

The AI Moment: Responsible AI at Microsoft

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www.microsoft.com/ai



AI isn't just another piece of technology. It could be one of the **most fundamental** pieces of technology the human race has ever created.

Satya Nadella

The Promise of Artificial Intelligence



Education



Healthcare



Transportation



Agriculture

So what has changed?
Why all the buzz?

The New York Times

THE SHIFT

The Brilliance and Weirdness of ChatGPT

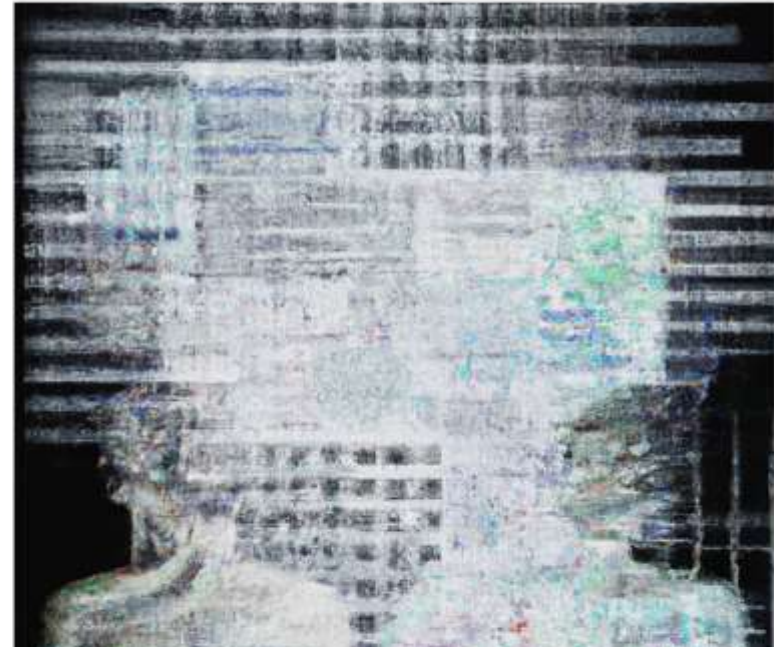
A new chatbot from OpenAI is inspiring awe, fear, stunts and attempts to circumvent its guardrails.



Share full article



422





What is AI?



Machine Learning



The cost of data collection and storage
have decreased over time.

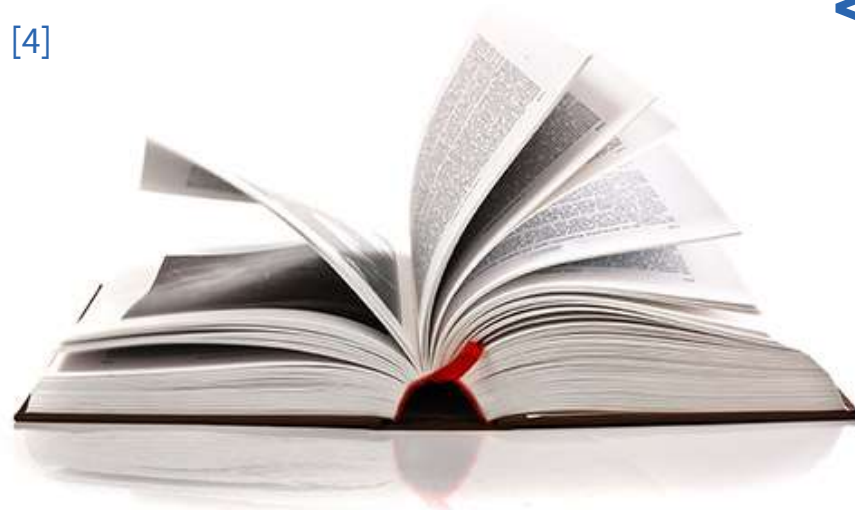
Cost of storing every book ever written

1987

> US 1 billion ^[4]

2023

< US \$1,000



130 million books ^[5]

[4] A history of storage cost, Matthew Komorowski, 2009

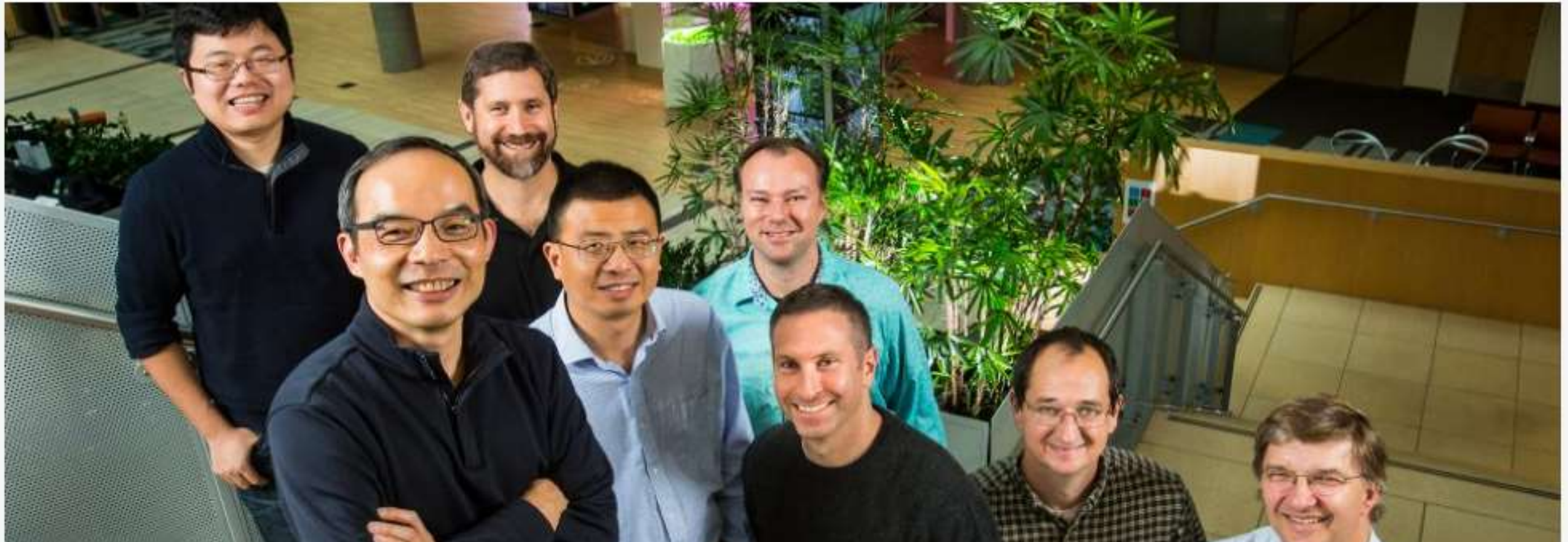
[5] There Are 130 Million Books in the World, How Many Have You Read?, 2009 by WALLACE YOVETICH

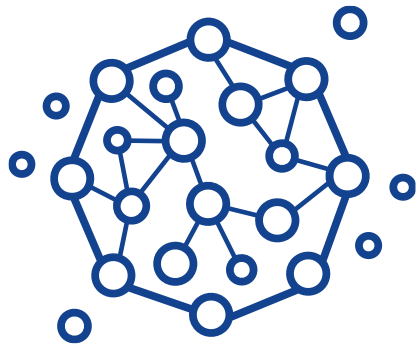


Massive processing power

Historic Achievement: Microsoft researchers reach human parity in conversational speech recognition

October 18, 2016 | Allison Linn





What is a Large Language model?

What is Language model?

"I woke up this morning and there was a beautiful
blue _____"
(Sky, bird, butterfly, flower)

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ChatGPT is an example of a Large Language Model

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ChatGPT is an example of a Large Language Model

What these models do is Math

Models can be very powerful

GPT 4 BAR Exam results

GPT-4 scored **297** on the bar exam in an experiment conducted by two law professors and two employees of legal technology company Casetext.

That places GPT-4 in the 90th percentile of actual test takers and is enough to be admitted to practice law in most states

“Large language models can meet the standard applied to human lawyers in nearly all jurisdictions in the United States by tackling complex tasks requiring deep legal knowledge, reading comprehension, and writing ability”

GPT-4 Passes the Bar Exam

35 Pages • Posted: 15 Mar 2023

[Daniel Martin Katz](#)

Illinois Tech - Chicago Kent College of Law; Bucierius Center for Legal Technology & Data Science; Stanford CodeX - The Center for Legal Informatics; 273 Ventures

[Michael James Bommarito](#)

273 Ventures; Licensio, LLC; Stanford Center for Legal Informatics; Michigan State College of Law; Bommarito Consulting, LLC

[Shang Gao](#)

Casetext

[Pablo Arredondo](#)

Casetext; Stanford CodeX

Date Written: March 15, 2023

Abstract

In this paper, we experimentally evaluate the zero-shot performance of a preliminary version of GPT-4 against prior generations of GPT on the entire Uniform Bar Examination (UBE), including not only the multiple-choice Multistate Bar Examination (MBE), but also the open-ended Multistate Essay Exam (MEE) and Multistate Performance Test (MPT) components. On the MBE, GPT-4 significantly outperforms both human

The Promise of AI



Healthcare / Life-Science

- Enhanced diagnosis and personalized treatment
- Drug discovery: cancer; infectious diseases like HIV, hepatitis, COVID-19, and influenza; and neurodegenerative diseases like Alzheimer's and Parkinson's



Climate Change

- Enhanced climate models via analysis of data from sensors and satellites
- Risk assessment: assess and predict impacts of climate change on infrastructure, ecosystems, and human populations, and develop adaptation and mitigation strategies



Agriculture

- Crop breeding: pest, disease, climate-resistant
- Precision Ag: optimize fertilizer, pesticide, H2O
- Food-safety: detect/prevent food-borne illness via microbial data analysis and identifying contamination patterns



Education

- Personalized education via custom learning materials tailored to students' individual needs and learning styles.
- Identify at-risk students and provide targeted interventions to improve academic outcomes.



Materials Science

- Superconductivity: zero resistance at high temperatures > more efficient power grids
- High-strength: stronger, lighter, more durable products – aircraft, vehicles, buildings, bridges
- Self-healing: med. devices, infrastructure, electr.



Finance

- Predict market trends, optimize trading/investment strategies
- Detect fraud and other financial crimes
- Risk assessment
- Personalized advice



Social Justice

- Reduce bias and discrimination by analyzing large datasets to identify discrimination patterns
- Develop fairer hiring and promotion practices
- Identify and address systemic inequalities in housing, lending, healthcare



Energy

- Optimize energy consumption and reduce waste
- Carbon capture and storage: Generative AI can help identify new materials and technologies for capturing and storing carbon emissions from power plants and industrial processes



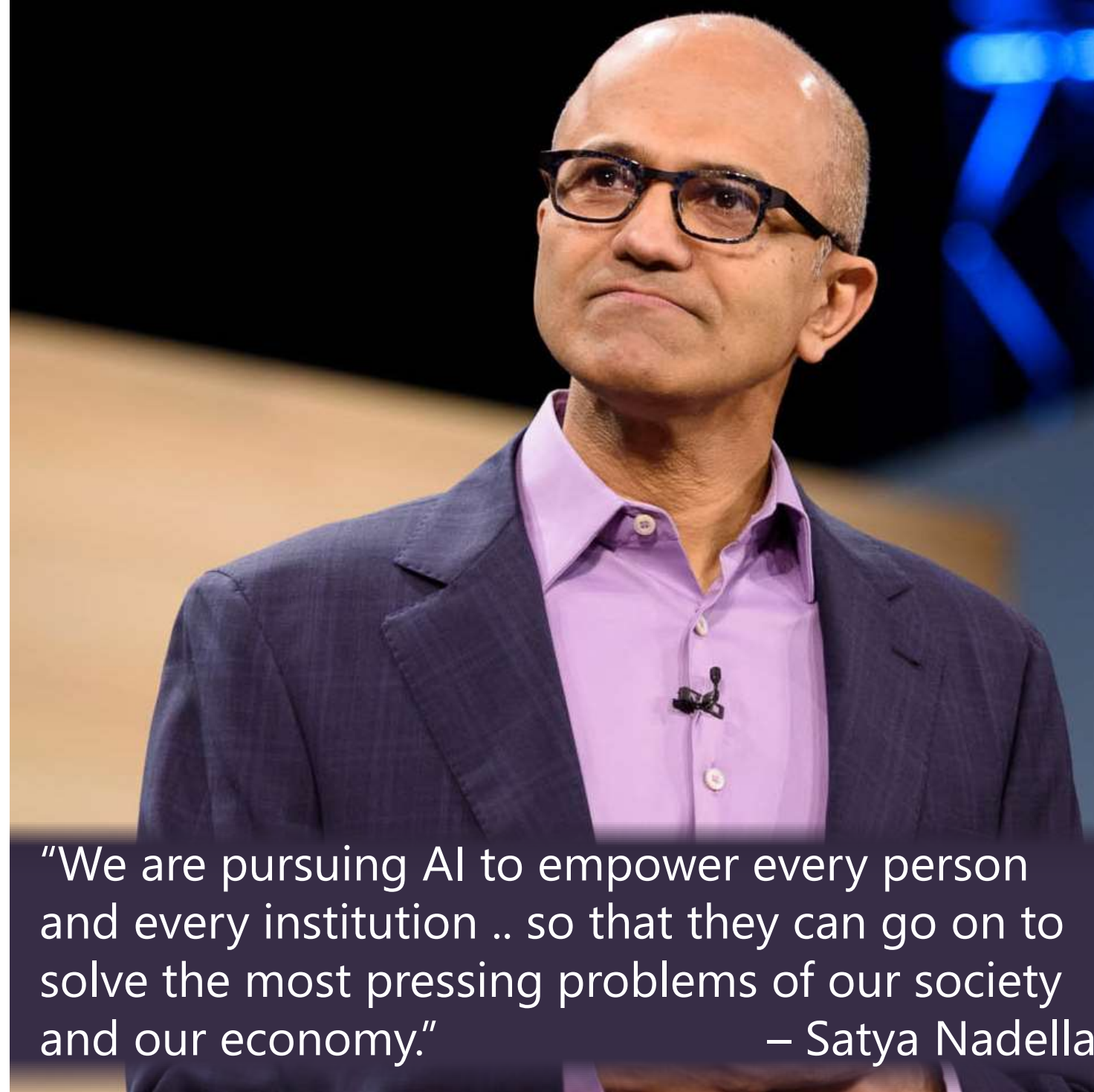
Creative Expression

- Help writers, artists and musicians create new and innovative works by providing them with inspiration and ideas
- Generate new designs for products and buildings, and optimize layout and functionality of cities and public spaces

Design AI to **augment**
human abilities



Make AI **available to everyone**



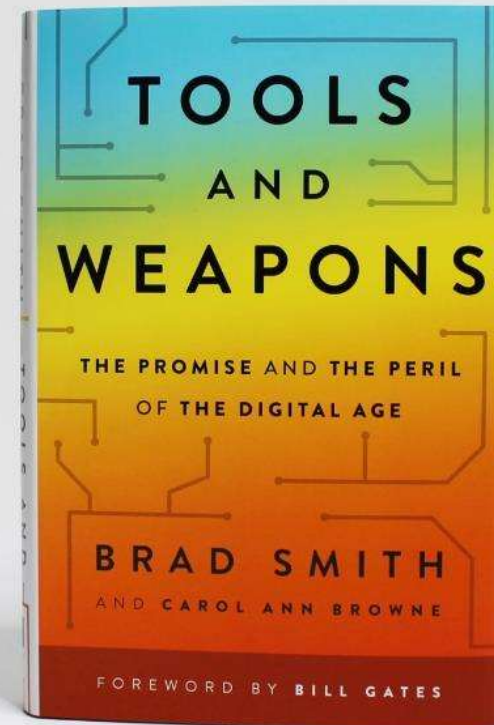
"We are pursuing AI to empower every person and every institution .. so that they can go on to solve the most pressing problems of our society and our economy."
– Satya Nadella

Why Responsible AI?

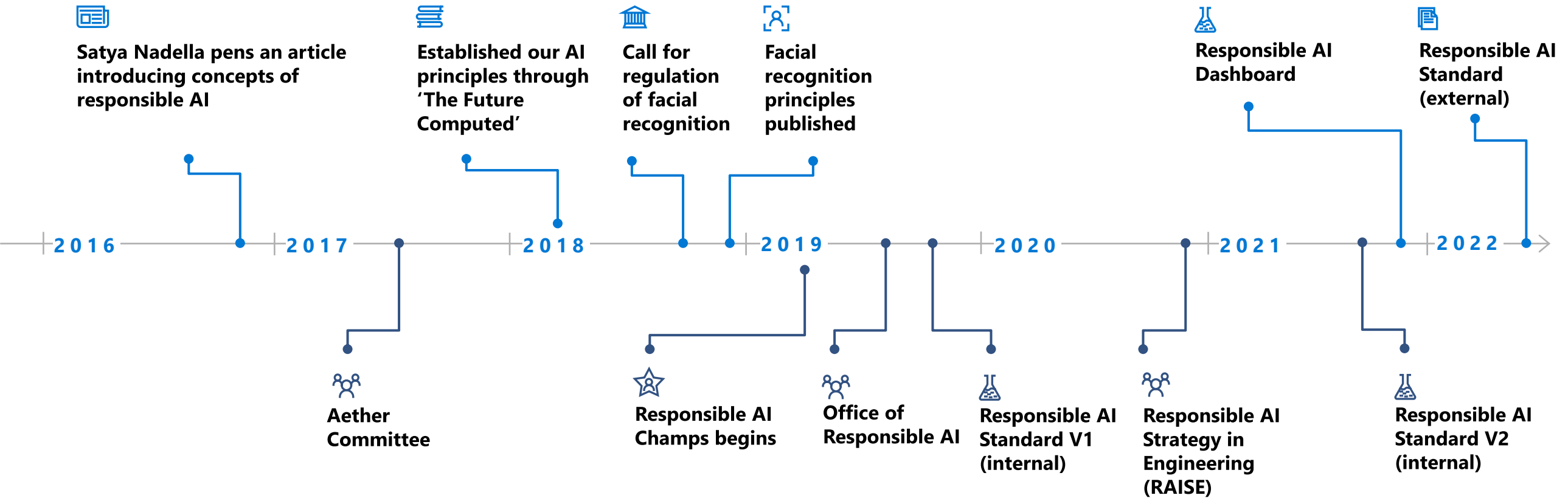
“When your technology changes the world, you bear a responsibility to help address the world that you have helped create.”

Brad Smith

President and Vice Chair, Microsoft Corp.



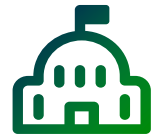
Responsible AI at Microsoft



A five-point blueprint for public governance of AI



Governing AI: A Blueprint for the Future



Implement and build upon new govt-led **AI Safety Frameworks**



Require effective **safety brakes** for AI systems that control **critical infrastructure**



Develop a broad **legal and regulatory framework** based on AI's tech architecture



Promote **transparency** and ensure **academic and nonprofit access** to AI



Pursue new **public-private partnerships** to use AI as an effective tool to address the inevitable **societal challenges** that come with new tech

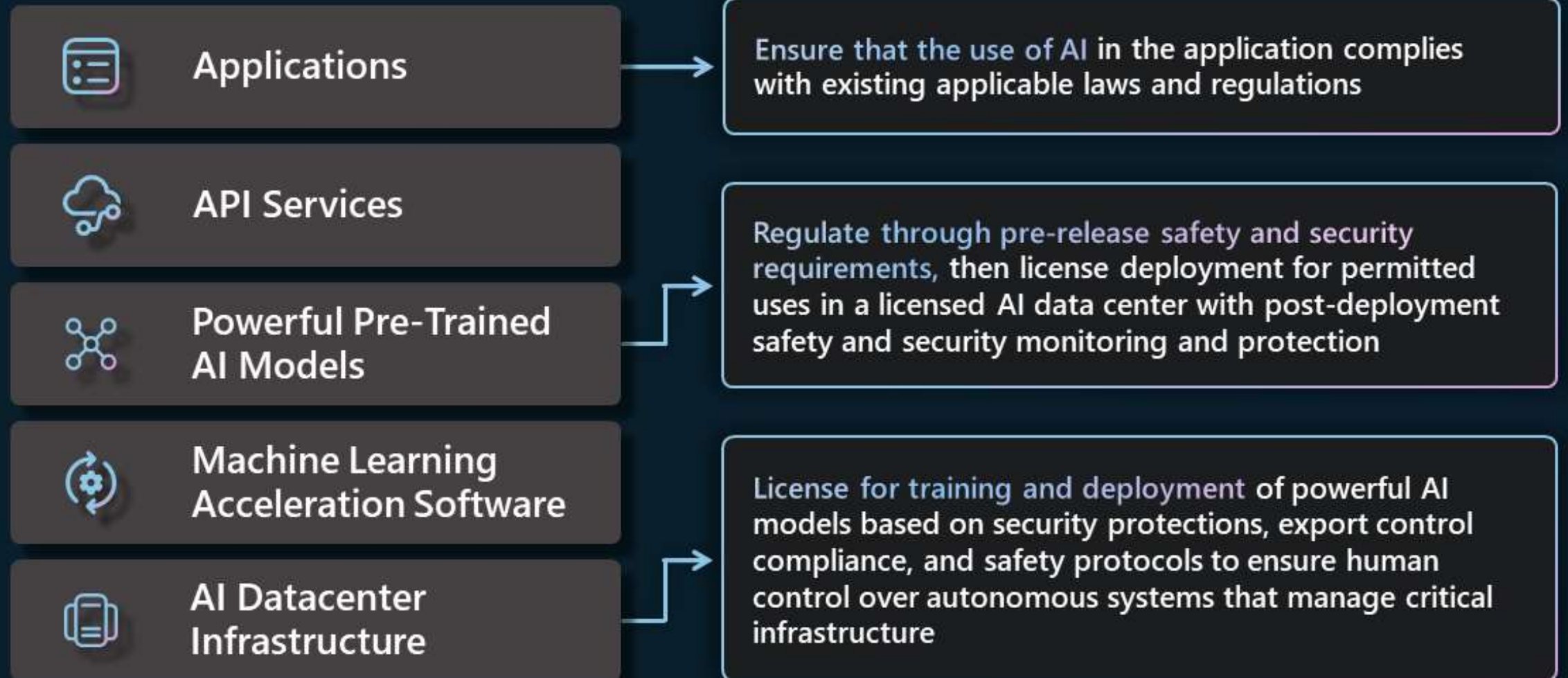
3. Develop a broad legal and regulatory framework based on the technology architecture for AI



The technology stack for AI foundation models



A proposed AI regulatory architecture



Ideas for State Policymakers



Comprehensive Privacy Legislation



Consider taskforces to review **existing laws** & identify gaps re: **protections** & **AI applications**



Consider **executive order or legislation** re: government and AI (commissions; procurement & NIST AI RMF; governance; facial recognition)



Legislation to require risk assessments, address consequential automated decision systems



Legislation to address **political deepfakes**

A photograph of the Florida State Capitol building, a large white neoclassical structure with a prominent dome. The building is surrounded by green trees and a clear blue sky. The word "Questions?" is overlaid in white text across the center of the image.

Questions?