

Artificial Intelligence: the Human Impact & Responsibility

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Stanford University
Human-Centered
Artificial Intelligence



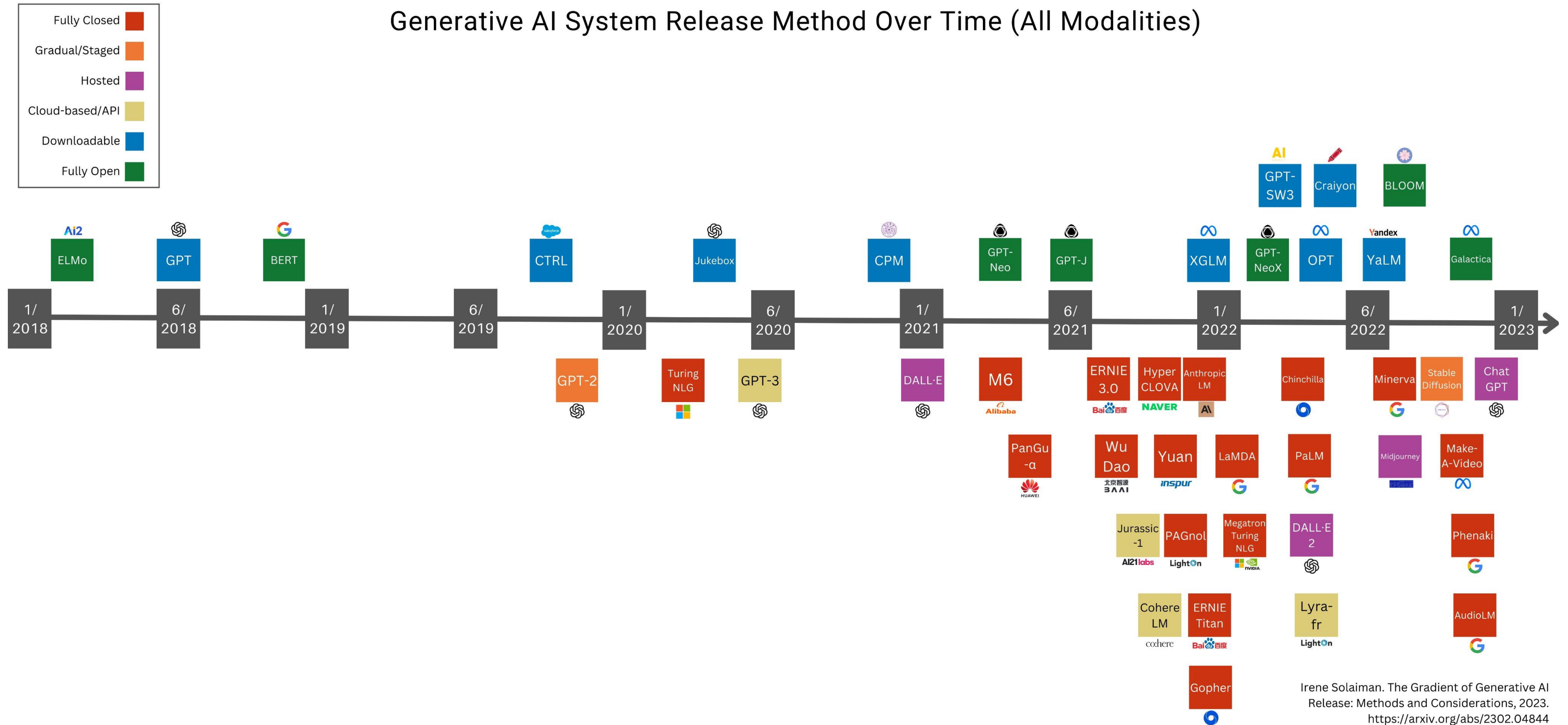
Stanford
University



STANFORD
VISION &
LEARNING

Inflection point

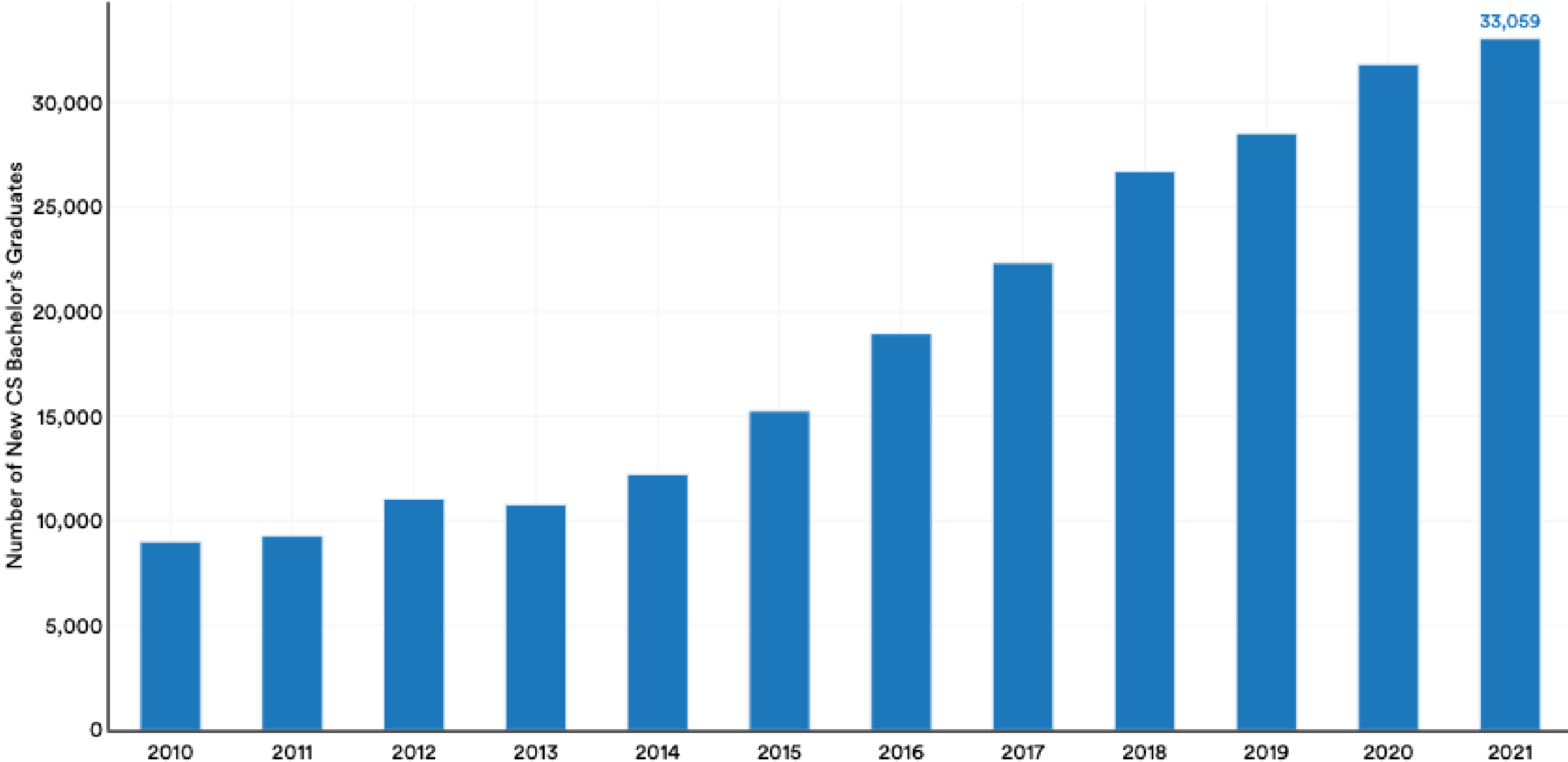
Sharp increase in the number of generative AI systems



Number of new CS bachelor's graduates grew nearly four times in the past decade in North America

New CS Bachelor's Graduates in North America, 2010–21

Source: CRA Taulbee Survey, 2022 | Chart: 2023 AI Index Report



**Large Language Models are
just the beginning**

Growing ecosystem of large language models

Next-gen (existing) applications

Product & customer interaction / management
viable chatdesk Quickchat
Nevermaps ActiveChat exceed by GENESYS
Stateset Sapling

Personal productivity
personal.ai.
mem Oogway

Search engine
YOU Google
algolia

Emerging net-new applications

Application synthesis
Adept CODEGEN

Data analyst productivity
veezoo AI 2sql cogram

Developer productivity
warp tabnine
GitHub Copilot ASK JARVIS
replit

New media generation
FABLE DALL-E 2 alethea- R

Writing assistant/text generation
AI21 labs Jasper Snazzy AI
PR Guy copy.ai Scalenut
LAVENDER YOU Write
anyword Simplified
copysmith copymatic
LONGSHOT Rytr Writesonic

Infrastructure

Model /builders providers - Big Tech
Microsoft
Google DeepMind
Meta NVIDIA

Model providers/builders - Startups
OpenAI co:here
Hugging Face BigScience
AI21 labs Lighton
ANTHROPIC

Accessible specialized AI chips
NVIDIA GRAPHCORE
Google Lighton
Other tooling
Humanloop anyscale

Language is just the beginning, more is coming

3D Vision



Pose Estimation



Instance Segmentation



DALL-E



an espresso machine that makes coffee from human souls, artstation

panda mad scientist mixing sparkling chemicals, artstation

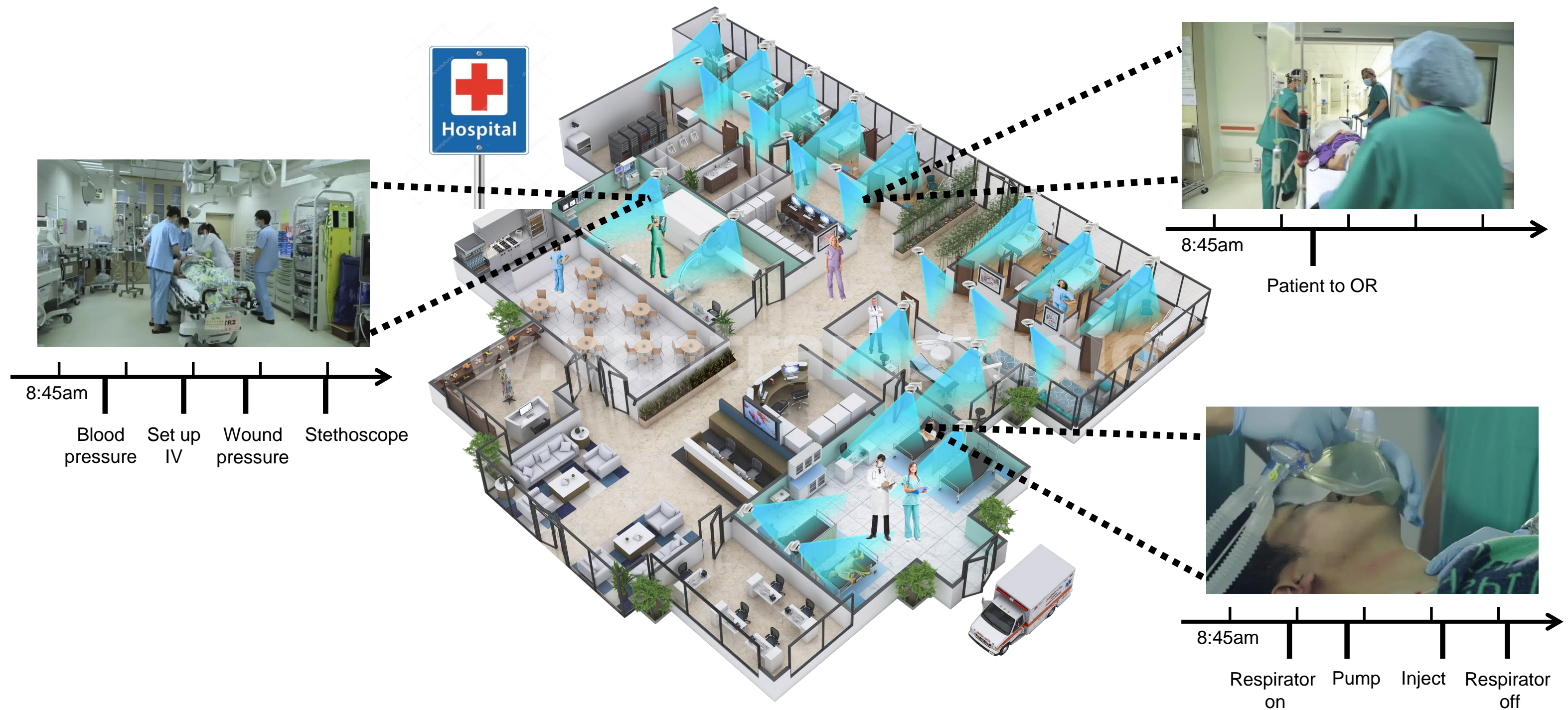
Language is just the beginning, more is coming



AI can augment humans

Ambient Intelligence for Healthcare

Use smart sensors and ML algorithm to glean health-critical insights



Laparotomy_sponge: 99%



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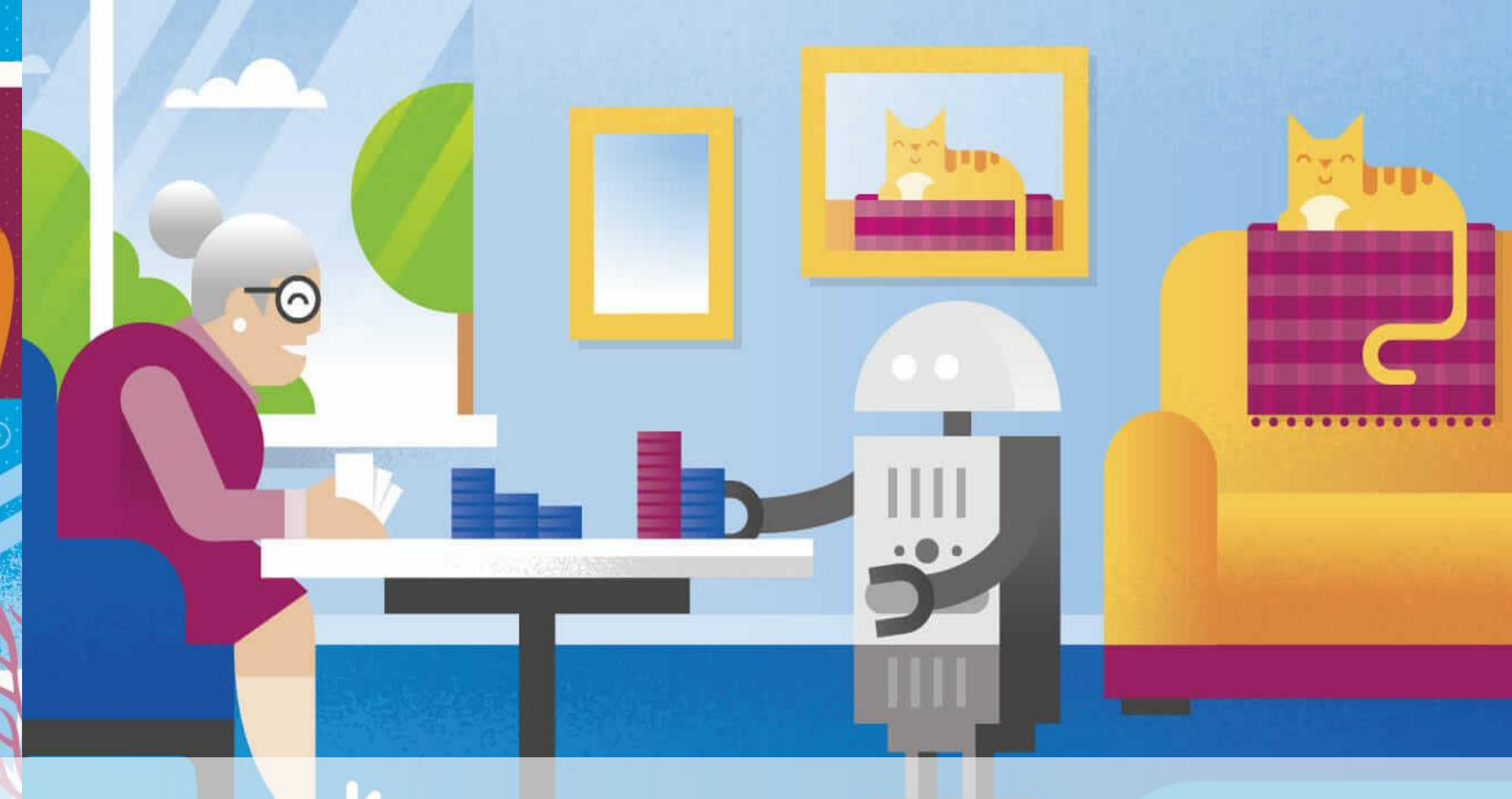
Laparotomy_sponge: 99%



AI for Aging in place

- > Predict and Prevent Unsafe Events
- > Monitor Patients with Mild Symptoms
- > Manage Chronic Conditions





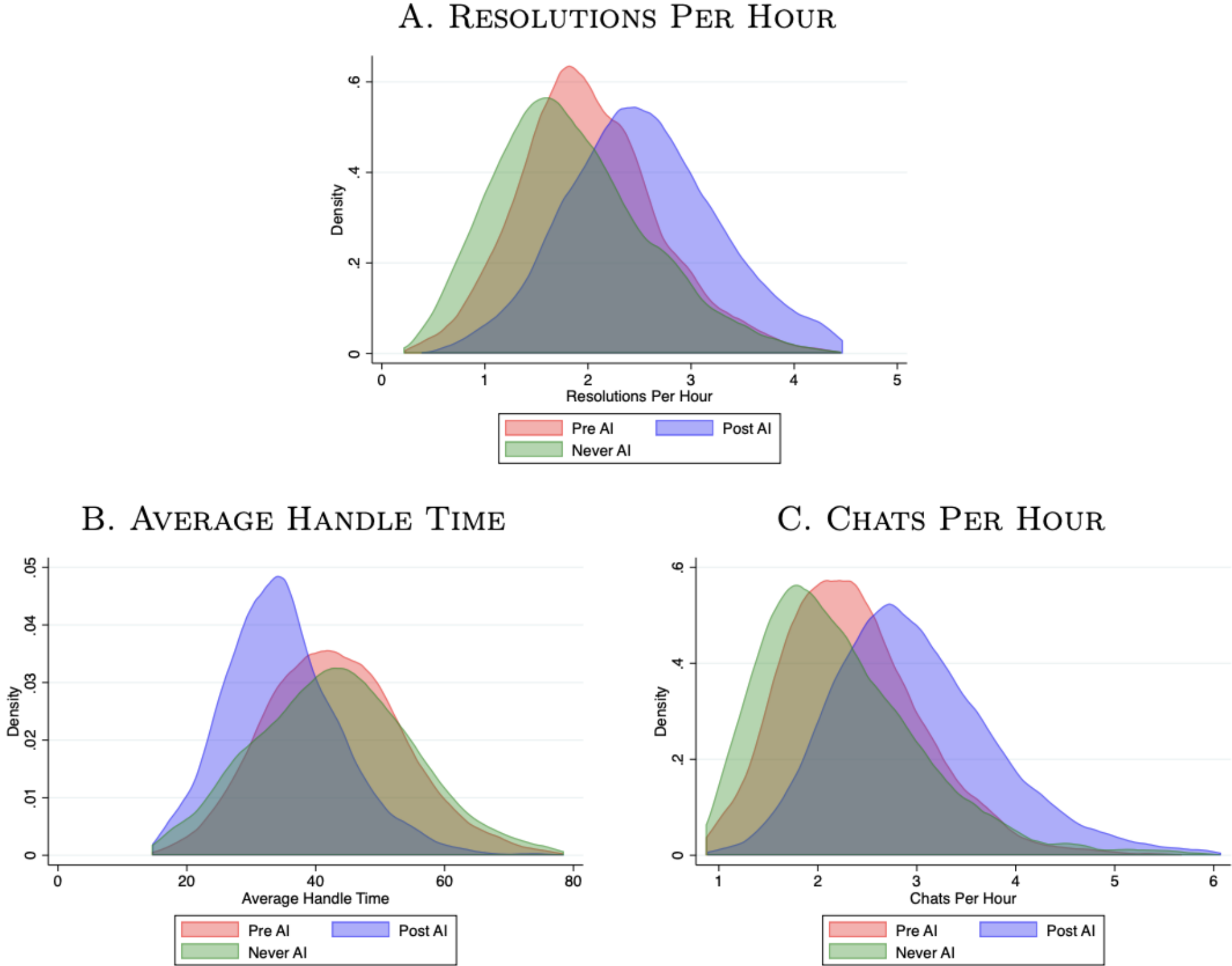
Many applications of human augmentation



Profound social impact

Generative AI boosts worker productivity by 14% in first real-world study

FIGURE 3: RAW PRODUCTIVITY DISTRIBUTIONS, BY AI TREATMENT



Generative AI systems continue to perpetuate bias

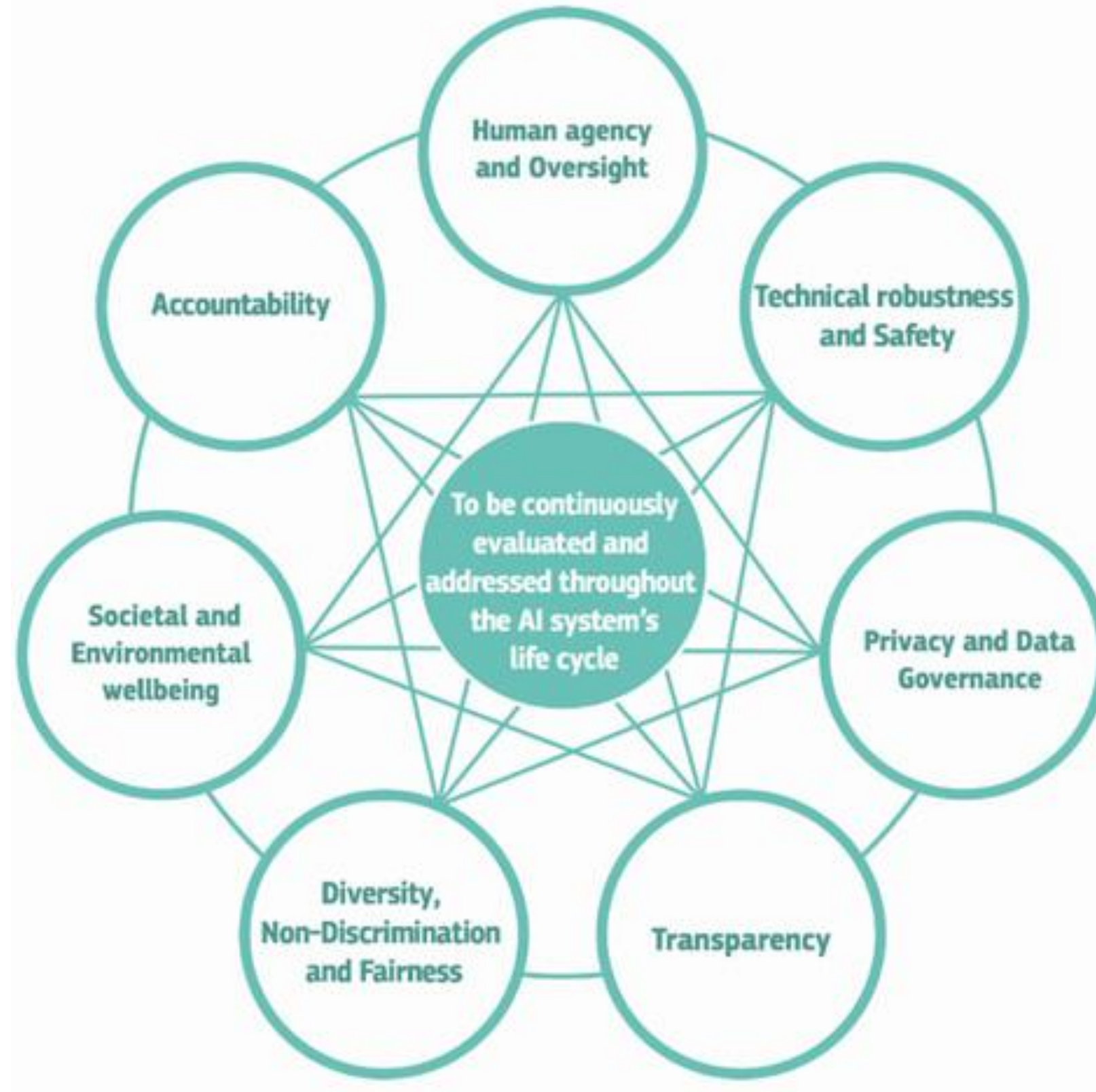
Midjourney when prompted “someone who is intelligence”



Stable Diffusion when prompted “Assertive, CEO”



Building Trustworthy and Responsible AI

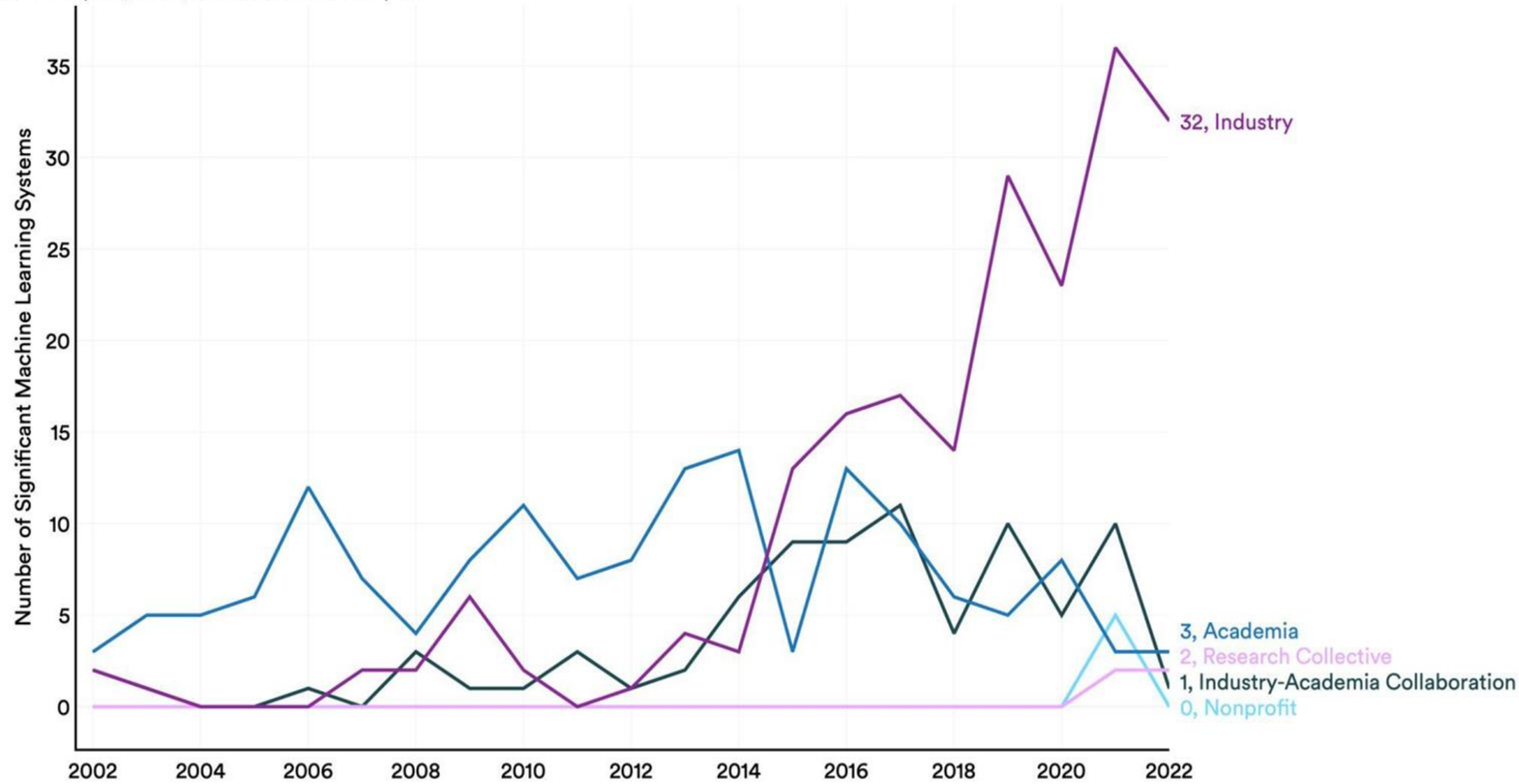


Policy: ensuring a better tomorrow

Industry dominates AI talent acquisition and development

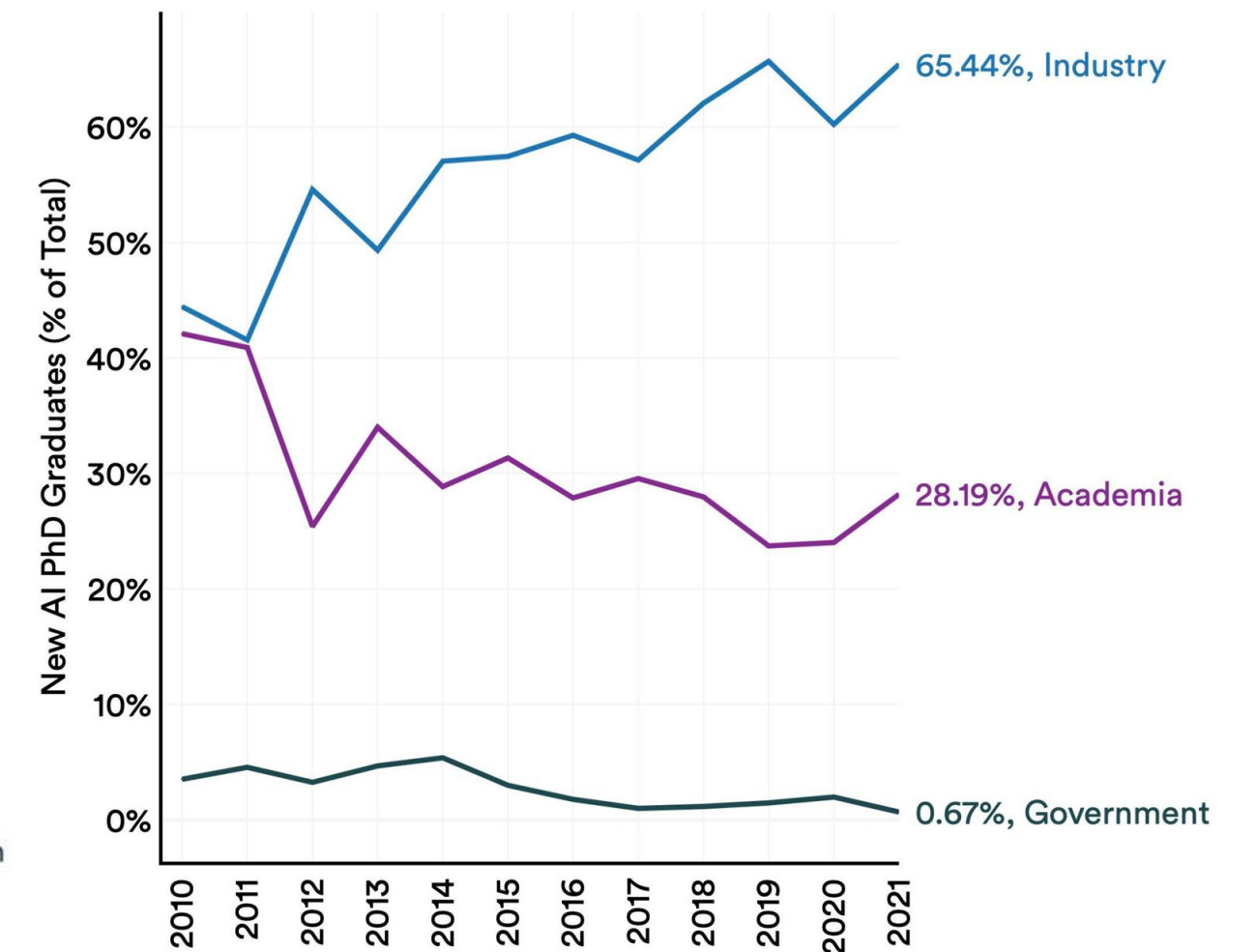
Number of Significant Machine Learning Systems by Sector, 2002–22

Source: Epoch, 2022 | Chart: 2023 AI Index Report



Employment of New AI PhDs (% of Total) in North America by Sector, 2010–21

Source: CRA Taulbee Survey, 2022 | Chart: 2023 AI Index Report



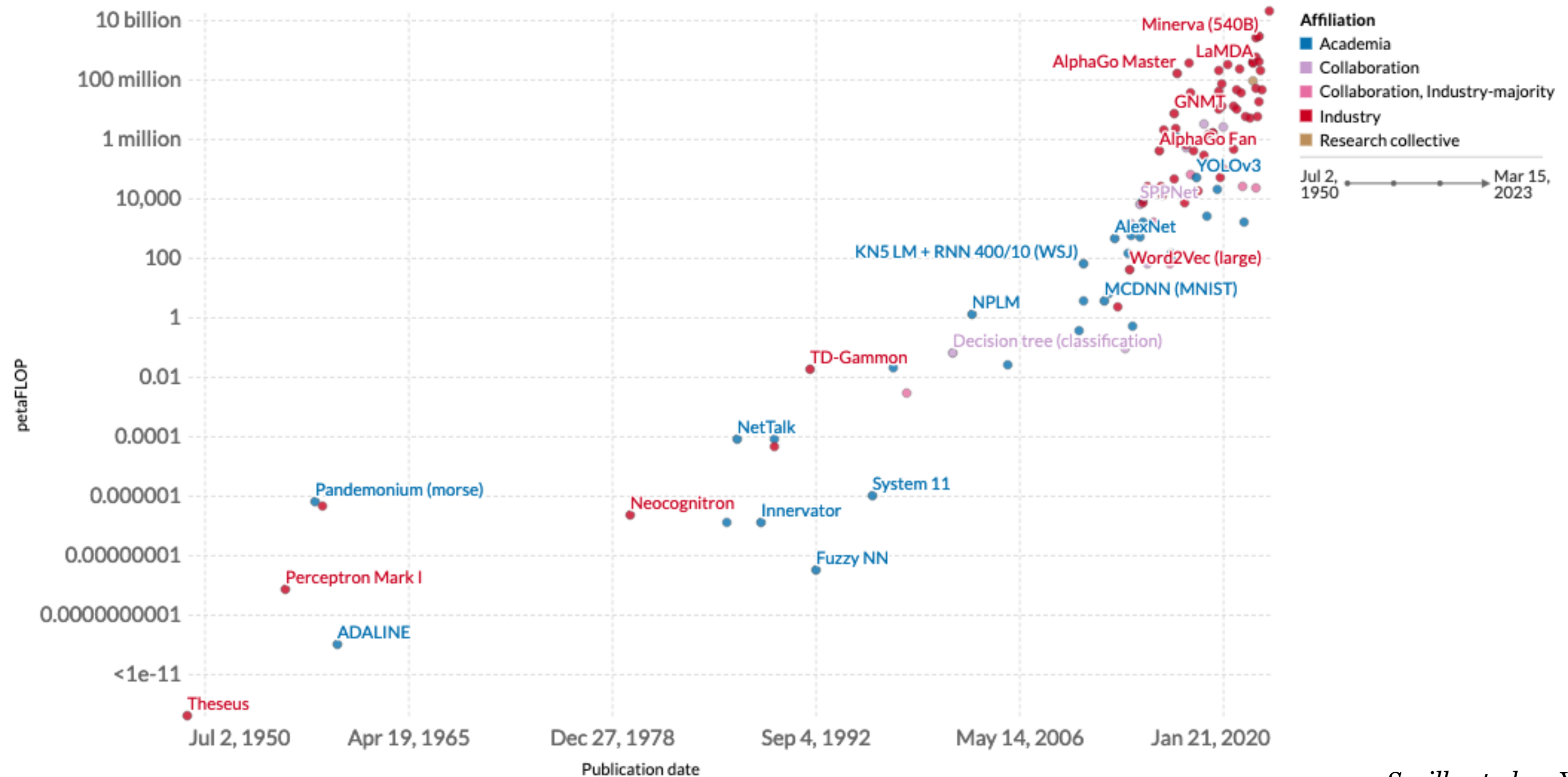
Steep rise of compute demand

Computation used to train notable AI systems, by affiliation of researchers

Computation is measured in total petaFLOP, which is 10^{15} floating-point operations.

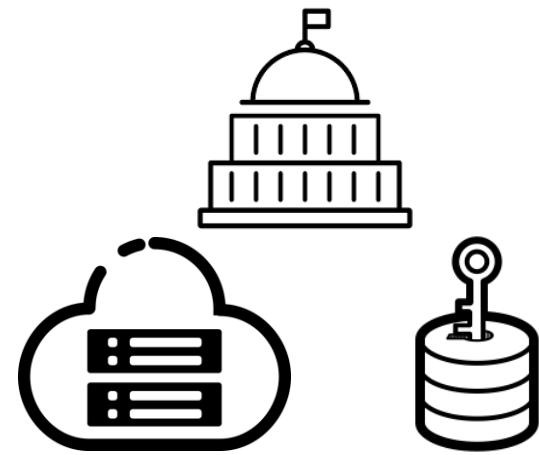
Our World
in Data

LINEAR **LOG** [Select systems](#)



National AI Research Resource

ACCESS



Public computational and data resources, testbeds, and more.

ELIGIBILITY



For academic researchers, non-profits, government agencies, federally-funded startups, etc.

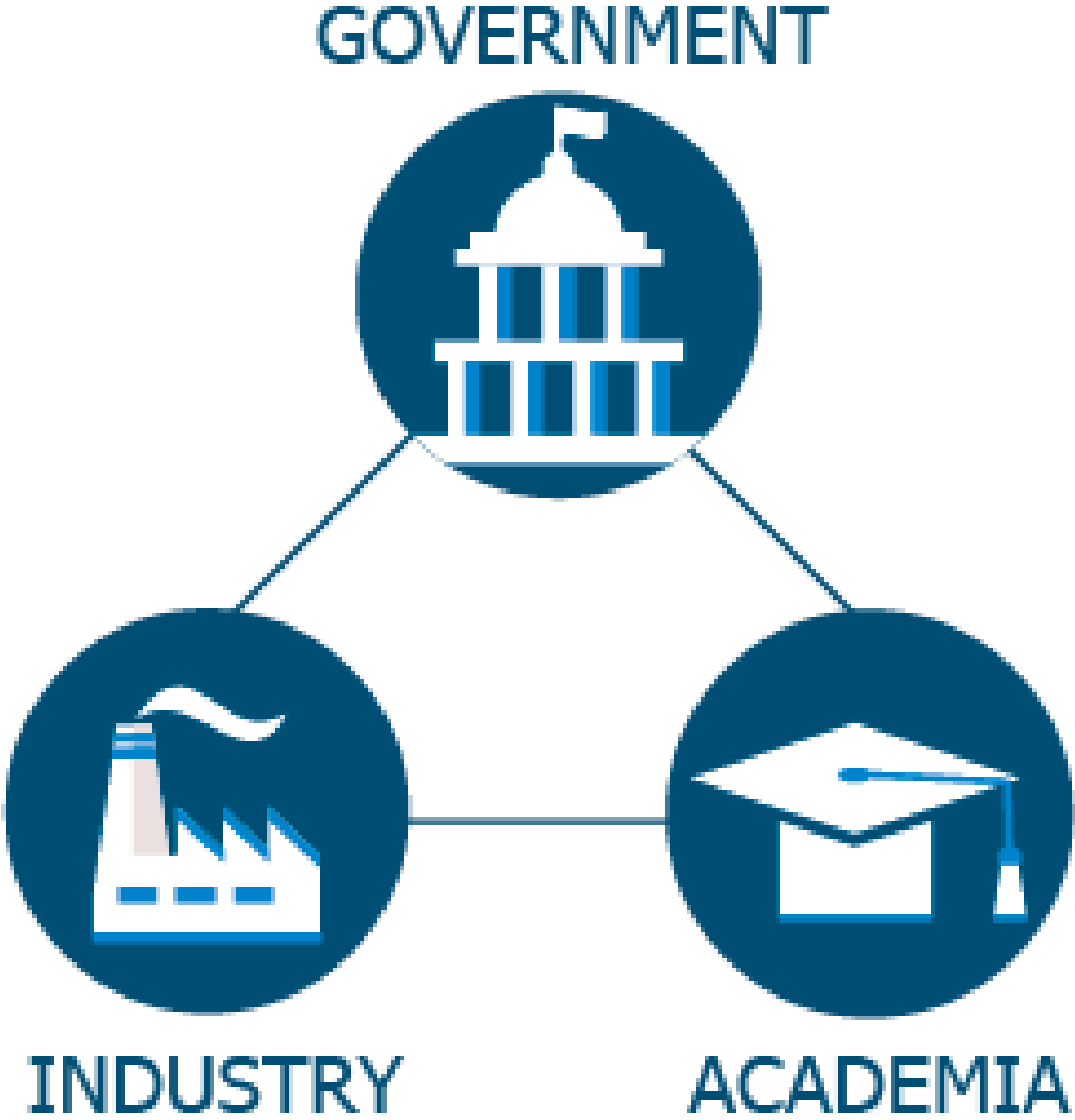
Strengthening and Democratizing the U.S. Artificial Intelligence Innovation Ecosystem

*An Implementation Plan for a
National Artificial Intelligence Research Resource*



January 2023

Rejuvenating a healthy AI ecosystem between government, academia, and industry



AI profoundly human.

The responsibility is on us.