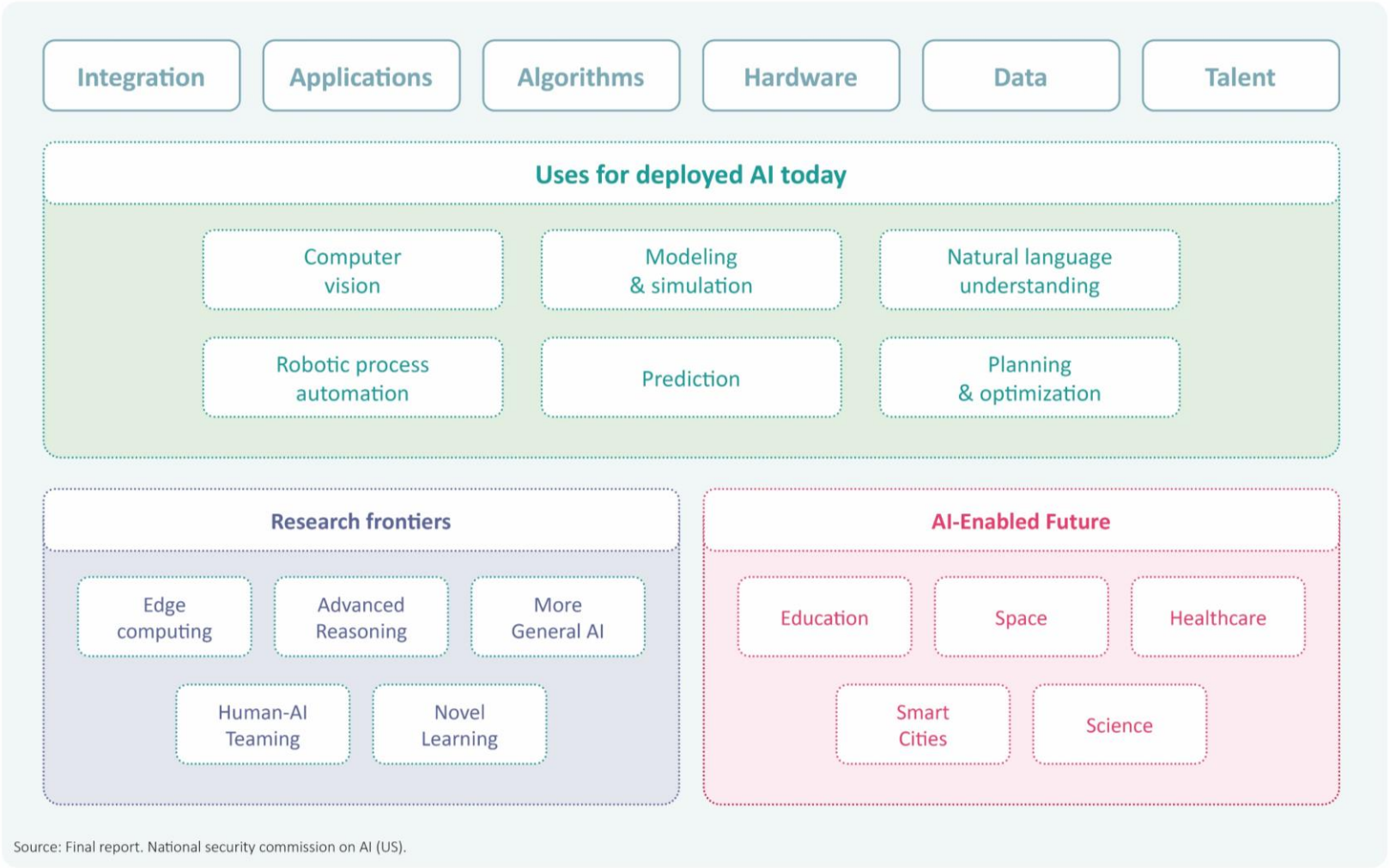
ALL EYES ON ARTIFICIAL INTELLIGENCE

TACKLING DIGITALISATION AND AI ON THE WORKPLACE

IndustriAll Europe

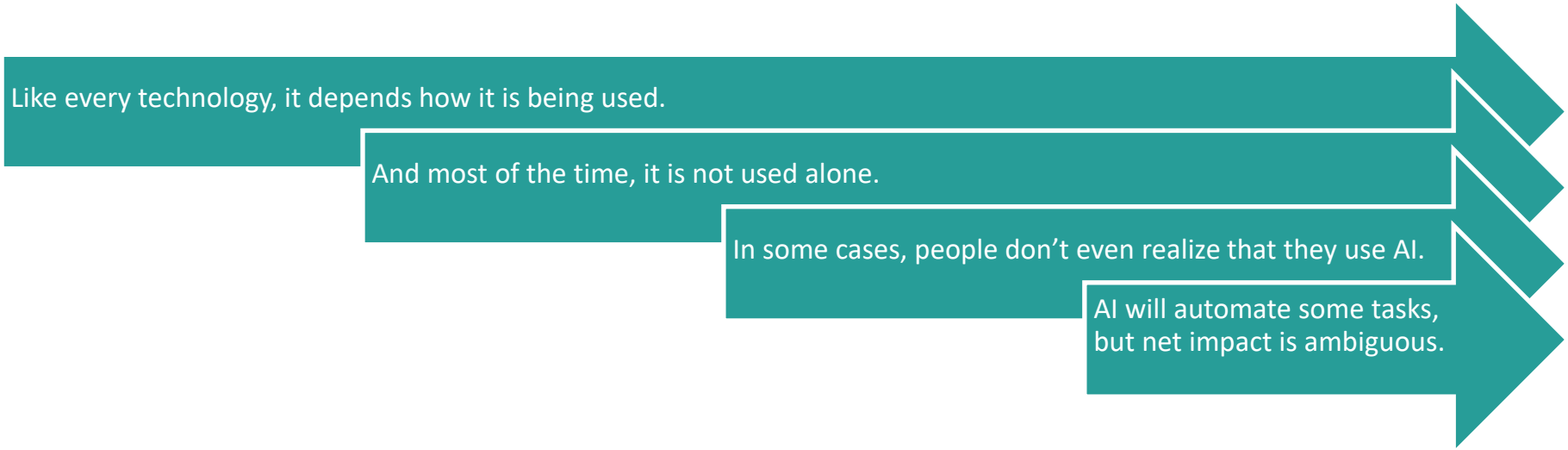
HELSINKI WORKSHOP. NOVEMBER 22, 2023

AI IS NOT A SINGLE PIECE OF HARD/SOFTWARE BUT MORE A CONSTELLATION OF TECHNOLOGIES



Source: Final report. National security commission on AI (US).

IS ARTIFICIAL INTELLIGENCE IRRESISTIBLE?



THE AMBIVALENCE OF TECHNOLOGY AND AI

	Human in the loop	No human in the loop
Hardwired/ specific systems	**Assisted intelligence** AI systems that assist humans in making decisions or taking actions. Hard-wired systems that do not learn from their interactions.	**Automation** Automation of manual and cognitive tasks that are either routine or non-routine. This does not involve new ways of doing things – it automates existing tasks.
Adaptive systems	**Augmented intelligence** AI systems that augment human decision making and continuously learn from their interactions with humans and the environment.	**Autonomous intelligence** AI systems that can adapt to different situations and can act autonomously without human assistance.

Source: "Sizing the prize, What's the real value of AI for your business and how can you capitalise?", PwC, 2017.

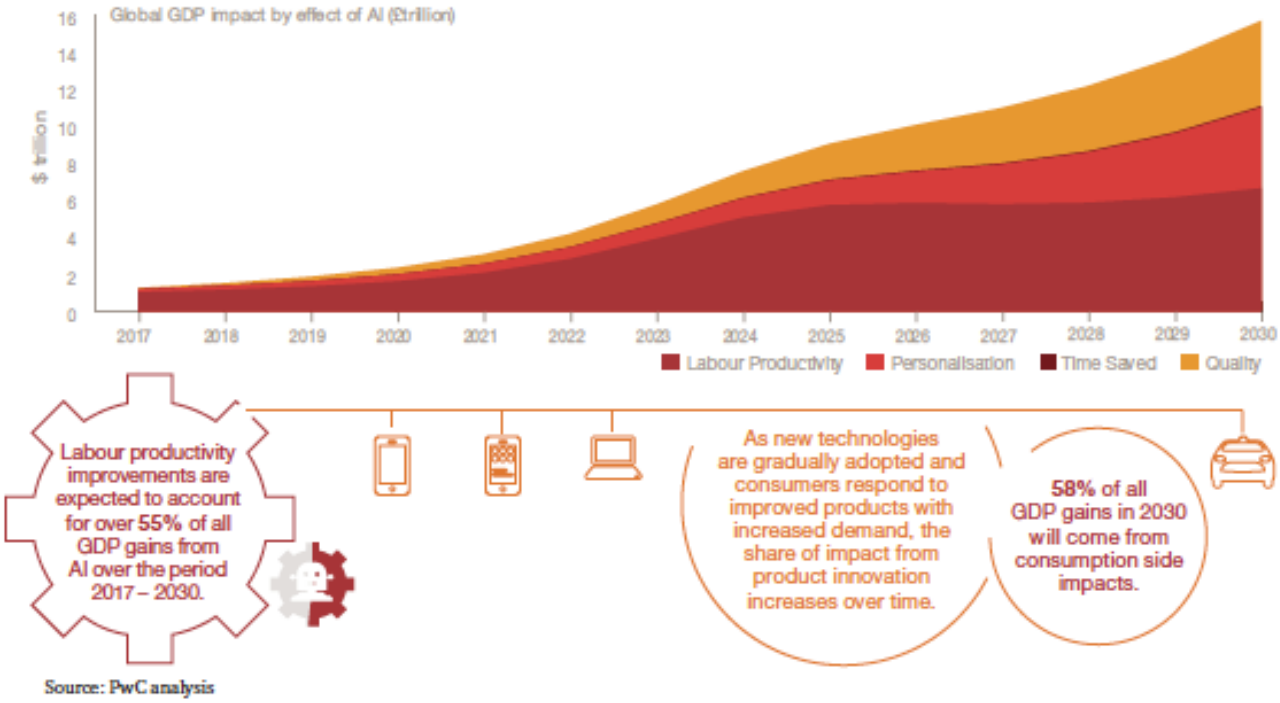
3 PERSPECTIVES ON AI (MORE TO COME)

#1

GROWTH AND LABOUR PRODUCTIVITY

AI MIGHT HAVE A POSITIVE IMPACT ON GDP AND ESPECIALLY ON LABOUR PRODUCTIVITY

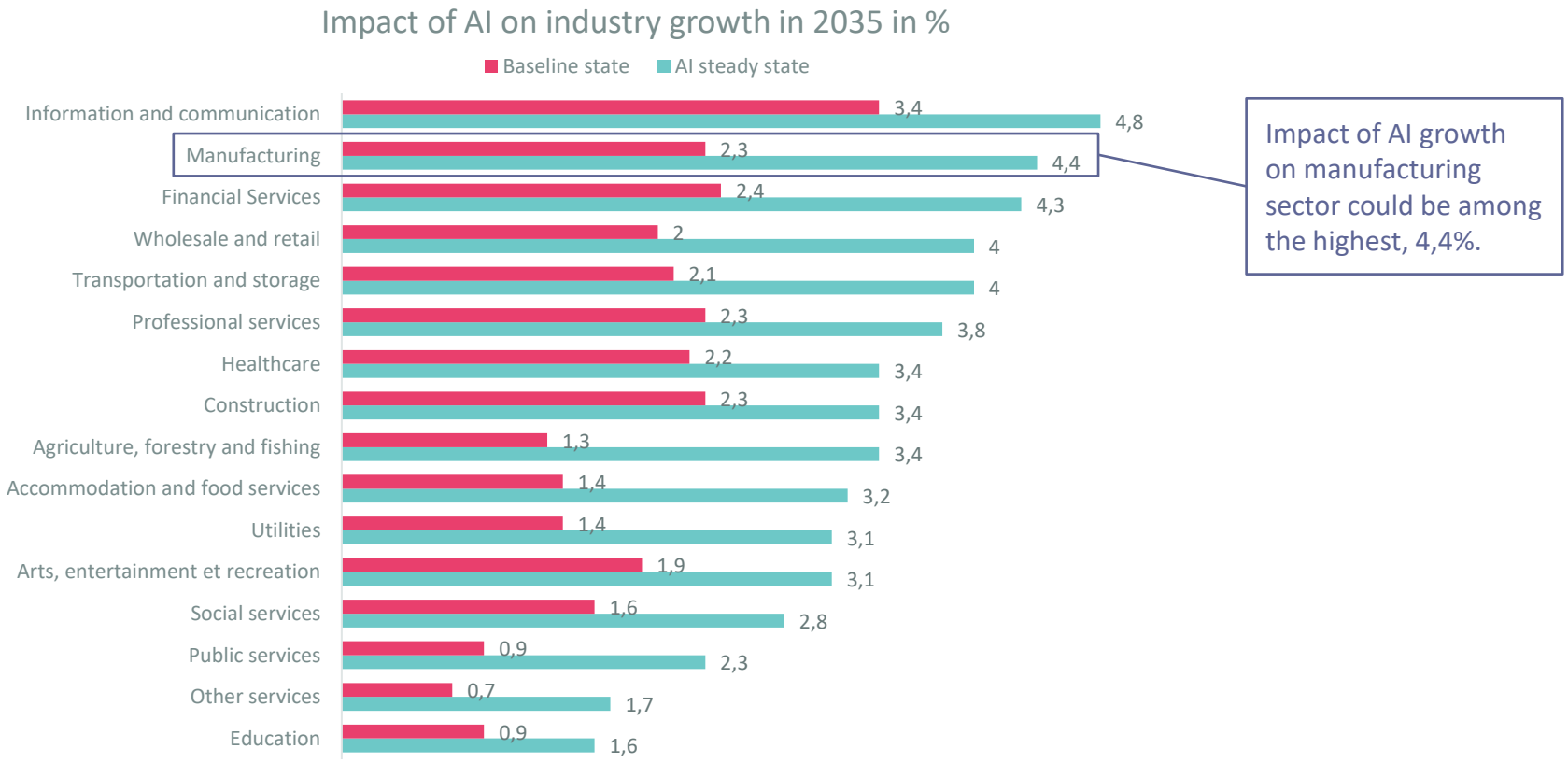
Figure 1: Where will the value gains come from with AI?



Source: PwC analysis

- According to PwC, more than half of GDP gains are expected to come from labour productivity.

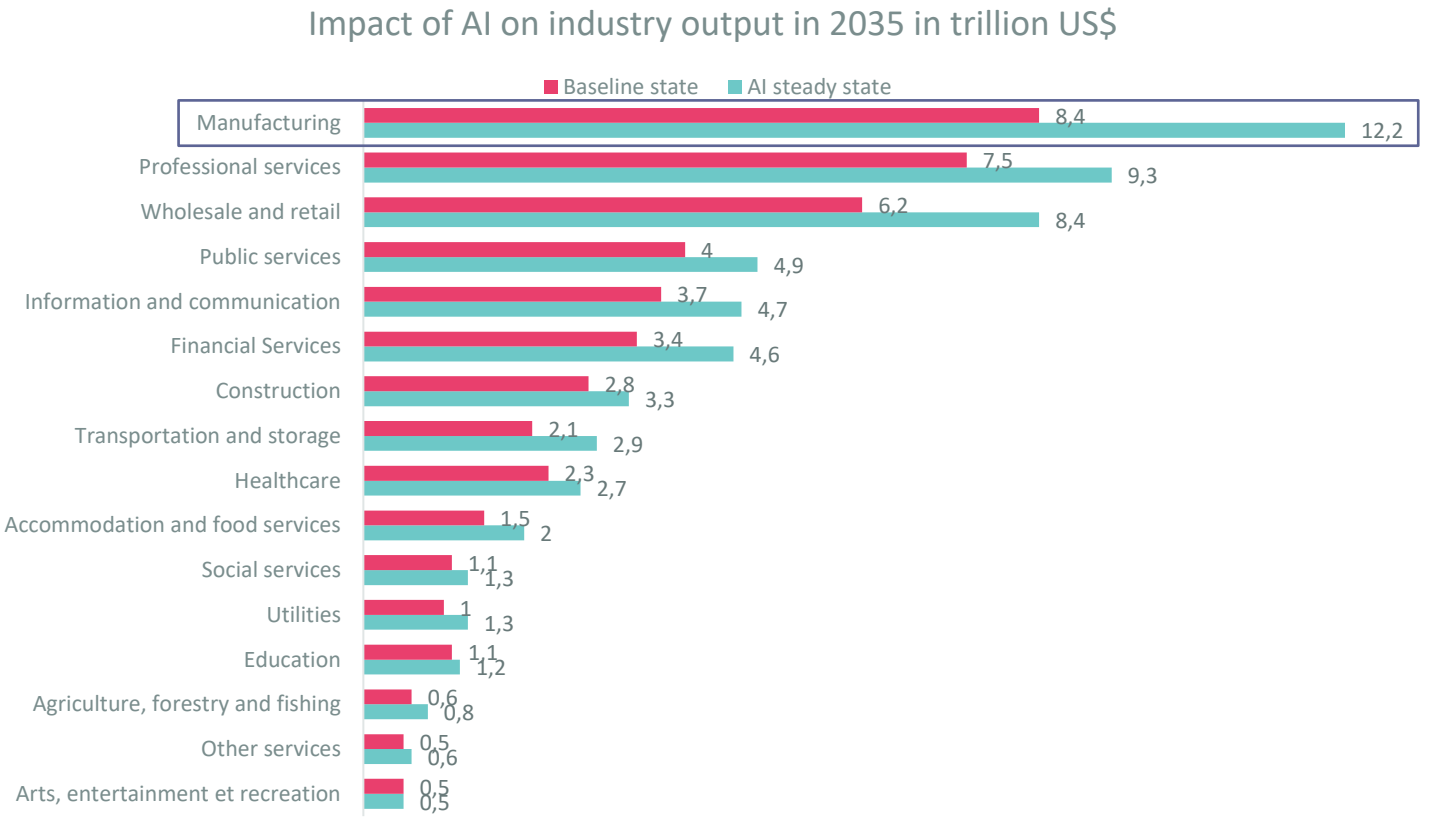
AI MIGHT BOOST THE GROWTH RATE OF ALL SECTORS



- A study by Accenture and Frontier Economics estimates that AI has the potential to increase economic growth rates by a weighted average of 1.7 percentage point by 2035 across 16 industries. Moreover, companies that successfully implement AI strategies face the prospect of increasing their profitability by an average of 38% by 2035.

Source: Statista.

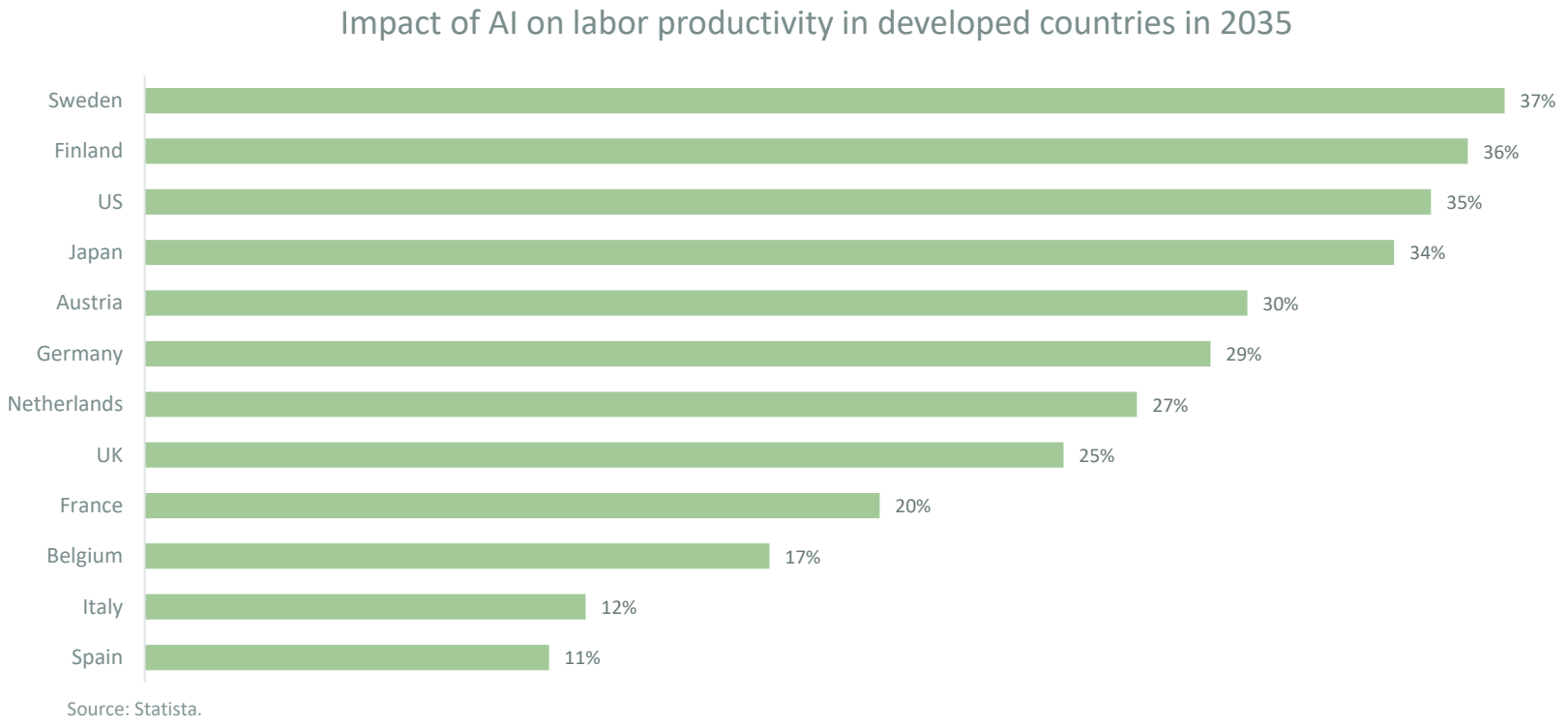
AI MIGHT FAVOUR MANUFACTURING OUTPUT



- The study by Accenture and Frontier Economics also estimates that AI can substantially raise the economic output of industries. For manufacturing alone, AI can boost GVA by almost US$ 4 trillion in 2035.
  - GVA = Gross value added: a close approximation of a country's GDP.

Source: Statista.

AI AND LABOR PRODUCTIVITY: HOW PRODUCTIVITY GAINS WILL BE ALLOCATED?



- According to the study by Accenture and Frontier Economics, AI has also the potential to increase labor productivity in countries.
  - The impact ranges from an 11 percentage points increase in Spain to 38 percentage points in Sweden (source: Statista).

Source: Statista.

#2

APPLICATION OF AI ON INDUSTRIAL SUB-SECTORS

AI APPLICATIONS IN INDUSTRY

Industries using reinforcement learning in various applications

Industry	Application
Advanced electronics and semiconductors	Optimize silicon and chip design to increase performance and reduce manufacturing costs Optimize fabrication manufacturing process for improved yield and throughput
Aerospace and defense	Optimize engineering design processes to reduce time to market for new systems and improve quality
Automotive	Optimize design processes to shorten development cycle for new cars and features and improve quality Deploy advanced predictive maintenance to prevent rare failures and unplanned outages Deliver real-time production monitoring and controls to increase manufacturing yield
Mining	Optimize design process so teams can explore a grater range of mine designs for improving mine yield Use intelligent process controls for managing power generation and bore milling to increase yield and reduce costs Apply holistic logistics scheduling to optimize mine-to-shipping operations and reduce costs
Oil and gas	Enable real-time well monitoring and precision drilling for increased yield Optimize tanker routing to reduce costs and ensure on time delivery Enable advanced predictive maintenance to prevent rare equipment failures and unplanned outages
Pharmaceuticals	Optimize drug discovery, identifying molecules of interest faster to reduce the time and cost of research and bring new therapies to market faster Automate chemistry, manufacturing, and controls (CMC) to maximize batch yield and quality Optimize biological methods to reach peak production output
Telecom	Optimize network layout to maximize coverage and minimize power consumption Manage networks in real-time to optimize service quality and reduce downtime Apply advanced personalization to increase cross-sell an upsell revenue

Optimizing product development cycles (AI-assisted design) Optimizing complex operations Informing next best action for each customer

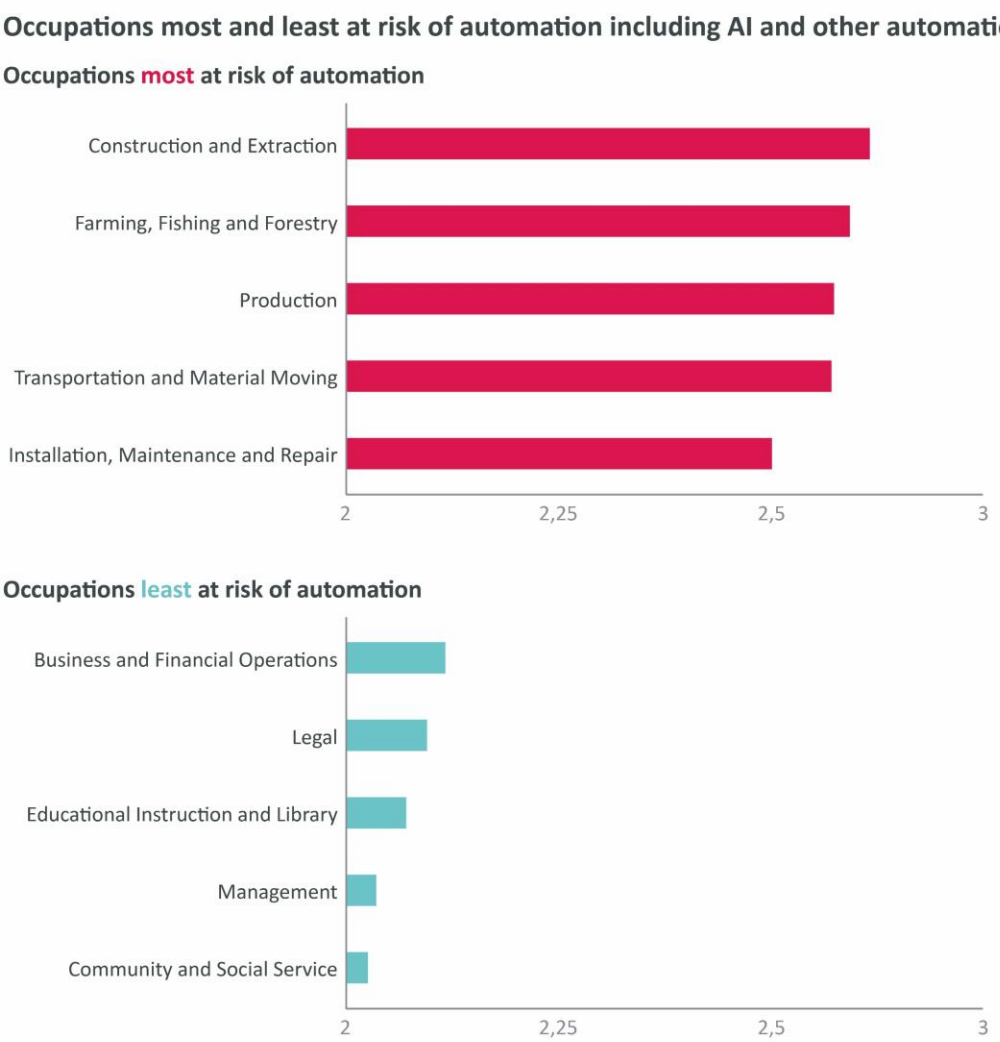
Sources: Statista/McKinsey.

#3

AI ENLARGES THE IMPACT ON OCCUPATIONAL CATEGORIES

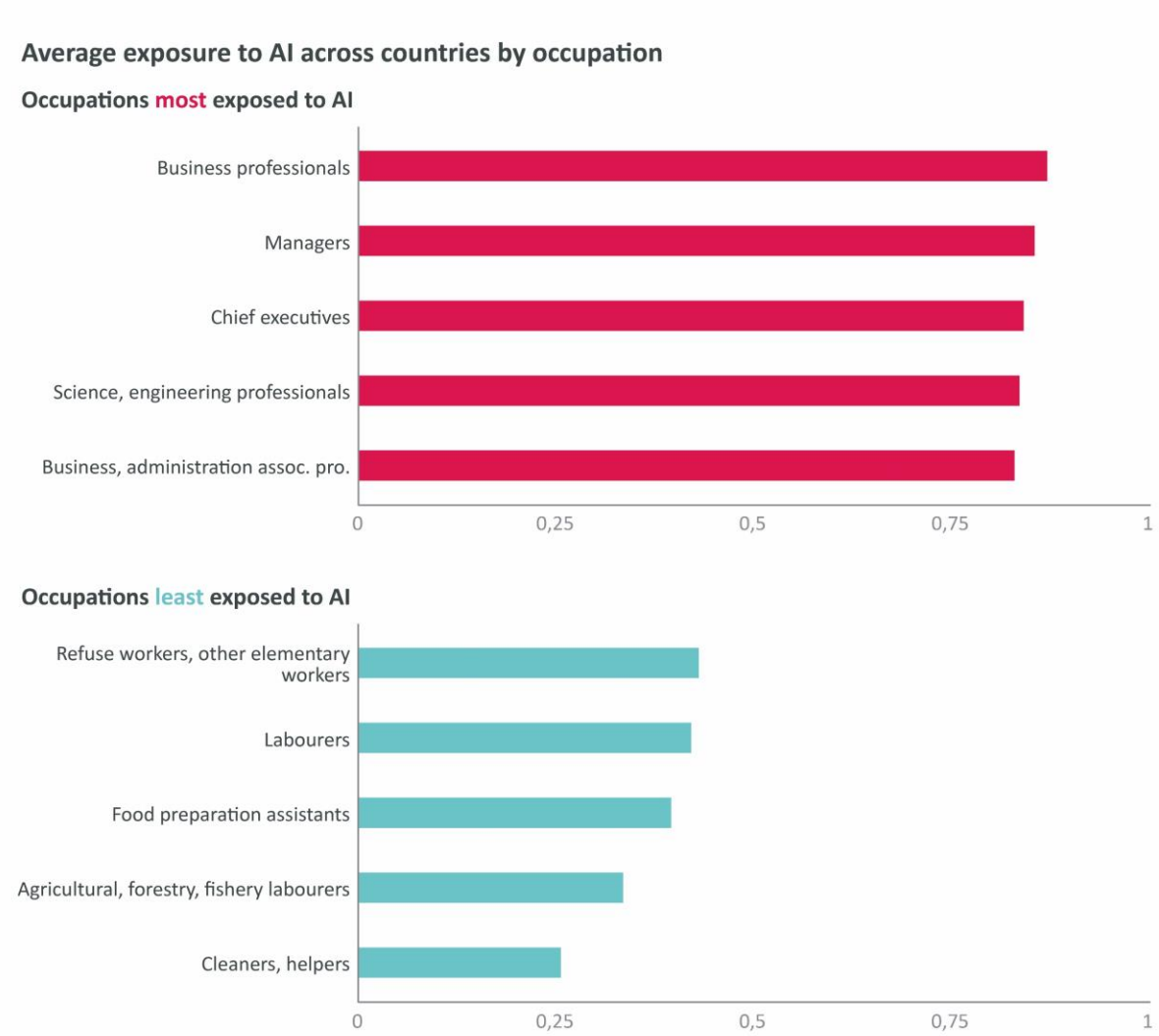
LOW SKILL JOBS ARE MORE EXPOSED TO AUTOMATION THAN HIGH SKILL JOBS

Occupations most and least at risk of automation including AI and other automation technologies, 2021



Source: OECD Employment outlook 2023. Artificial intelligence and the labour market

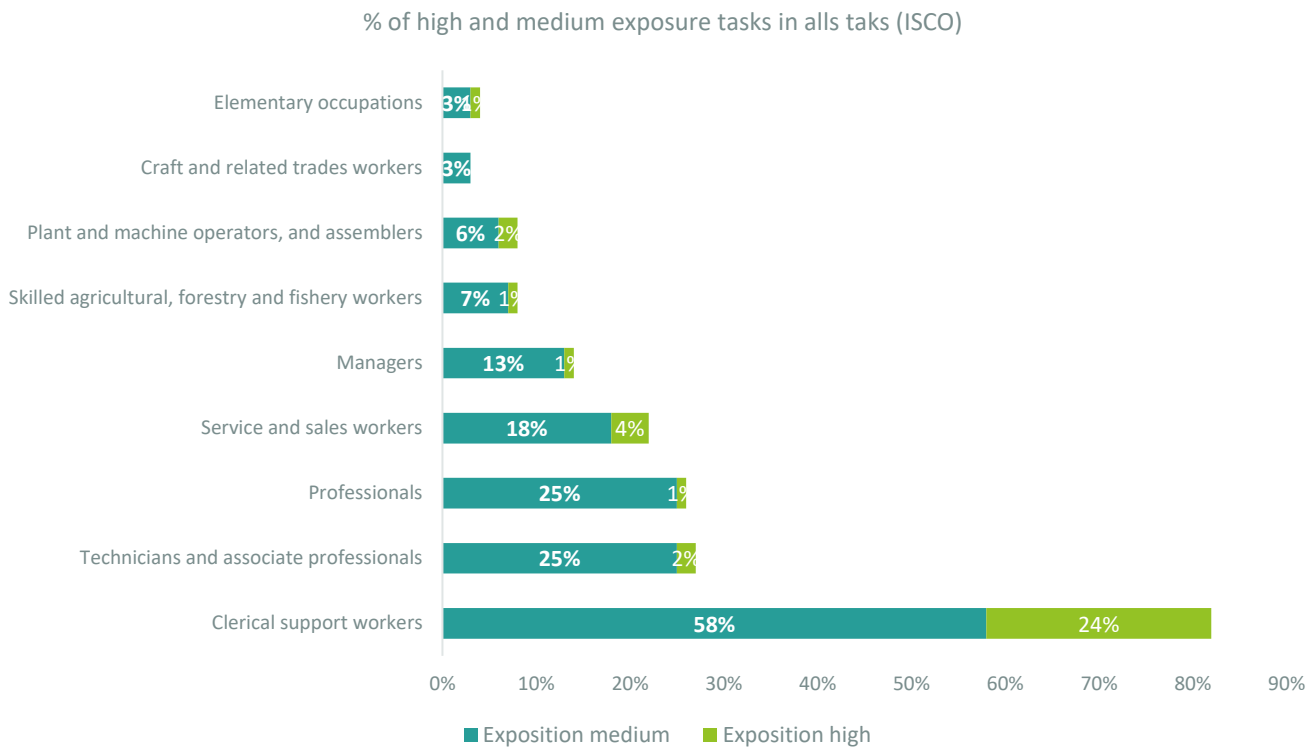
HIGH SKILL JOBS ARE MORE EXPOSED TO AI THAN LOW SKILL JOBS



- AI made huge progress performing non routine skills/cognitive tasks. This is why white-collar/skilled jobs are more exposed to AI.

Source: OECD Employment outlook 2023. Artificial intelligence and the labour market

TASKS WITH MEDIUM AND HIGH GPT-EXPOSURE: WHO IS IMPACTED?



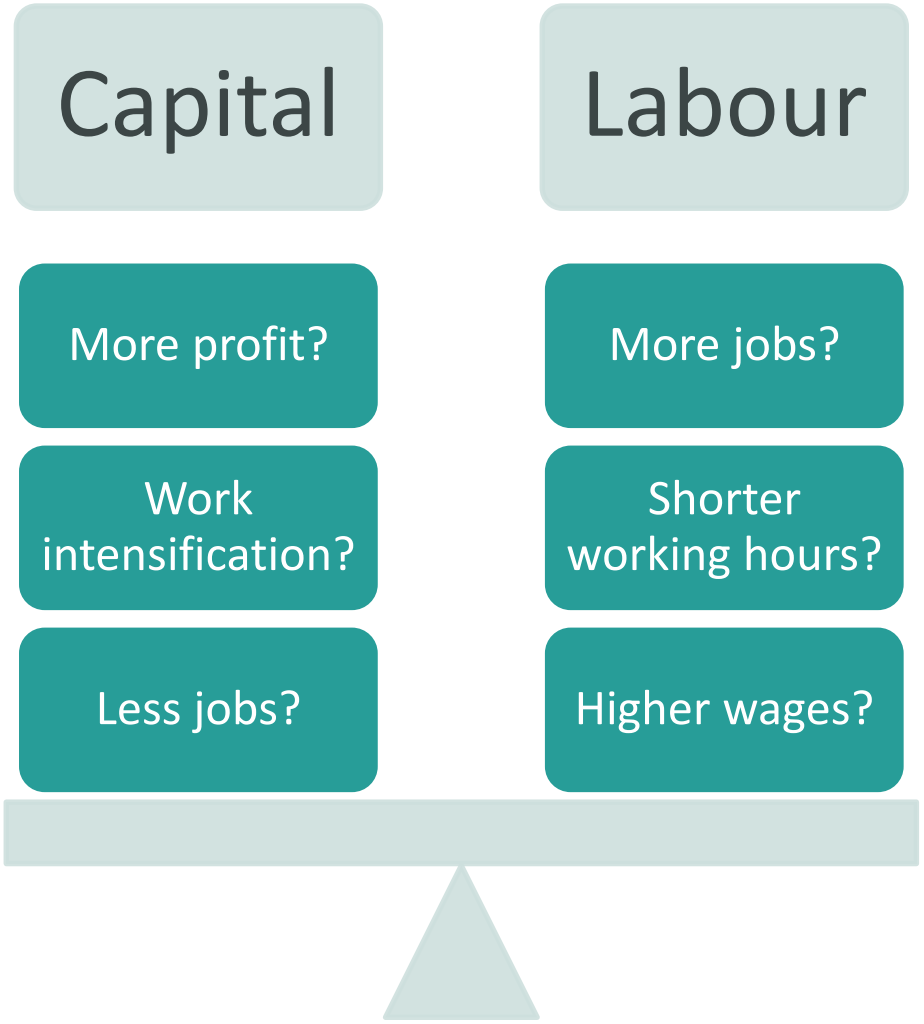
- White-collars seem to be strongly exposed to ChatGPT and much more than another occupation.
- On the contrary, workers seem to be only slightly exposed.
- ILO work goes in the same direction as OECD.

Source: Generative AI and Jobs. A global analysis of potential effects on job quantity and quality. ILO. August 2023.

#4

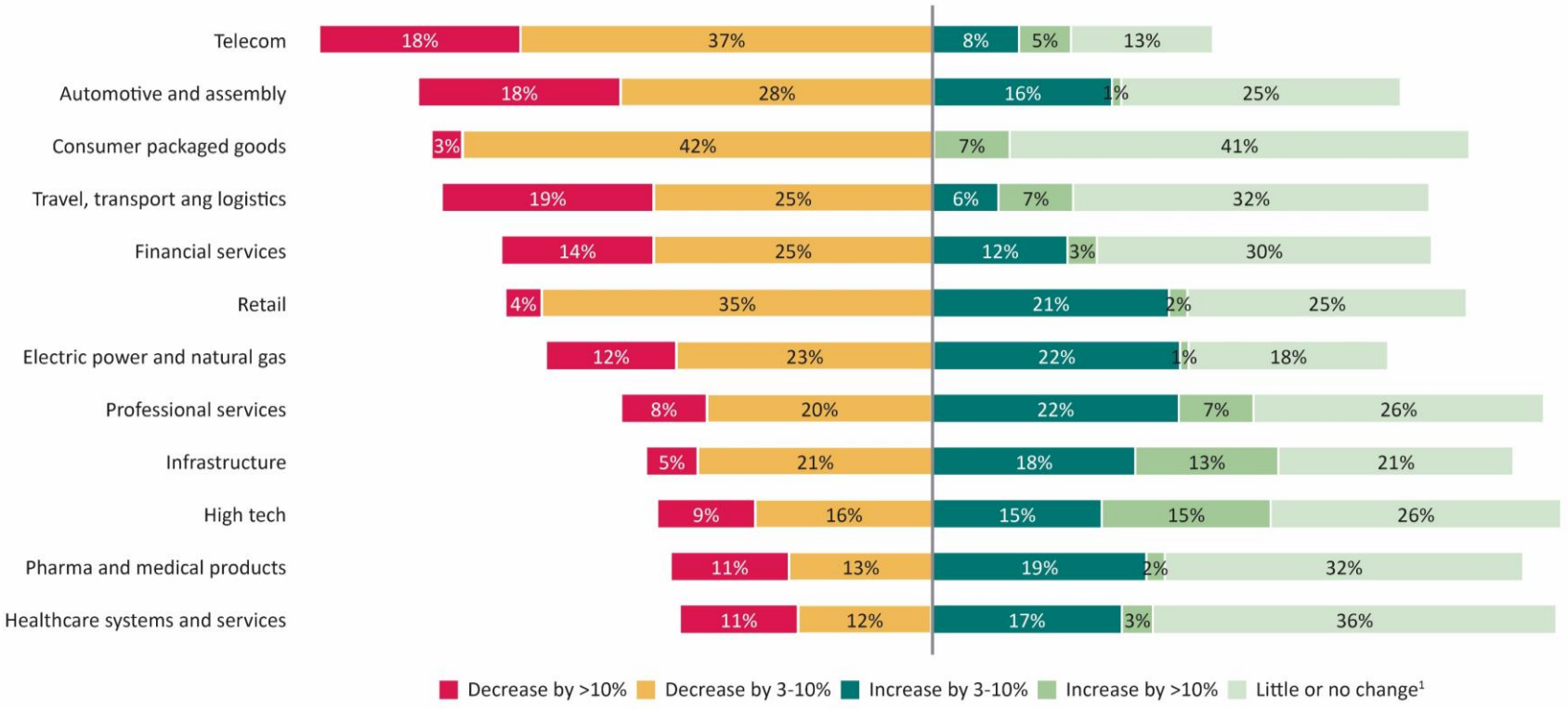
A FIRST MAJOR QUESTION: HOW PRODUCTIVITY GAINS WILL BE ALLOCATED?

WHICH KIND OF ALLOCATION?



WILL PRODUCTIVITY LEAD TO WORKFORCE CUTS?

Impact of AI on workforces in organizations worldwide in 2020-2023



1. Little or no change refers to a decrease or increase in the workforce of less than or equal to 2%.
Sources: McKinsey, Statista.

Reminder: caution with prediction is required

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KNOWLEDGE FOR ACTION

CONSEILLER ET ACCOMPAGNER LES REPRÉSENTANTS DES SALARIÉS

CABINET D'EXPERTISE
POUR LES CSE

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