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Unpacking the State of AI and its Impact on Workforce Development

November 2024

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Agenda

Topic

- 1 What is Generative AI (GenAI)?

- 2 What is the impact on people and organizations?

- 3 How do organizations get started?

- 4 How do I get started?



1

What is Generative AI?



GenAI is the next new frontier of a long AI journey



Artificial Intelligence, the science and engineering of making intelligent machines



Machine Learning (ML), a major approach to realize AI



Deep Learning



Generative AI



1950's

1960's

1970's

1980's

1990's

2000's

2010's

2020's

Artificial Intelligence

Broad field of developing machines that can replicate human behavior, including all aspects of **perceiving, reasoning, learning, and problem solving**

Machine Learning

Major approach to AI focused on teaching machines to **learn relationships hidden in data**, and build approximate models of real systems

Deep Learning

Branch of Machine Learning that uses '**neural networks**' to **model real systems** by mimicking how the human brain works, utilizing millions of computational 'neurons'

Generative AI

Branch of Deep Learning that uses exceptionally large neural nets called **Large Language Models** (with 100's of billions of neurons) that can learn especially abstract patterns

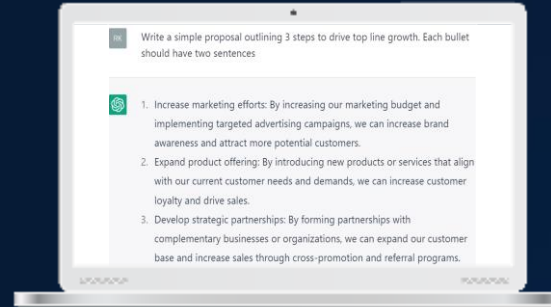
Applying these language models to interpret and create text, images, video, and data has become known as **Generative AI**

What is Generative AI?

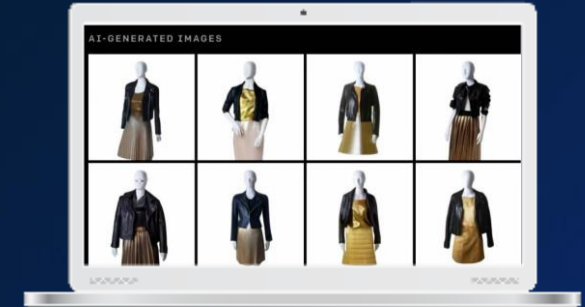
Generative AI (GenAI) enables the **creation of new content**, such as text, images, audio, video, and code

GenAI is powered by Foundation Models (artificial intelligence models) trained on a **broad set of data** that can be adapted to a wide range of tasks

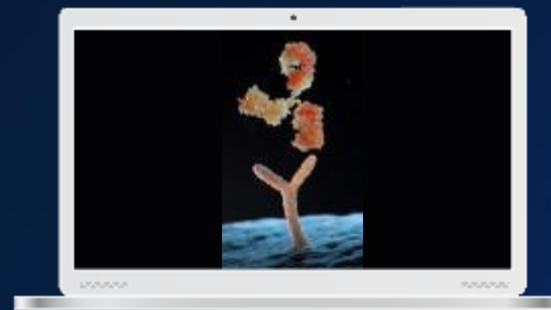
These models are typically also **better at interpreting / labelling unstructured data than traditional AI**



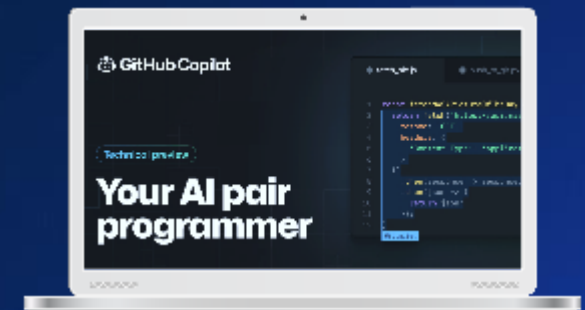
Generate marketing or social media copy in "house style" using ChatGPT, Copy.A, etc.



Create new product design concepts using DALL-E2, Stable Diffusion, etc.



Accelerate the drug discovery process, reducing time in laboratories with ABSCI, etc.



Automate code generation in programming languages like Python with Codex/Github Copilot, etc.

Generative AI use cases generally fall into four archetypes

Archetype

Content Synthesis



Coding & Software



Content generation



Customer Engagement



Description

Generate insights and drive actions based on summarization and synthesis of unstructured data

Interpret and generate code and documentation

Support ideation for new product development or generate personalized marketing copy

Streamline interactions by interpreting text or model customer journeys

Selected use cases

Extract insights from large document sets (e.g., ESG information from sustainability reports)
Augment capabilities of operations staff (e.g., chat interface for maintenance operator)

Generate code and assist developers
Refactor or translate code to accelerate mainframe migration

Personalized customer comms or marketing
Generate RfPs or technical documents
Generate visuals (images, designs, 3D models) to accelerate the product design process

Streamline customer communications, e.g., issue resolution (driving action to resolve) and Q&A
Model and predict elements in patient or customer journey

Examples

Technical report query



1. Perform regular inspections. Contact a work around supervisor and request the forklifts to be inspected if necessary. Always tag that leads up to the correct levels (Source: page 117).
2. Check the conditions. Make the sure to the correct person and control your the chain for operating pressure. Refer to the Operation and Maintenance Manual for information on the chains and the information (Source: page 117).
3. Avoid operating the machine in conditions that can lead to tipping or damage. This includes carrying a full load, carrying or towing a load, riding, or other unexpected obstacles or uneven ground (Source: page 88).
4. Use proper flow. Ensure the flow being used are appropriate for the machine by checking with your local Cat dealer. Adjusting the flow is important to ensure the machine is not damaged (Source: page 88).
5. Consider the machine safety. Avoid operating the machine across slopes, and when possible, operate the machine up and down the slope. The side of the machine are not designed to support its capacity (Source: page 88).

Code optimization

```

COMPUTE_GROSS_PAY
IF HOURS_WORKED > 40 THEN
  MULTIPLE_PAY_RATE BY 1.5, COMPUTE_OVERTIME_RATE
ELSE
  MULTIPLE_PAY_RATE BY 1.0, COMPUTE_OVERTIME_RATE
SUBTRACT 40 FROM HOURS_WORKED TO GET OVERTIME_HOURS
MULTIPLE_HOURS_BY_PAY_RATE, MULTIPLE_PAY_RATE
MULTIPLE_OVERTIME_HOURS_BY_OVERTIME_RATE
COMPUTE_OVERTIME_PAY
ADD HOURS_PAY TO OVERTIME_PAY TO GET GROSS_PAY
END
MULTIPLE_GROSS_PAY BY PAY_RATE, COMPUTE_GROSS_PAY
END

```



```

def compute_gross_pay(timecard):
    if timecard.hours_worked > 40:
        overtime_rate = timecard.pay_rate * 1.5
        regular_hours = 40
        overtime_hours = timecard.hours_worked - 40
        regular_pay = regular_hours * timecard.pay_rate
        overtime_pay = overtime_hours * overtime_rate
        gross_pay = regular_pay + overtime_pay
    else:
        gross_pay = timecard.hours_worked * timecard.pay_rate
    return gross_pay

```

Design ideation



Always on chat bot



Examples of GenAI solutions introduced in the public sector



Content Summarization & Synthesis

- **Medicaid contracting tool** to gather competitive intelligence by **rapidly interrogating Medicaid RFPs and deep-diving into responses** across all states / MCO / years
- **Singapore GovTech's Pair app**: a GenAI-powered assistant to help government officials **summarize text, conduct research, and generate reports** for internal use



Customer Engagement

- **Heidelberg, Germany's Lumi chatbot**: a digital assistant to help citizens navigate government services such as applying for a new ID
- **Virtual tax and customs SME** to synthesize complex import guidance from multiple sources to **help answer specific customer questions**



Coding & Software

- **GitHub Copilot**: an AI-based programming solution that **provides coding suggestions**, used extensively in private sector and being tested by the United Kingdom's economic and finance ministry



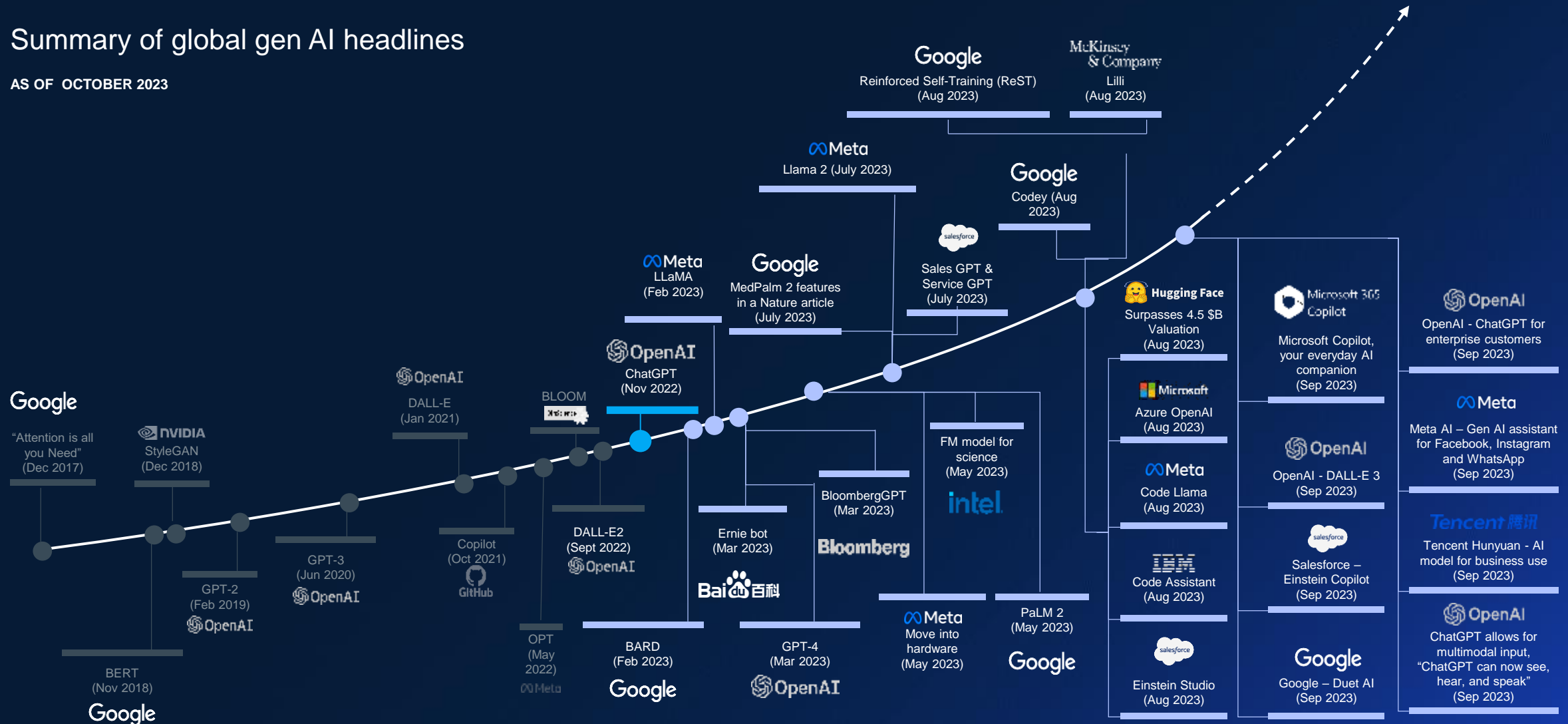
Content Generation

- **Acqbot**: an AI-powered **contract-writing solution** developed by the DoD to help speed up procurement processes

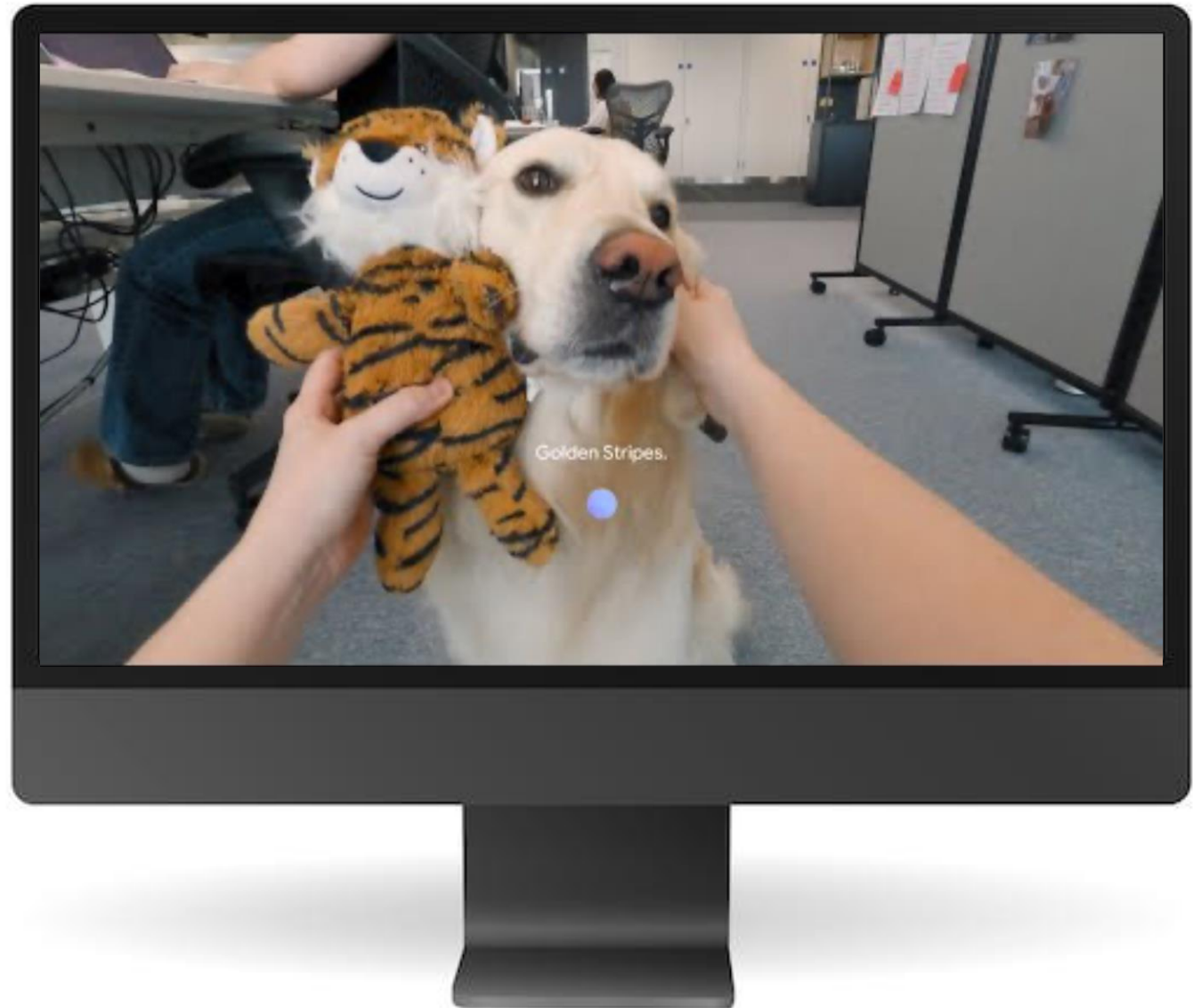
The pace of innovation seems unprecedented

Summary of global gen AI headlines

AS OF OCTOBER 2023



**“The pace of change
has never been this
fast, yet it will never
be this slow again”**



2

**What is the impact
on people and
organizations?**



GenAI will add value across industries

↑ Travel, transport & logistics
**\$180–\$300
billion**

Education ↑
**\$120–\$230
billion**

↑ Advanced
manufacturing
**\$170–\$290
billion**

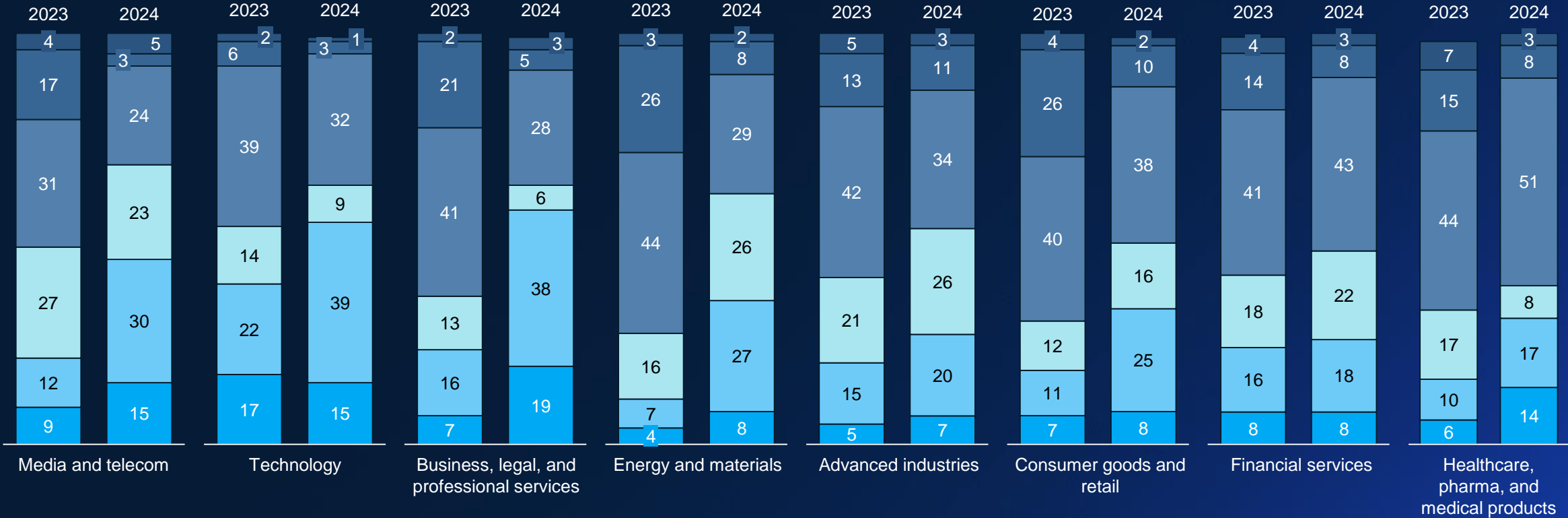
Life Sciences ↑
**\$60–\$110
billion**

and more...

All industries are increasing their enterprise use

■ Regularly use for work
 ■ Regularly use for work and outside of work
 ■ Regularly use outside of work
 ■ Have tried at least once
 ■ No exposure
 ■ Don't know

Reported exposure to generative AI tools, 2023–24, by industry,¹ % of respondents



Source: McKinsey Global Survey, [The state of AI in Early 2024: Gen AI adoption spikes and starts to generate value](#)

Two lenses through which to view how GenAI affects People and Organization



Enabling the organization and its people to capture the value of GenAI



GenAI as a driver of People Function efficiency and effectiveness



80% of jobs significantly exposed to automation due to GenAI



88% of current users are non technical employees

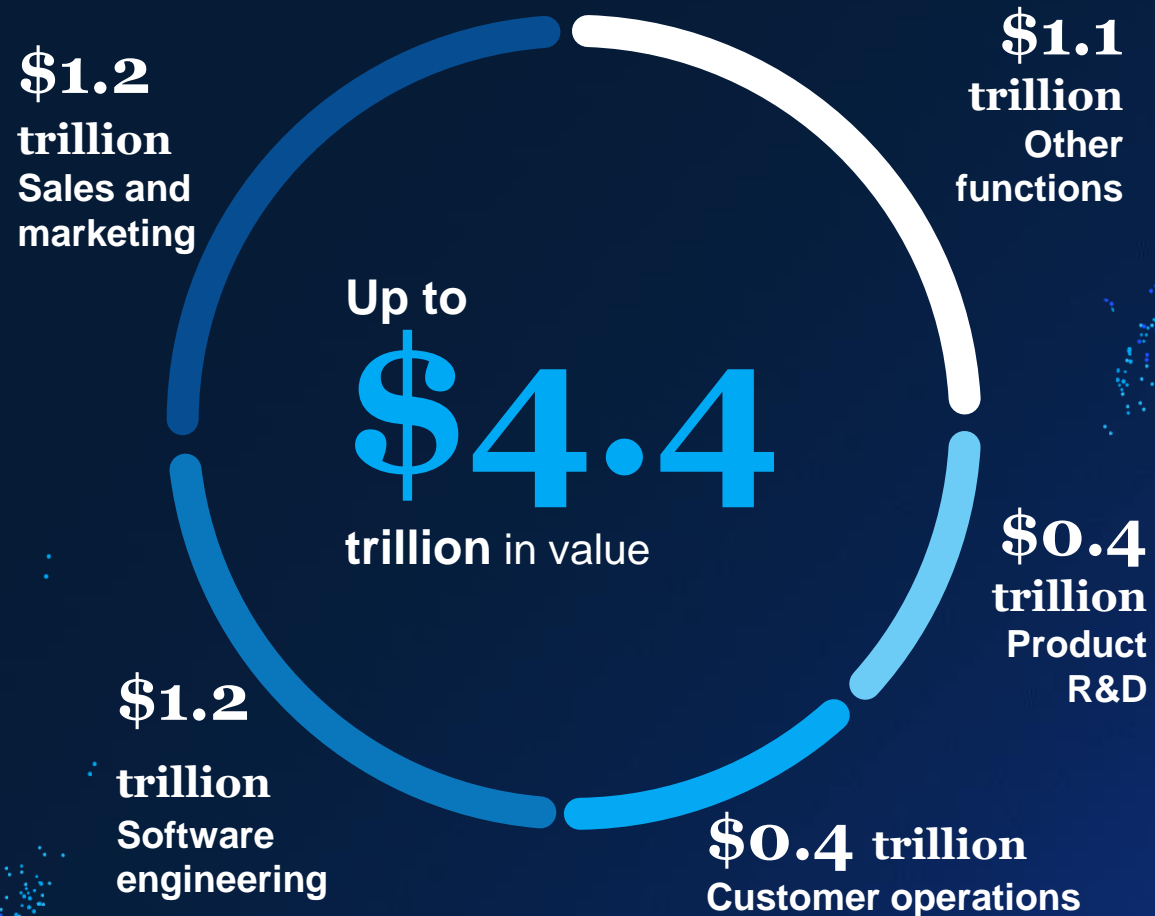


\$80b global value in HR due to GenAI

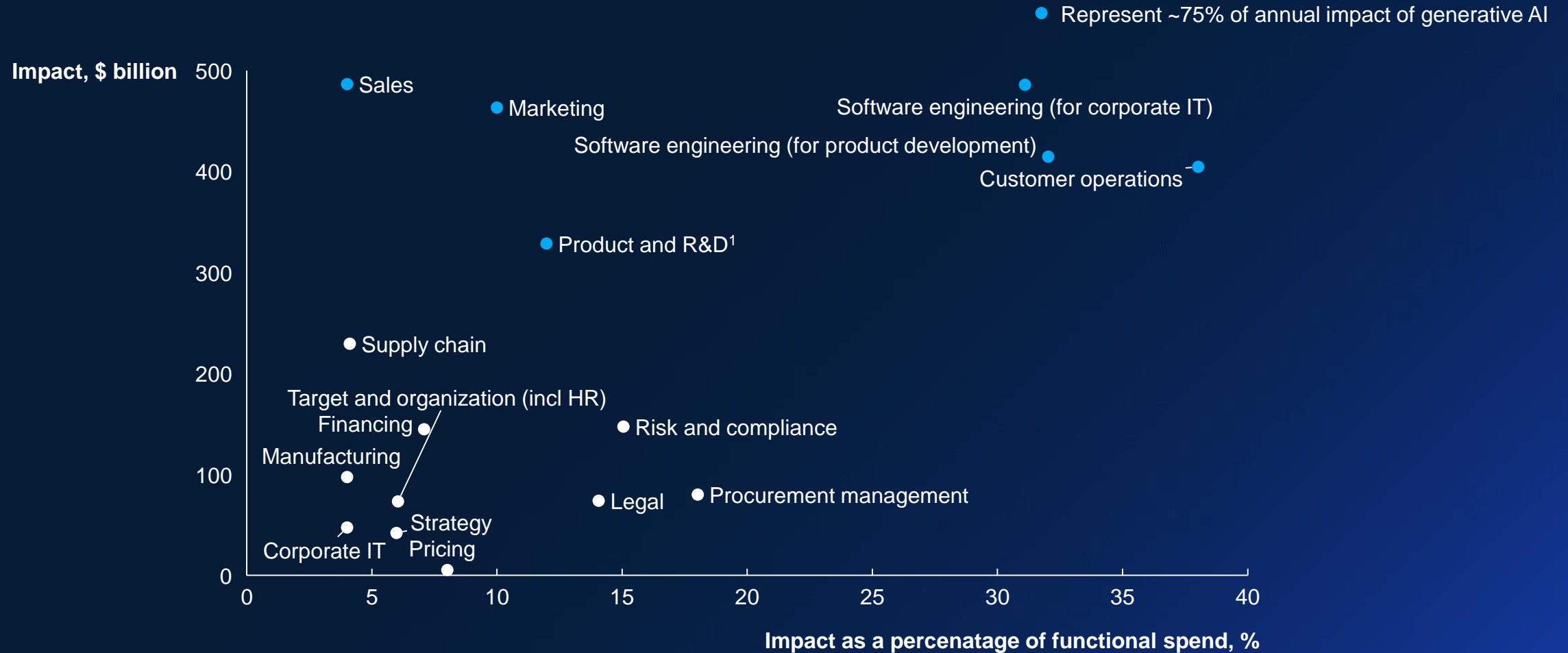


54% automation potential of HR processes

GenAI is poised to boost performance across functions



Using generative AI in just a few functions could drive significant impact across the organization...



1. Excluding software engineering

Note: Impact is averaged.

Source: Comparative Industry Services (CIS), HIS Markit; Oxford Economics; McKinsey Corporate and Business Functions database; McKinsey Manufacturing and Supply Chain 360; McKinsey Sales Navigator; Ignite, a McKinsey database; McKinsey analysis

GenAI's impact on organizations will be faster, broader and deeper

Continuation..



Automation and digitization reshaping Future of Work and Future of Workforce



Demographic shifts changing structure of workforces and talent pools



Employees placing increased demands on their (potential) employers



...and exacerbation of talent challenges and opportunities



Faster

The pace of workforce transformation is likely to accelerate

10 year

acceleration of widespread automation compared to pre-GenAI



Broader

GenAI will reshape the way we work impacting all employees, incl. occupations with higher levels of education

70%

of jobs significantly exposed to automation due to GenAI – with some professions 2X compared to pre GenAI



Deeper

GenAI has the potential to change the anatomy of work, augmenting individual tasks for all employees

25%

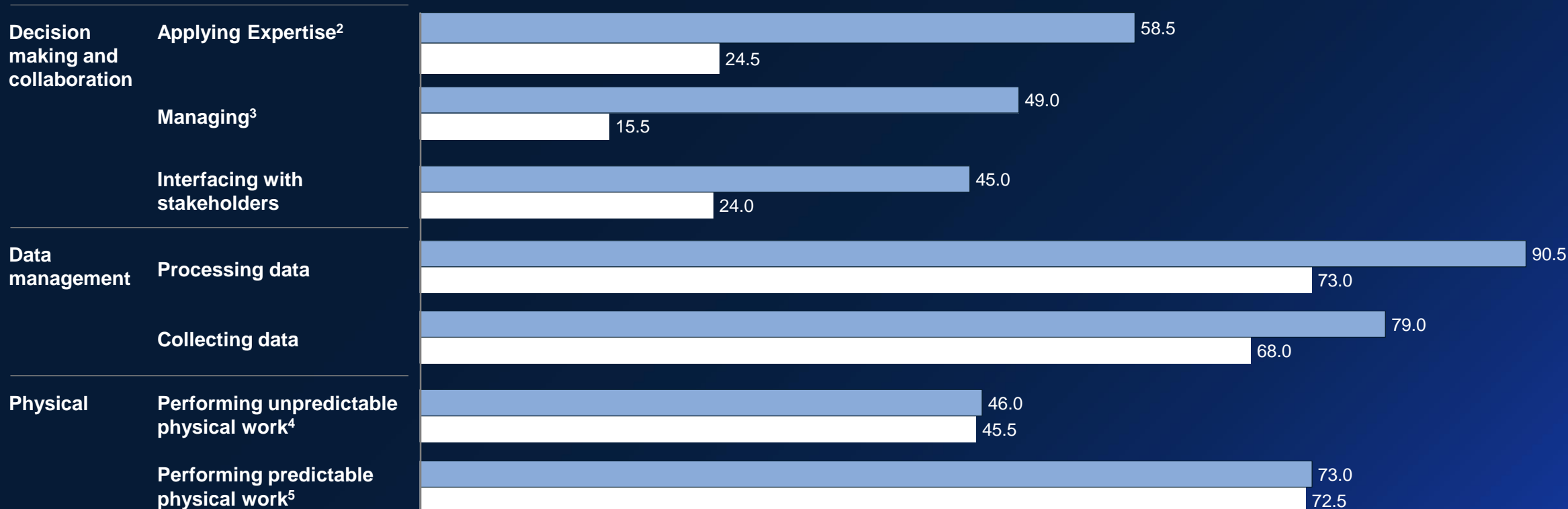
of employees' time previously not automatable, is now potentially automatable by GenAI

Generative AI could have the biggest impact on collaboration and the application of expertise, activities that previously had a lower potential for automation

Overall technical automation potential, comparison in midpoint scenarios, % in 2023

■ With GenAI ■ Without GenAI¹

Activity groups



Note: Figures may not sum, because of rounding

1. Previous assessment of work automation before the rise of generative AI. 2. Applying expertise to decision making, planning, and creative tasks.











3. Managing and developing people. 4. Performing physical activities and operating machinery in unpredictable environments.

5. Performing physical activities and operating machinery in predictable environments.

Source: McKinsey Global Institute analysis

GenAI opportunities exist across the talent lifecycle

Non exhaustive

1 Workforce planning 	2 Talent acquisition 	3 Onboarding 	4 Talent management 	5 Learning 
Conduct labor market analysis Create organization scenarios	Draft skill-based job postings Draft customized candidate communications	Create pre-onboarding checklist and assist with forms Virtual “buddy” to answer common early-hire questions	Career co-pilot to uncover career paths and draft associated development plans Develop learning and employment records	Create simulation-based, personalized learning experiences Develop multimodal learning content (not limited to text)
6 Performance management and coaching 	7 Benefits 	8 Diversity, Equity, and Inclusion 	9 Employer and Manager Self Service 	10 Workforce productivity 
Aggregate performance input from multiple sources for manager review Assist in developing specific goals tied to business strategy	Answer benefits eligibility questions via advanced chatbot Assist in suggesting additional benefits offerings for which employees are eligible	Aid in accessibility with multi-model support (text, image, language) – including translation Support DEI in implementation of GenAI across other elements of talent lifecycle	Provide self-service through improved interface for administrative tasks Auto-complete medical leave form	Summarize / create first drafts to save time and enhance productivity Summarize meetings and send to attendees

3

How do organizations get started?



Framework for how organizations can rewire to drive value from GenAI

Alignment on value

Business-led digital roadmap

Delivery capabilities

Talent

Operating Model

Technology

Data

Change management

Adoption and Scaling

Scaling generative AI beyond initial use cases requires building capabilities across multiple dimensions

Strategic roadmap



How do we align our GenAI strategy with our overall technology aspirations?

How should we approach the transformation in a way that ensures value capture and unlocks competitive advantage?

How do we define use case delivery and integrate them in a holistic roadmap?

Enablers



Technology

How do we set up a scalable tech stack and infrastructure to support multiple GenAI use cases and solutions?

Data

How do we set up a robust data foundation to scale GenAI across the organization?

Talent

How do we manage talent to stay ahead of the GenAI skill gaps?

Op model

How do we organize ourselves and teams to deliver on our GenAI strategy?

Adoption & scaling



How do we design our scaling plan to ensure easy re-usability and scalability across the organization?

How do we deliver effective training to support skill building and manage culture change at scale?

How do we think about risk and responsible use of GenAI across the organization?

Five critical areas can guide organizations when implementing GenAI

Area	Key Questions	
Adoption road map	① Risk tolerance	What is my organization's tolerance for risk, broadly and for specific use cases?
	② Potential benefits	For which processes or functions does GenAI offer the greatest value potential?
Governance	③ Enterprise adoption	How is my organization monitoring both sanctioned and unsanctioned enterprise adoption of gen AI?
	④ Risk monitoring	What are our protocols for continual risk assessment and monitoring as GenAI evolves and our approach matures?
	⑤ Guidelines for use	What are our guidelines for official and unofficial use of GenAI? Do we have plans to refresh those based on experience and technological advancement?
Technology and data	⑥ Pilot readiness	How is our IT team assessing readiness for potential gen AI pilots?
	⑦ Infrastructure needs	How are we assessing IT infrastructure needs and opportunities to improve efficiency via GenAI software development tools?
Talent	⑧ Readiness	How knowledgeable and prepared are leaders and employees for GenAI adoption?
	⑨ Talent strategy	Does our strategy meet the needs of GenAI in our organization?
Operations	⑩ Process selection	Have we reviewed business processes, dependencies, and readiness for GenAI adoption?
	⑪ Reducing risk	Are there any processes where GenAI might reduce risk and provide better outcomes?

4

How do I get started?



“As machines get better at being machines, humans have to get better at being more human... So human empathy, EQ, et cetera, will all become more important for employment”

Andrew J. Scott, professor of economics at the London Business School



Shifting away from role-based upskilling to ‘future-proof skills’ can help workers avoid being displaced by future waves of automation

Requires 4-year degree
 Automation adoption (pre-GenAI)
 Accelerated adoption driven by GenAI

Select occupations¹ with low automation adoption rate and average annual wages of more than \$42,000

Role	Automation adoption rate ² , %	Average annual wages, \$ thousand	Future-proof skills		
			Physical presence	Socioemotional understanding	Comfort with ambiguity
Dental hygienists	3 6	64	●	●	●
Licensed practical and licensed vocational nurses	9 1	42	●	●	●
Social and community service managers	2 11	60	●	●	●
Massage therapists	7 6	43	●	●	●
Commercial and industrial designers	1 13	62	●	●	●
Education and childcare administrators (preschool and daycare)	9 6	44	●	●	●
Occupational health and safety specialists	8 8	62	●	●	●
Training and development specialists	1 13	53	●	●	●
Special education teachers	5 11	56	●	●	●
Respiratory therapists	13 5	56	●	●	●

1. Select occupations from among the top 20 occupations with >20,000 employees that have the lowest adoption rate by 2030.

2. Potential labor displacement driven by automation adoption; midpoint scenario through 2030. Automation includes both GenAI and pre-GenAI technology (eg, robotics). Additional GenAI displacements may include displacement by some technologies that benefitted from gen ai in addition to GenAI itself.

Appendix

What are the biggest opportunities you see for your organization?



Three common ways to deploy gen AI solutions



TAKER

Integrate commercial off-the-shelf gen AI solution into workflows as-is, with little to no customization



SHAPER

Augment existing gen AI models for specific geographic, sector, organization, and business case needs, leveraging proprietary data and insights



MAKER

Develop and train a new foundational model from scratch, tailored to the organization

Cost and value implications

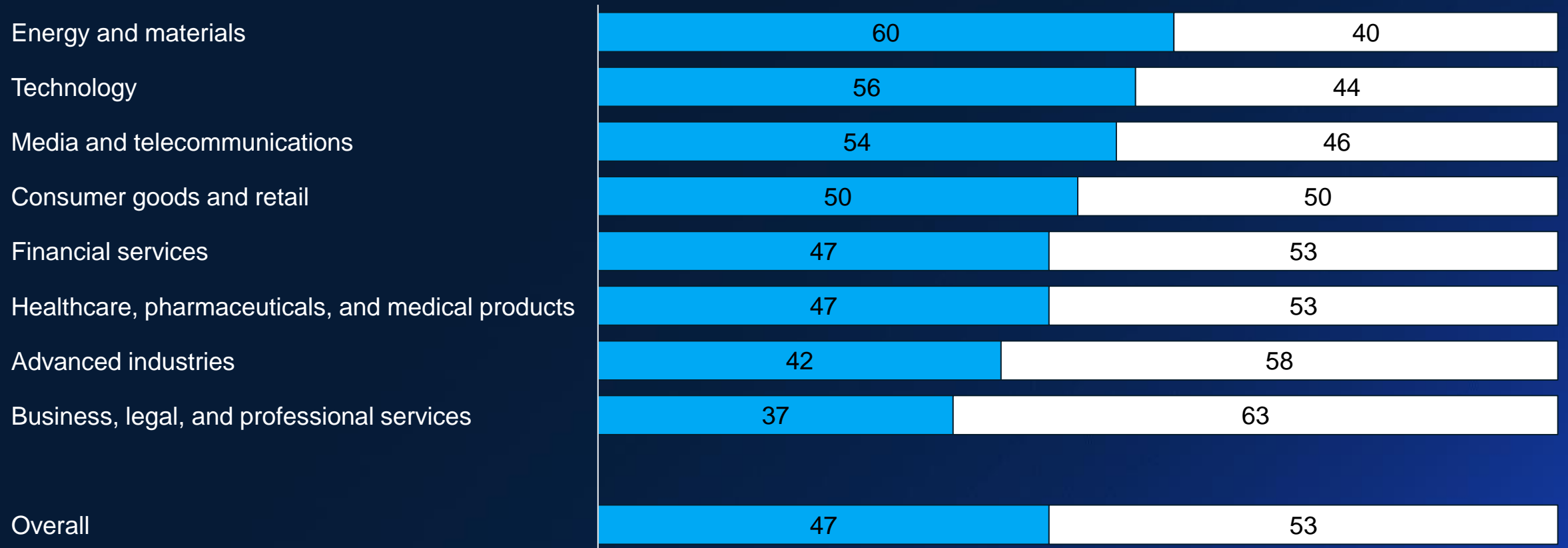
Lower capex needs, minimal differentiation possible

Higher capex needs, high differentiation possible

Industries employ both “shaper” and “taker” models

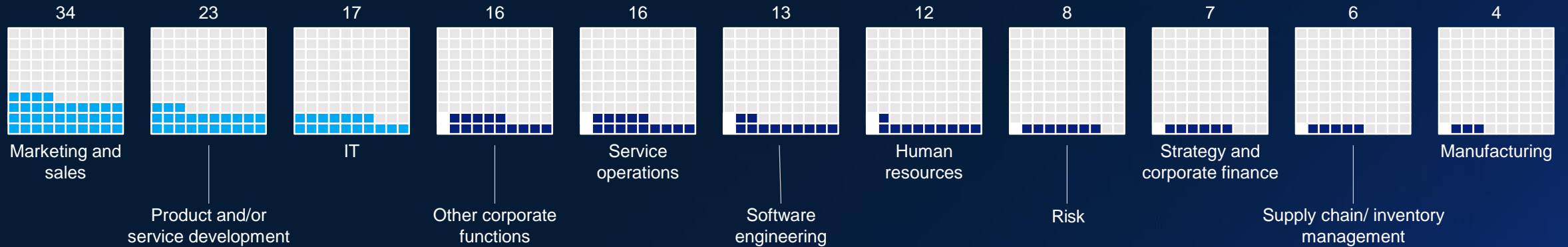
■ Significant customization or developed own model ■ Primarily off the shelf, with little or no customization

Strategy for developing generative AI (gen AI) capabilities, % of reported instances of gen AI use¹



>50% of organizations are using gen AI in 2 or more functions

Respondents' organizations regularly using generative AI (gen AI), by function, % of respondents

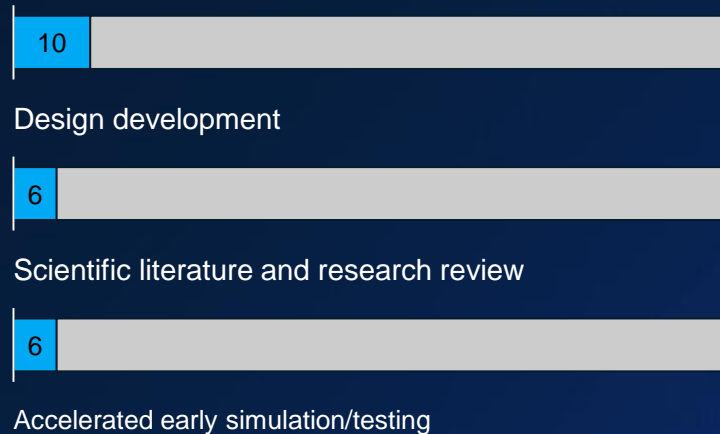


Most commonly reported gen AI use cases within function, % of respondents

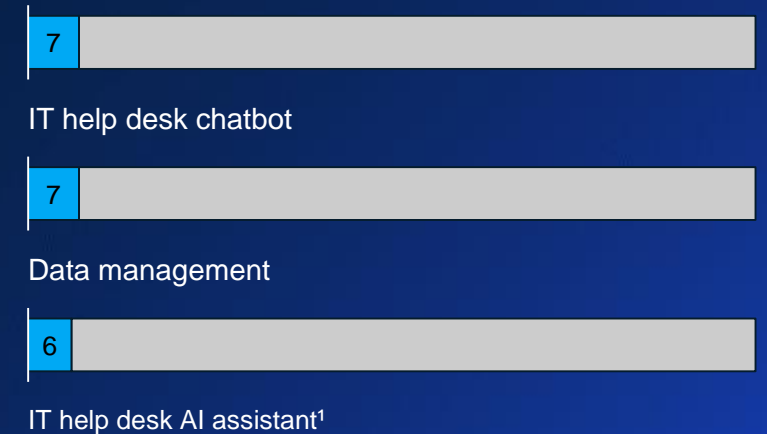
Marketing and sales



Product and/or service development



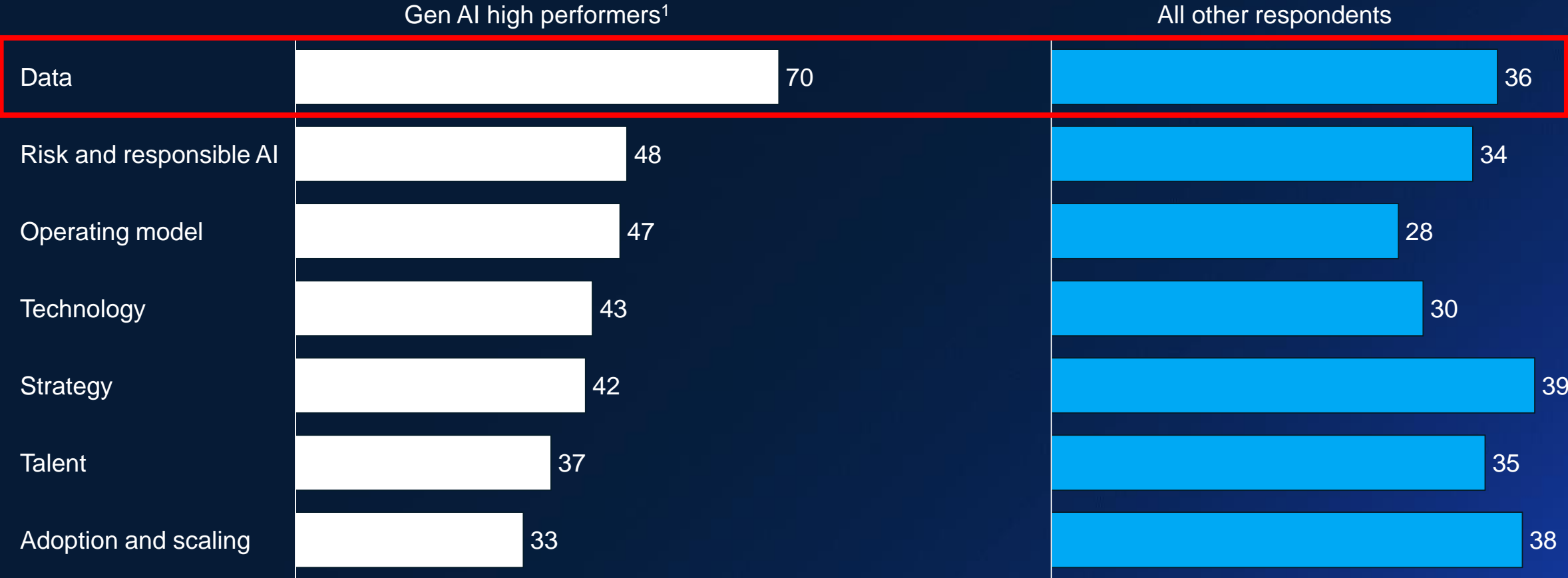
IT



1. Eg, providing real-time assistance and script suggestions to help desk employees during human-to-human conversations.

Generative AI high performers say data is their top challenge

Elements that have posed challenges in capturing value from generative AI (gen AI), % of respondents



Source: McKinsey Global Survey, [The state of AI in Early 2024: Gen AI adoption spikes and starts to generate value](#);

Common pitfalls and corresponding principles

Common pitfall		Corresponding principle
“Shiny toy” syndrome	→	Prioritize critical areas and problems for AI use cases to transform how work is delivered or experienced with quantified targets for ROI
Vendor overreliance	→	Avoid vendor or tool lock-in with a plan for integration with current systems and internal capability building to sustain long-term use and evolution
Siloed solutions	→	Build the solution to be interoperable with other organizational systems so that a process is transformed end-to-end with a focus on experience
Availability of quality data	→	Identify the data requirements and plan for model training (for traditional AI and GenAI solutions)
Risk-resilient model design	→	Require measures for bias, explainability, and performance across the lifecycle (data integration, model development, deployment and use)
User mistrust and resistance	→	Invest in adoption from Day 1 with a focus on user experience, re-engineering the business process, and building in AI explainability

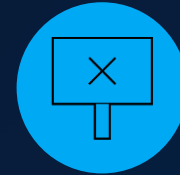
Risk matters, but that does not mean you can't innovate

Responsible AI risk types



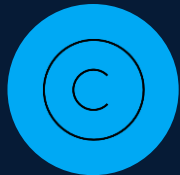
Impaired fairness

Algorithmic bias; misrepresentation of generated content as human-created



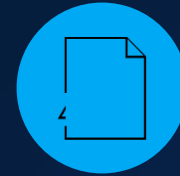
Performance & explainability risk

Inability to explain model outputs appropriately and model inaccuracies



IP infringement

Infringement on copyrighted or otherwise legally protected materials



Security threats

Vulnerabilities in generative AI systems that may be breached or exploited



Privacy concerns

Unauthorized use/disclosure of personal or sensitive information



ESG impact

Non-compliance with ESG standards; reputational risk



Malicious use

AI-generated promulgation of malicious content



Third-party risk

Risks associated with the use of third-party AI tools



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