!

5

Ask me 5 clarifying questions before answering.

Forces your AI to deeply understand your request before responding. → Useful for business strategy, problem-solving, and development.

6

Give Gemini, Claude & ChatGPT the same task and have them argue

Have each one critique the others. You'll quickly surface gaps in your framing, assumptions you didn't realize you were making, and higher quality bars than you expected.

7

What would I do if I had 50 people working on this?

I currently [describe your task/process]. Walk me through what this would look like if I had a team of 50 people dedicated to doing this comprehensively and systematically.

What would each role focus on?

What would the ideal output look like?

Then help me identify which parts of that hypothetical team's work could be automated or assisted by AI tools.



Write two internal memos dated 18 months from now

Memo A: we won big because we embraced AI early

Memo B: we lost because we didn't

Make each memo painfully specific: decisions, what we stopped doing, etc.

Then extract the 7 decisions that differ

This converts futurism into concrete decisions, surfaces success/failure

9

Simulate a board meeting with 5 persona: CFO, CTO, Head of Sales Customer and competitor

Have them all disagree.

End with the strongest no, the strongest yes, and the smallest 7-day test what would resolve the debate.

This forces conflict and reveals assumption and weak logic.
Give you both the pitch and the red-team critique

10

Generate 5 solutions to [problem x] each with a stricter constraint than the last:

- 1) No new budget
 - 2) No new people
 - 3) Must ship in 72 hours
 - 4) Must be 5x cheaper
 - 5) Must work even if our core assumption is wrong
- And after each, explain the new principle it relies on.

Summary: Great Prompting is like ***Programming Attention***

Great Prompts

- **Intent** – what outcome do you want
- **Constraints** – what must be true
- **Definition of done** – what does good look like
- **Challenges** – find blind spots
- **Synthesizes** – scorecards, tradeoffs
- **Clarify** – asks for clarification

Bad Prompts

- **Vague** – write me something about...
- **No constraints** – audience, tone, format, length, etc.
- **No example of good** – rubric, examples, tests
- **No iteration or critique loop**

A simple two-line fix (prompt strengthener)

- Add these two lines to almost any prompt:

1) Constraints: [format, audience, tone, budget/time, risks]
2) Definition of done: [rubric + example + tests]

Everything improves because you've told the model what to pay attention to.

Learn - how it works

The screenshot shows the Coursera interface for the course 'Prompt Engineering for ChatGPT'. At the top, there is a navigation bar with the Coursera logo, an 'Explore' dropdown, a search bar with the placeholder text 'What do you want to learn?', and links for 'Online Degrees', 'Find your New Career', 'English', and a user profile for 'Nicolas Darveau...'. Below the navigation bar, a breadcrumb trail reads 'Browse > Data Science > Machine Learning'. The main content area features the Vanderbilt University logo and the course title 'Prompt Engineering for ChatGPT'. A sub-header indicates the course is part of the 'Prompt Engineering Specialization'. Below this, there is a note about the course being taught in English with 22 languages available for translation. The instructor is identified as 'Dr. Jules White', a 'Top Instructor'. A blue 'Go To Course' button is present, with text indicating the user is 'Already enrolled' and 'Financial aid available'. At the bottom left, it states '228,396 already enrolled'. On the right side, a white box highlights key course details: 'Course' (Gain insight into a topic and learn the fundamentals), '4.8 ★ (2,204 reviews) | 98%' rating, 'Beginner level' (Recommended experience), '18 hours (approximately)', and 'Flexible schedule' (Learn at your own pace). A 'View course modules' link is at the bottom of this box.

coursera Explore Online Degrees Find your New Career English Nicolas Darveau...

Browse > Data Science > Machine Learning

VANDERBILT UNIVERSITY

Prompt Engineering for ChatGPT

This course is part of [Prompt Engineering Specialization](#)

Taught in English | [22 languages available](#) | Some content may not be translated

Instructor: [Dr. Jules White](#)
Top Instructor

Go To Course Already enrolled
Financial aid available

228,396 already enrolled

Course
Gain insight into a topic and learn the fundamentals

4.8 ★ (2,204 reviews) | 98%

Beginner level
Recommended experience ⓘ

18 hours (approximately)

Flexible schedule
Learn at your own pace

[View course modules](#)

GEOTAB®

Telematics world #1
5 million vehicles on road NOW !

Boost fleet efficiency with next-gen telematics

Track driver behavior, fuel consumption, and more, in real time. Auto-detect fastest routes.
Get AI-powered fleet insights. Increase safety and reduce costs.

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Neil Cawse, founder and owner

Favorite thing to do ?

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Neil Cawse, founder and owner

Favorite thing to do ? PROGRAMMING

GEOTAB®

Telematics world #1
5 million vehicles on road NOW !

Neil Cawse, founder and owner



Took ChatGPT as a starting LLM

GEOTAB®

Telematics world #1
5 million vehicles on road NOW !

Neil Cawse, founder and owner



Took ChatGPT as a starting LLM
Google built firewalls around the whole LLM

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Took ChatGPT as a starting LLM
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Added the entire GEOTAB financial history

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THEN

GEOTAB®

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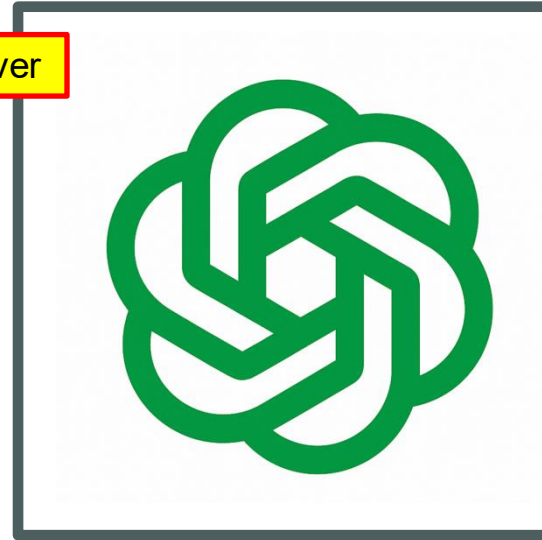
THEN: asked it for a 3 year plan !

GEOTAB®

Telematics world #1
5 million vehicles on road NOW !

His Board said it was his BEST plan ever

Neil Cawse, founder and owner



Took ChatGPT as a starting LLM
Google built firewalls around the whole LLM
Added the entire GEOTAB financial history

THEN: asked it for a 3 year plan !

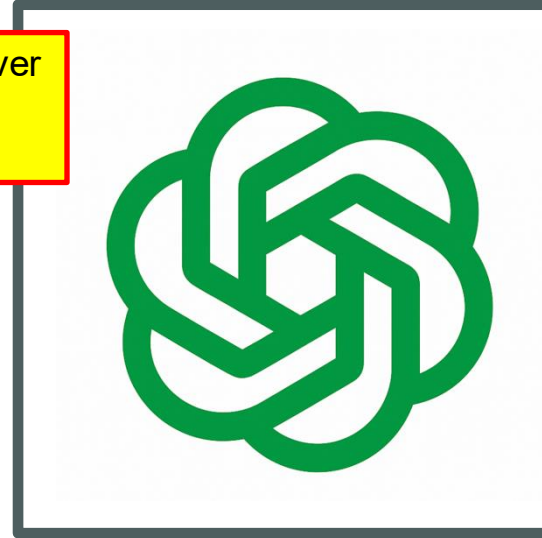
GEOTAB®

Telematics world #1
5 million vehicles on road NOW !

His Board said it was his BEST plan ever

Neil has a “mentor” now

Neil Cawse, founder and owner



Took ChatGPT as a starting LLM
Google built firewalls around the whole LLM
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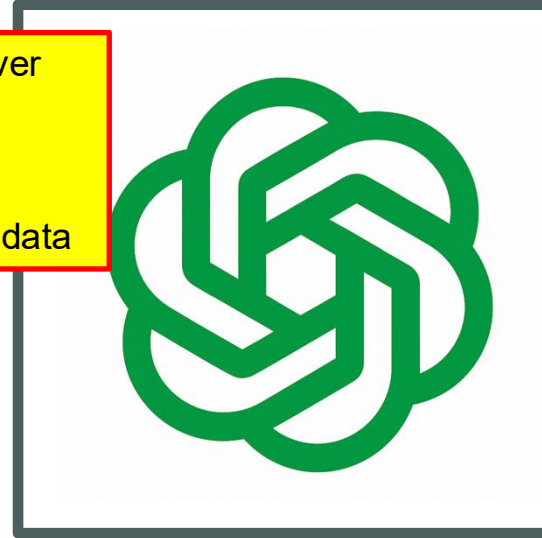
Telematics world #1
5 million vehicles on road NOW !

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Neil has a “mentor” now

His Board can “play” with all the same data

Neil Cawse, founder and owner



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THEN: asked it for a 3 year plan !

The “line in the sand” will now be completely blurred

Management

Board

NIFO - gone



Will ChatGPT Become CEO Of OpenAI?

Sam Altman's succession plan: turning the company over to AI.

“If AI becomes advanced enough to run companies, he asks, why not his own?”

‘I should be the most willing to do that.’



AI'S ALCHEMIST

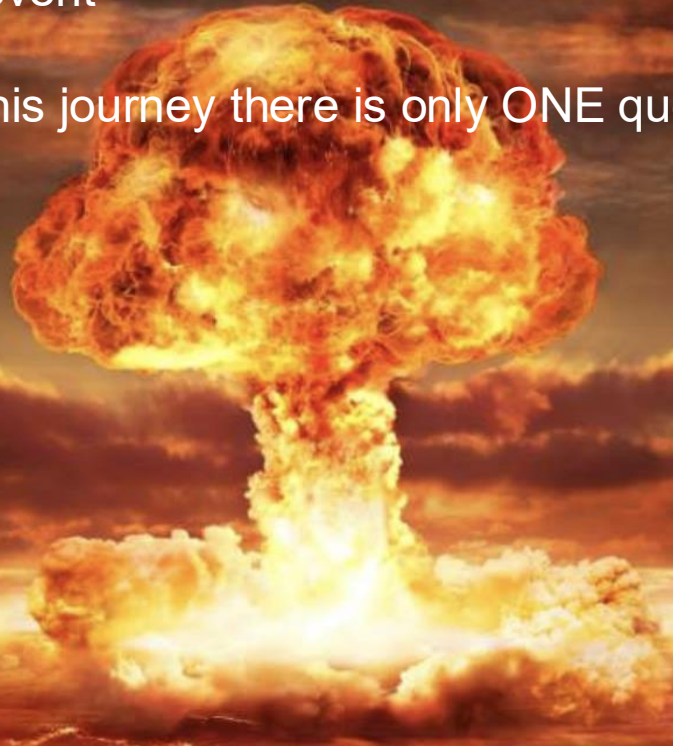
OPENAI COFOUNDER SAM ALTMAN TRANSFORMED THE ECONOMY WITH HIS \$500 BILLION CHATGPT BEHEMOTH. NOW THE NEW FATHER IS BUILDING THE FUTURE HIS KIDS WILL HAVE TO LIVE IN. OH YEAH, AND THE REST OF US, TOO.

We are ALL in an extinction event



We are all in an extinction event

If you don't get started on this journey there is only ONE question left to answer



Where do you want to be buried ?

Teşekkür ederim

