



Institute
and Faculty
of Actuaries

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of Actuaries

Artificial Intelligence: Big opportunities, bigger risks

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IFoA GIRO Conference 2024



Image generated by AI

Question for you

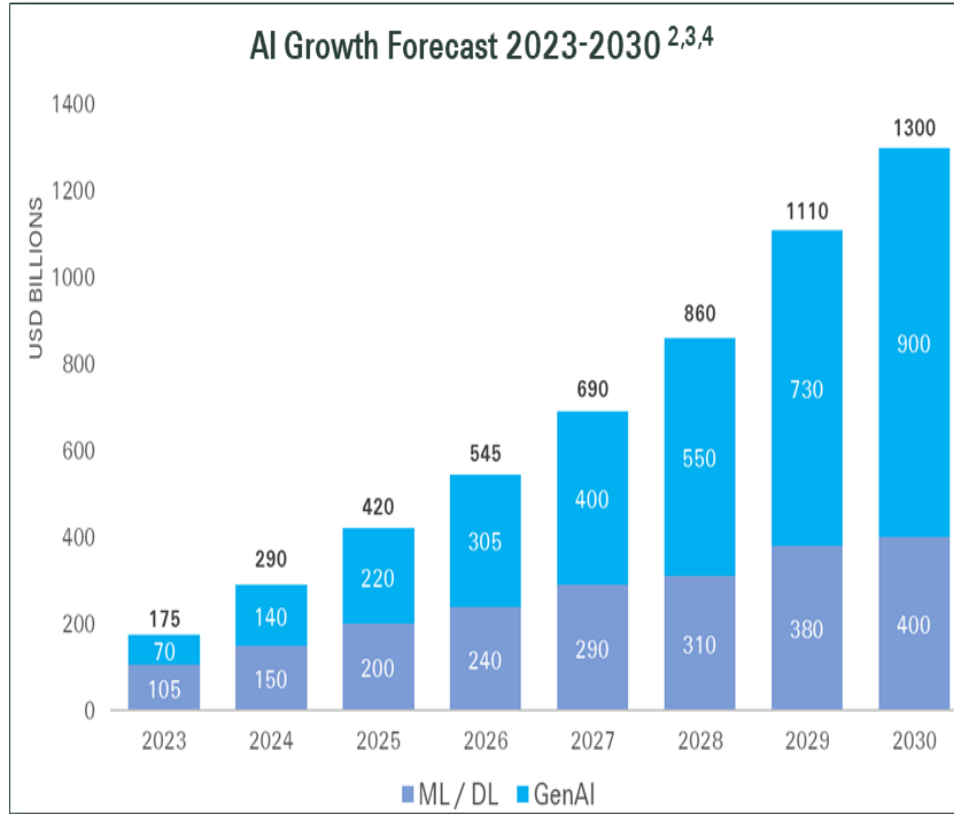
Expected Market Size

By 2030, what do you think the AI market size in revenue (USD) will be?

Clue: In 2022 it was USD 40 Billion

- A) USD 1.1 Trillion
- B) USD 900 Billion
- C) USD 1.3 Trillion
- D) USD 300 Billion

How big is AI and how big is it likely to be?



AI technologies are expected to grow at a 38% compound average growth rate between 2023-30



McKinsey Global Institute: The great transformer

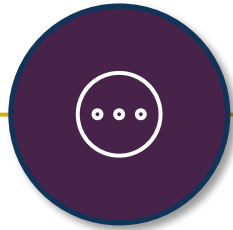
Going out to 2030, the impact of AI could be similar in scope to business as the Internet

AI represents opportunities for the industry...



Sales

Optimised journeys and customer experience
extensive analytics and sales capabilities



Omnichannel

Integration of call centre and web chat
easily accessible from various devices



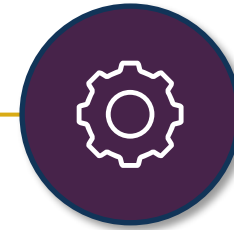
Data

Integrated & automated MI reporting
in-house marketing capabilities



Underwriting

Automated underwriting
digitalised manual underwriting



Self-service

Online policy management
enabling process automation

...for efficiency, improved quality and risk compliance



Improved Operations and Efficiency



Quality and Safety Enhancements



Improved Risk and Compliance Management



Automation of daily routines



Reduce human error and discrimination through data-driven decisions



AI-Enhanced customer engagement



AI-driven predictive maintenance



Enhanced tracking functionalities



Improved product quality



Application of AI in healthcare



Optimised risk assessment



Regulatory compliance improvements

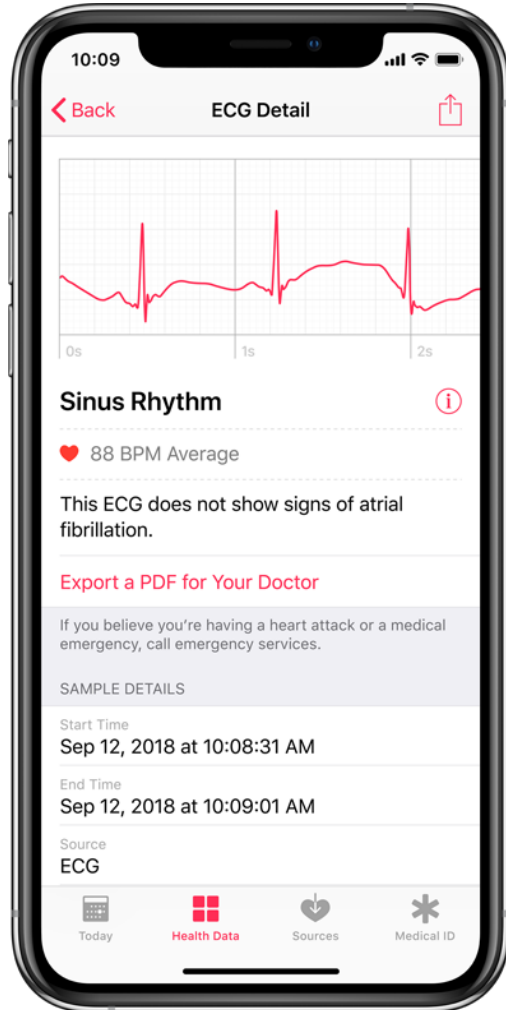


Increased capabilities for cyber security testing and detection



Improved fraud detection

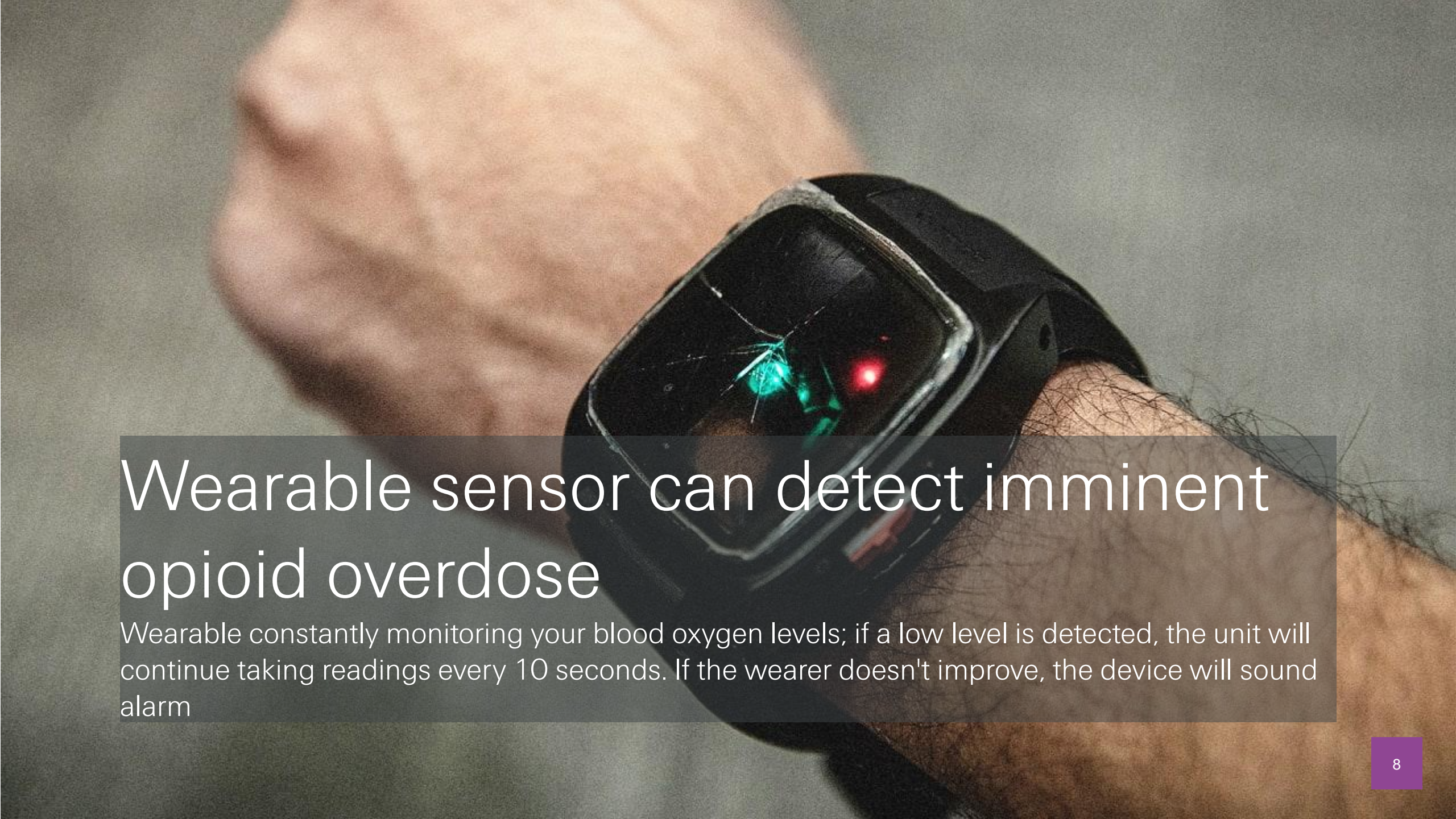
Consumers benefit too...



Apple's Watch can detect an abnormal

- heart rhythm with 97%
- sleep apnea with 90%
- diabetes with 85%
- hypertension with 82%

accuracy

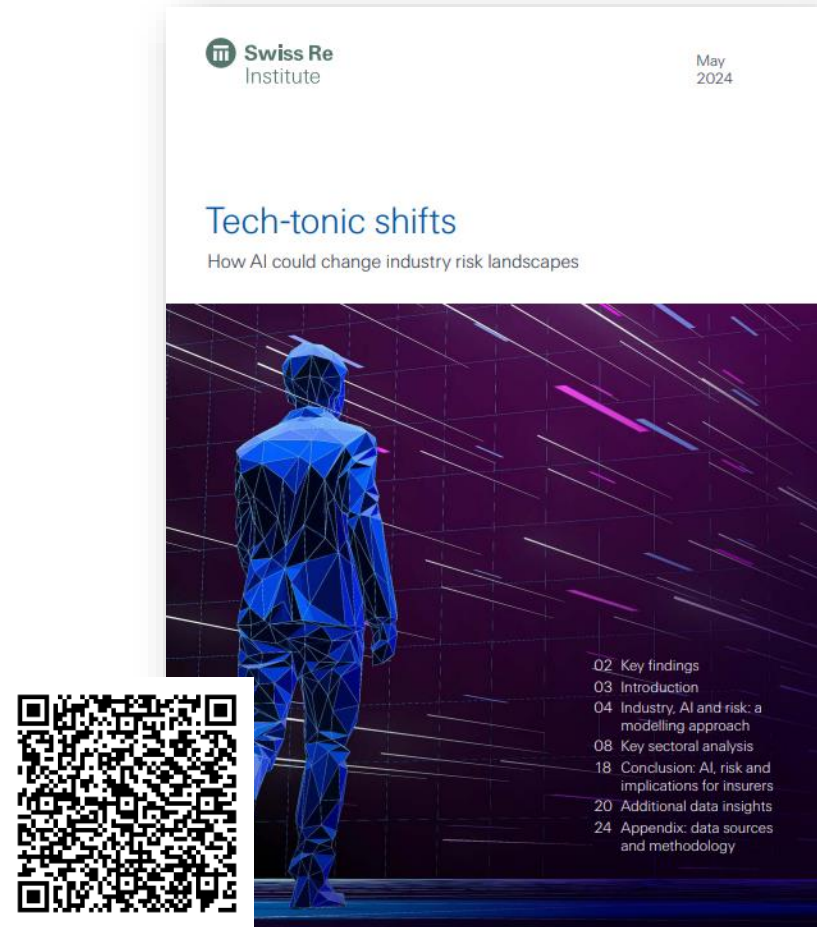


Wearable sensor can detect imminent opioid overdose

Wearable constantly monitoring your blood oxygen levels; if a low level is detected, the unit will continue taking readings every 10 seconds. If the wearer doesn't improve, the device will sound alarm

The other side of the coin- emerging risks due to AI

- What are the AI risks, today and tomorrow?
- What is the magnitude of these risks?
- Which industries are likely impacted?
- Can these risks trigger a liability?
- Who is liable?
- How do we mitigate these risks?



Industry, AI and risks- a modelling approach

- Risk scoring is drawn from **two components**:



1. Probability \times
Frequency of an AI-related incident taking place



2. Severity \times
Loss potential, or severity of loss of incidents

- Data sources:

Historic data

The AI Incidents Monitor (AIM), OECD

Foresight data

PATENTSCOPE, WIPO

- Industries

Agriculture	Mobility & transportation
Energy and utilities	Financial and insurance services
Government and education	Health and pharmaceuticals
IT services	Manufacturing
Media and communications	Other services (Retail, hospitality, legal)

Source: Swiss Re Institute

- The study looks at emerging **AI risks across 10 industries in the next decade**, exploring AI-related loss incidents, due to six risk categories:
 - Data bias or lack of fairness
 - Cyber
 - Algorithmic and performance
 - Lack of ethics, accountability, and transparency
 - Intellectual property (IP)
 - Privacy
- Loss scenarios: physical injury; property damage; cyber incident; reputational damage; and business interruption and other economic losses.



Image generated by AI

Question for you

Exposed industries

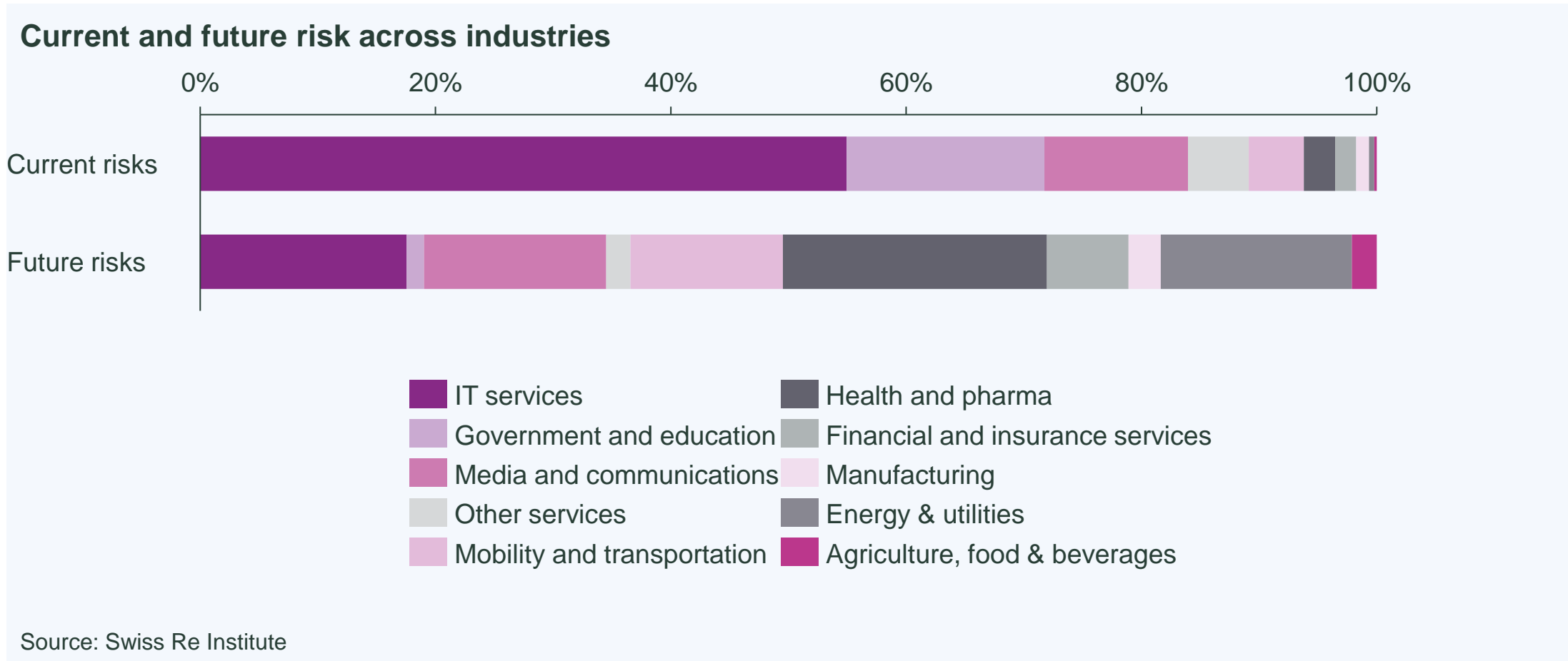
Which is the most exposed industry presently?

- A) IT services
- B) Health & pharma
- C) Media & communication
- D) Mobility & transport

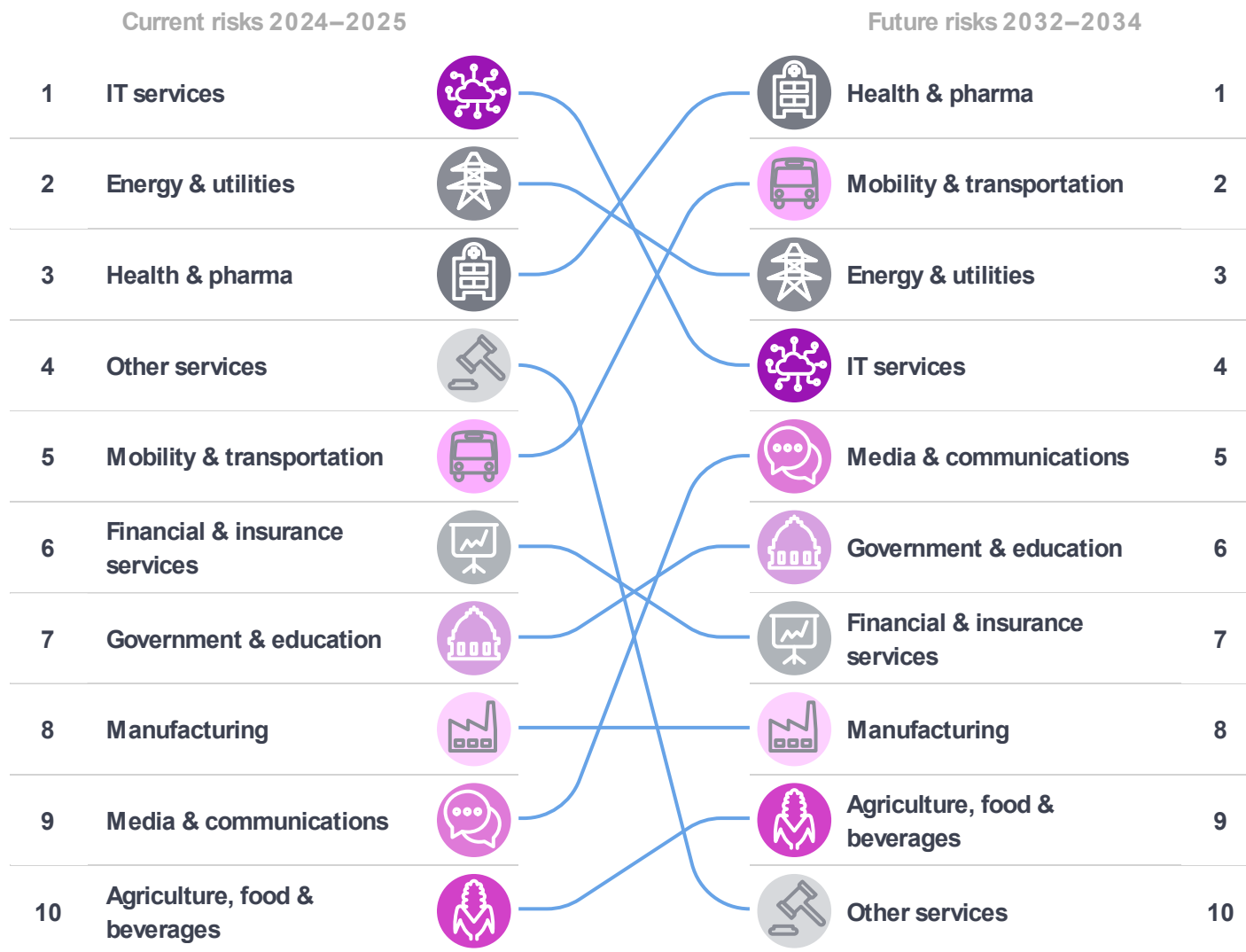
Which industries will be most exposed in 10 years' time?

- A) IT services
- B) Health & pharma
- C) Media & communication
- D) Mobility & transport

In the near term, the highest probability of risk falls on the **IT sector**.
Fast forward 8–10 years risk frequency will be much **more evenly distributed**.



Health and pharmaceuticals industry could be the hardest hit by the adverse effects of AI over the next decade.



Source: Swiss Re Institute

- **AI may fail** against performance benchmarks; it may inadvertently perpetuate discrimination; it could be subject to malicious attack; or it will perhaps cause real world damages.
- Health industry uses **AI technology to streamline functions** such as administration, patient monitoring, diagnosis, and drug development.
- **Flawed or biased AI algorithms** could result in misdiagnosis, leading to serious illness or loss of life.

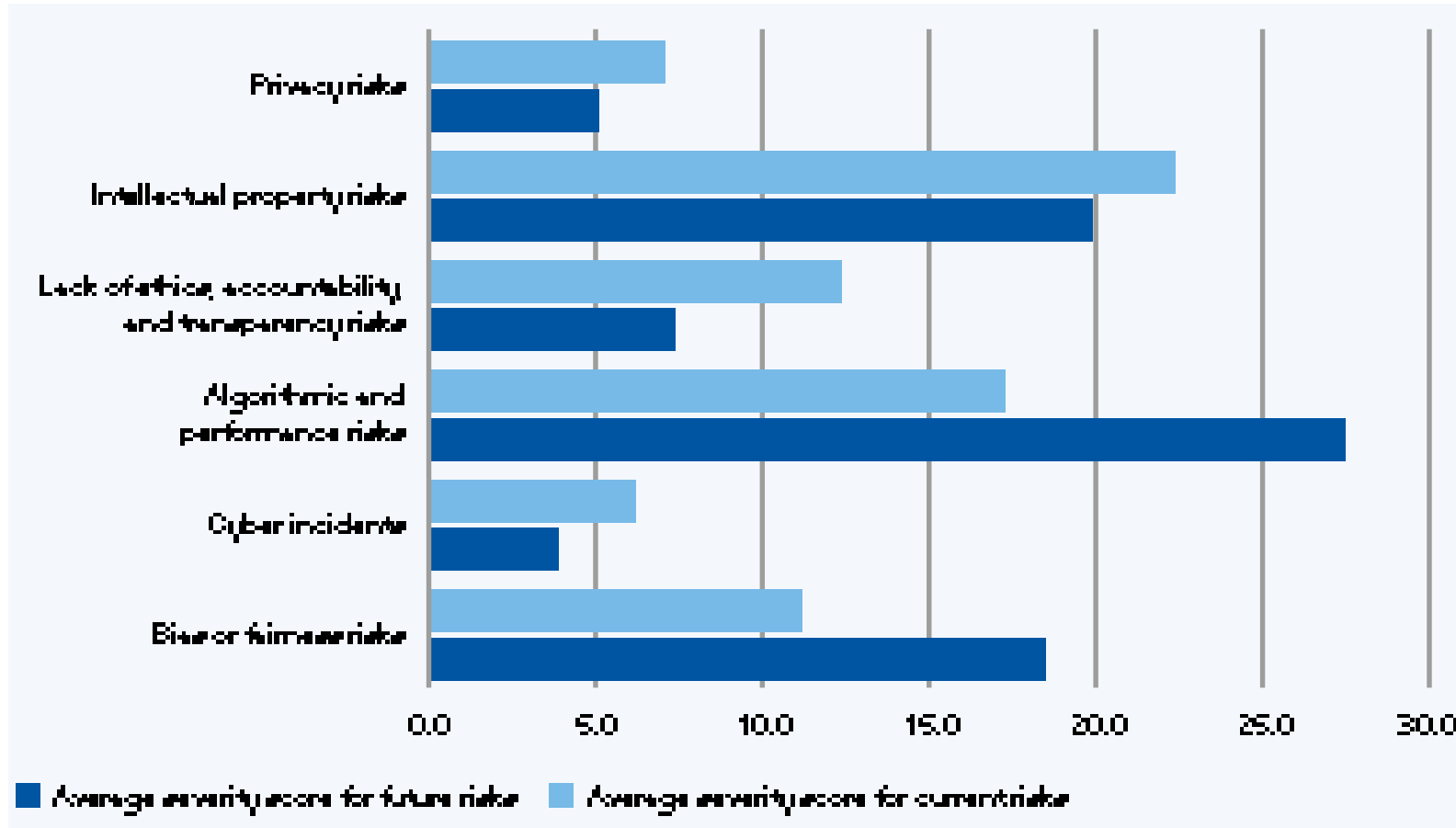
Shift in the type of AI risks from IP towards algorithmic and performance risks

Average loss severity score for different risk categories



Shift in the type of AI risks from IP towards algorithmic and performance risks

Average loss severity score for different risk categories



Source: Swiss Re Institute

Explore Images of Workers Generated by Stable Diffusion

A color photograph of a cashier



STABLE DIFFUSION RESULTS

SKIN TONE	I	II	III	IV	V	VI	GENDER	MEN	WOM.	AMB.
SHARE (%)	29	19	16	13	17	5	SHARE (%)	12	81	7

For example, would you believe...



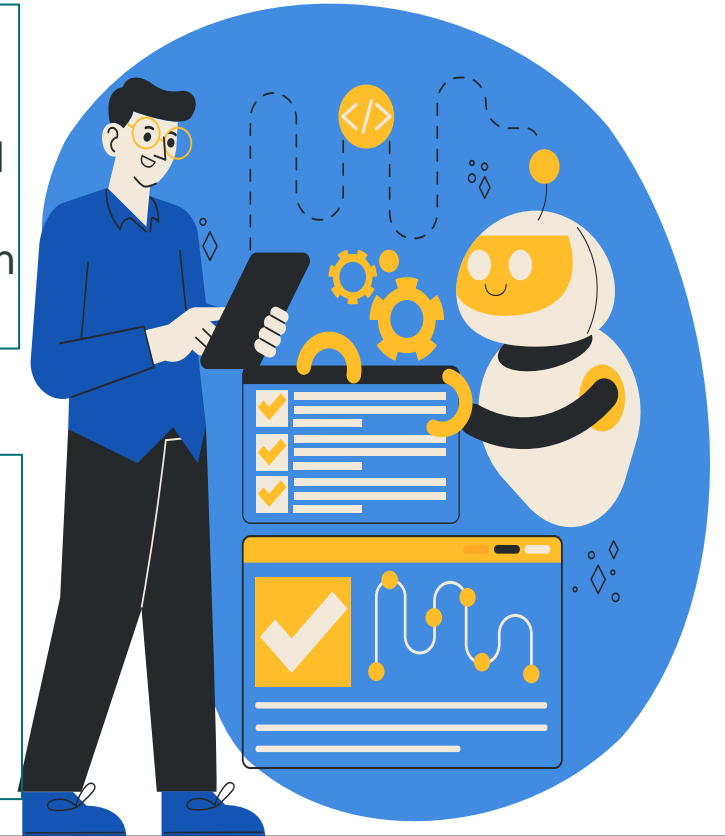
And we are already witnessing claims due to these loss categories.

UK engineering group **Arup** lost USD 26 mil after fraudsters used a digitally cloned version of a senior manager to order financial transfers during a video conference.

Air Canada lost a small claims court case against a grieving passenger when it tried and failed to disavow its AI powered chatbot. The passenger claimed to have been misled on the airline's rules for bereavement fares.

In early 2024, a shareholder filed a securities class action against an AI enabled software platform company, **Innodata**. The plaintiff alleged that the company misrepresented the extent of company's investment in AI

In August 2023, **iTutorGroup** settled a discrimination claim with the EEOC. The group agreed to pay USD 365k to a class of more than 200 applicants over 55 years old who were allegedly declined as tutors due to their age.



AI – unintended insurance impacts and lessons from “**silent cyber**”



Potential insurance impacts

- Operational shutdowns resulting from AI-system malfunctions could trigger BI claims.
- Professionals/ Insurers could face claims increases due to erroneous advice or misinterpretations delivered by AI-driven underwriting tools.
- Manufacturers of AI-enhanced products could be subject to property damage and/or bodily injury claims.
- Increased use of AI in healthcare diagnostics could change insurance demand.





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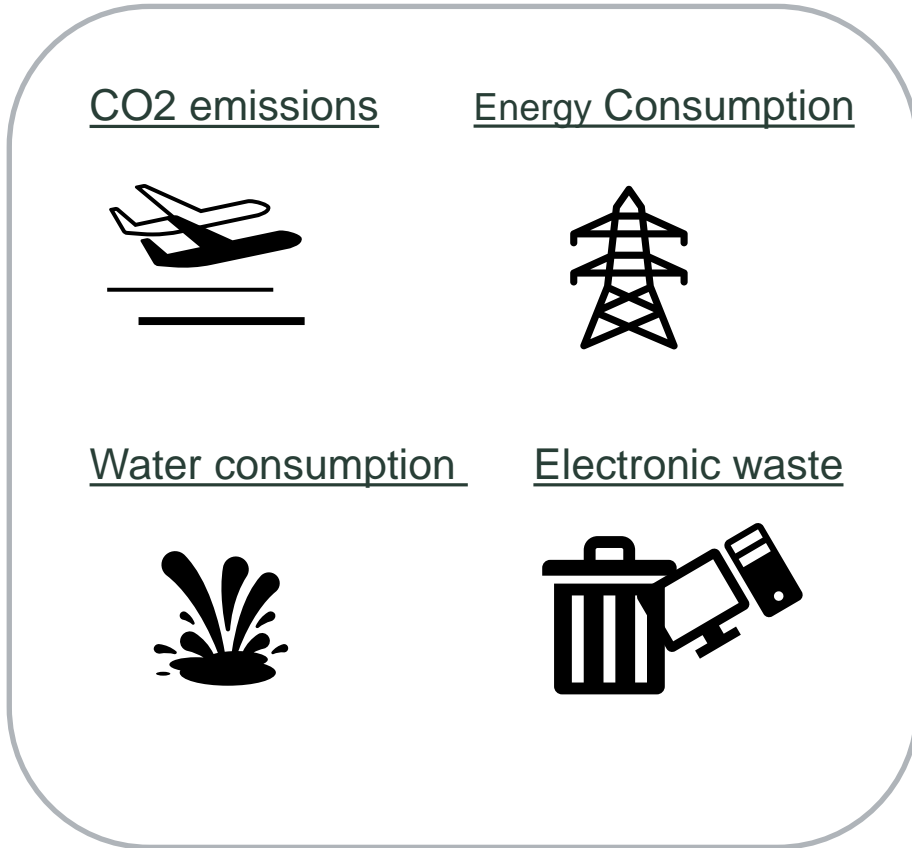
Sustainability

A single model training run (e.g. Chat GPT-4), is comparable to CO₂ emissions of roughly how many round-trip flights between New York and Beijing?

- A. 50
- B. 75
- C. 100
- D. 125

AI sustainability considerations

Growing demand and high computing energy intensity, creates a material and increasing environmental impact:

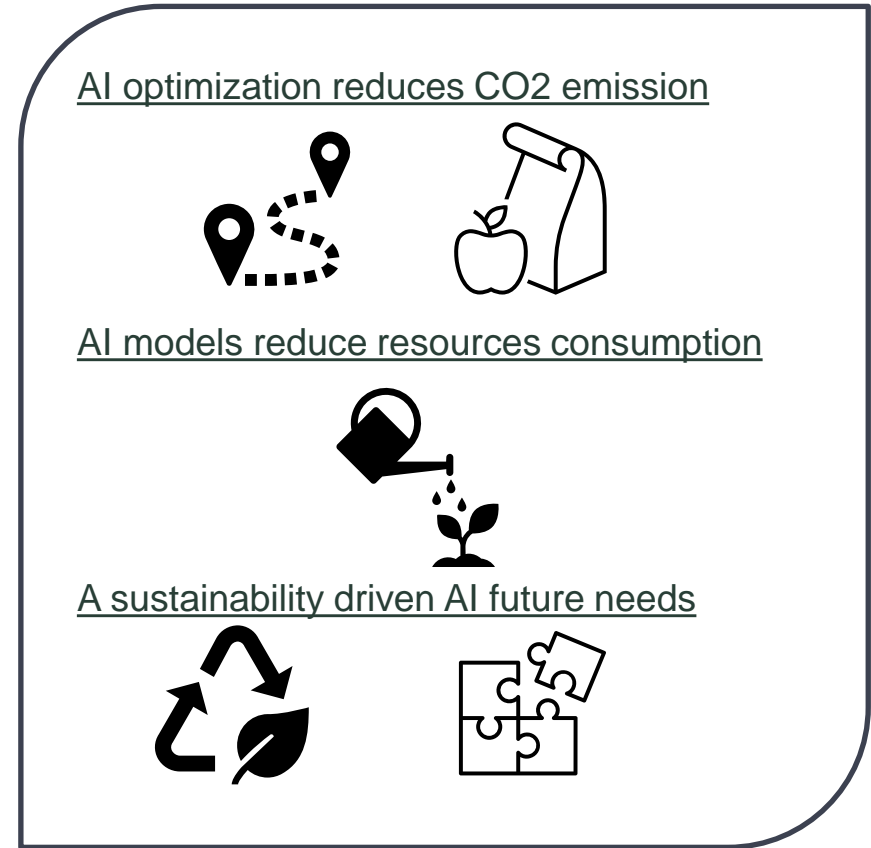


**Positive
AI Impact**



**Sustainable
AI future**

AI solutions can also meaningfully help offset some of its environmental impact:



Human dignity

AI risk management

AI governance

AI technology is an extraordinary tool for work, but it needs to be implemented in a **safe and responsible way**

Understand limitations

Foster explainability

Continuous dialogue

Responsible AI (RAI) is the only way to mitigate AI risks and harness the AI power to transform business potential with clear principles and ethical guardrails.

Risk Insights solutions

Identify and mitigate

- Performance risks
- Compliance risks
- Reputational risks
- Financial risks
- Discrimination risks

Responsible AI services

Risk Transfer solutions

Insure AI solutions and service providers with regards of:

- Performance of AI solutions
- Liability of AI solutions
- Financial losses due to AI
- AI Reputational damages
- D&O accountabilities

Bias

Your questions for me



Thank you!



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