INSIGHTBRIDGE GLOBAL LLC

White paper · English edition

Global AI in the Real Economy: From Adoption Hype to Industrial Value

15 countries and territories · 12 major industries
A six-layer measurement framework and three-stage maturity model

20.0%
EU-27 enterprise AI use (2025, 10+ employees)

88%
Organisational adoption in executive surveys (2025)

23%
Agentic systems scaled in the enterprise (2025)

542,076
industrial robots installed worldwide (2024)

What is inside

Six-layer measurement framework · three-stage maturity model · 15 country tables
12 industry tables · value conversion and productivity evidence · physical AI and robotics data
Industrial-grade AI thresholds · OpenAI hardware fact-check · clickable sources on every page

InsightBridge Global LLC / Dr. Tong Yin

For corporate executives, government bodies, industrial investors and AI product leaders
Evidence rule: every number links to the page that states it

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Public release · EN

Copyright, methodology and citation rules

How this white paper was assembled and how it should be quoted

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- **Single evidence base.** Only figures verified in the underlying research file are used. No new numbers are introduced and no market-size forecasts are made.
- **Unverifiable means n.a.** Where no verifiable official figure could be obtained, the field reads **n.a.** Consumer data, telemetry estimates and industry guesses are never substituted.
- **Never merge different bases.** Enterprise adoption rates, population-level diffusion rates and industry surveys are three non-interchangeable measurement systems. They are presented in separate chapters and are never summed, divided or ranked together.
- **Sources on every page.** Numbered superscripts in the body text correspond to full, clickable URLs at the foot of the same page, so any figure can be checked page by page.
- **Conflicts of interest are labelled.** Vendor and vendor-commissioned research (NVIDIA, Thomson Reuters, Itron, Trimble, IBM–NRF and others) is flagged inside the tables and must not be read as an industry average.
- **Self-assessment is distinguished from audit.** All financial and productivity outcomes based on respondent judgement are labelled as self-reported and are not treated as audited financial data.

3. Comparability grades (A / B / C)

Table 1 Definition of comparability grades

Grade	Meaning	Applies in this white paper to
A	Follows the Eurostat ICT enterprise survey framework (enterprises with 10 or more employees, NACE Rev.2 C–J, L–N and group 95.1, an itemised technology list) and is therefore directly comparable[1]	Germany, France, Denmark, EU-27
B	Official national statistics whose size threshold, recall period, sector coverage or technology list differs from grade A; usable for orders of magnitude and trends, not for ranking	United States, United Kingdom, Canada, Korea, Singapore, Brazil
C	Authoritative institutional surveys, industry-body surveys or telemetry estimates with self-selected samples or a non-enterprise base; must not be ranked alongside official statistics	China (enterprise adoption), Japan, India, United Arab Emirates, Saudi Arabia

4. Copyright and permitted use

Sources

1. Eurostat Statistics Explained: Use of artificial intelligence in enterprises — https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises

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Executive summary, part 1: a two-speed reality

Diffusion is fast; organisational value capture is not

Today's debate about AI rests on a category error: personal exposure, employee usage, corporate procurement, production deployment and auditable financial return are all described as "adoption". This white paper separates them into six measurable layers, covers 15 countries and territories and 12 major industries, and treats the spread of software tools separately from industrial-grade, hardware-integrated physical AI.

20.0%	88%	23%	36%
EU-27 enterprise AI use (2025, 10+ employees)	Organisational adoption in executive surveys (undefined)	Agentic systems scaled somewhere in the enterprise	Self-reported improvement in profitability

1. Diffusion is genuinely faster than value capture, but "diffusion" means different things

On an official statistical basis (the enterprise as the unit of observation, 10 or more employees, an itemised list of AI technologies), **20.0%** of EU-27 enterprises used AI in 2025[2]. In the same period, an executive sample reported that **88%** of organisations use AI regularly in at least one business function[3]. The fourfold gap is **not a contradiction but a difference of base and definition**: the first is a census-style probability sample, the second a self-selected executive panel in which the term "adoption" is explicitly "left undefined"[4].

2. Scaling and financial value run far behind adoption

In the same 2025 McKinsey survey, only **23%** of organisations had scaled agentic systems anywhere in the enterprise, defined as "expanded deployment and adoption within at least one business function"[3]. BCG's global study finds **5%** of companies are "future-built", **35%** are scaling and **60%** obtain "almost no material value"[5]. The Stanford AI Index 2026, citing McKinsey, reports that **36%** of respondents see improved profitability and **33%** improved organic revenue growth[6].

3. Firm size is the most stable and most reproducible stratifying variable

Denmark: **75%** of enterprises with 250 or more employees versus **37%** of those with 10–49 (2025)[7]. France: **58%** versus **15%** (2025)[8]. Germany: **57%** versus **23%** (2025)[9]. Korea: **66.9%** versus **30.6%** (2024)[10]. Singapore: non-SMEs **62.5%** versus SMEs **14.5%** (2024)[11].

Sources

2. Eurostat: Use of AI in enterprises, 2025 — https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2
3. McKinsey, State of AI: Global Survey 2025 — https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai
4. McKinsey, The State of AI (PDF, methodology) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf
5. BCG, The Widening AI Value Gap — https://www.bcg.com/publications/2025/are-you-generating-value-from-ai-the-widening-gap
6. Stanford AI Index 2026, chapter 4 (Economy) — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
7. Danish Agency for Digital Government, ITAV fact sheet 2023–2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf
8. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
9. Destatis (Federal Statistical Office of Germany) — https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Unternehmen/IKT-in-Unternehmen-IKT-Branche/Tabellen/ikti-unternehmen-kuenstliche-intelligenz.html
10. NIA, 2025 Enterprise Informatisation Statistics (via Etnews) — https://www.etnews.com/20260120000071
11. IMDA, Singapore Digital Economy Report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf

Executive summary, part 2: the next threshold is physical and engineering-led

Strategy has moved to physical AI; enterprise penetration has not

4. The shift to sector-specific, industrial-grade, hardware-integrated AI is documented

On 16 March 2026 NVIDIA's founder Jensen Huang stated that "physical AI has arrived — every industrial company will become a robotics company". FANUC, ABB Robotics, YASKAWA and KUKA (with **more than two million robots installed worldwide**) are integrating Omniverse libraries and the Isaac simulation framework into virtual commissioning, and are embedding **Jetson modules** in controllers for real-time inference at the edge[12]. Foxconn (Fii) used Omniverse digital twins to cut "time to market, factory build and factory planning by roughly 50%" and PhysicsNeMo to accelerate CFD thermal simulation by **150 times**, from hours to minutes[13].

5. Yet penetration of the physical layer remains in single digits

Among German enterprises that use AI, only **6%** use technologies for autonomous machine movement[14]. Denmark recorded **2%** in both 2023 and 2024 — the only AI category with no growth[15]. Brazil recorded **7%** in 2025[16]. The strategic narrative and enterprise-level penetration must be presented together, or the reader will draw opposite conclusions.

6. Engineering reliability can decide usability without any change of model

CAICT reports that across 11 Chinese MaaS platforms the average call success rate for the DeepSeek-R1 service rose from **87.01%** in February 2025 to **99.36%** in September, output tokens per second rose from **17.86** to **26.76**, and time to first token fell from **3.07 seconds** to **1.02 seconds**[17]. This is the clearest official evidence in this study of industrial-grade reliability metrics replacing benchmark scores.

The core finding

> "Personal exposure and tool-level usage are close to mainstream. Organisational workflow redesign and auditable financial returns remain a minority achievement. The gap does not lie in model capability but in depth of deployment, the data and governance foundation, and process change that can be booked in the profit and loss account."

The central conclusion of this white paper; the supporting evidence is set out in chapter 4.

Three rules for readers

First, never place 88% and 20% on the same chart. Second, never use population-level diffusion rates to rank countries for policy purposes. Third, treat outcome figures from vendor surveys as sample experience, not industry averages. All three caveats are set out in full in chapter 9, Data limitations and rules of use.

Sources

12. NVIDIA Newsroom, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world
13. NVIDIA case study: Foxconn (Fii) — https://www.nvidia.com/en-us/case-studies/foxconn-develops-physical-ai-enabled-smart-factories-with-digital-twins/
14. Destatis (Federal Statistical Office of Germany) — https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Unternehmen/IKT-in-Unternehmen-IKT-Branche/Tabellen/ikti-unternehmen-kuenstliche-intelligenz.html
15. Statistics Denmark (Danmarks Statistik) — https://www.dst.dk/nytpdf/55352
16. Cetic.br, TIC Empresas 2025 — https://cetic.br/media/analises/TIC-Empresas-2025-lancamento.pdf
17. CAICT, AI Industry Development Research Report 2025 — https://www.caict.ac.cn/kxyj/qwfb/bps/202602/P020260202487301304903.pdf

Chapter 1 — A six-layer measurement framework

Each layer must always be quoted together with its base, or errors of an order of magnitude follow

Table 2 The six-layer framework: definitions, bases and risks of misreading

Layer	Name	Definition	Base	Representative data	Risk of misreading
L1	Exposure / individual use	An individual has used a generative AI product in a given period	Population, or working-age population (15–64)	Microsoft AI Economy Institute basis: roughly **one in six** people globally in H2 2025; **24.7%** of the working-age population in the global north, **14.1%** in the global south[18]	**Never to be read as enterprise adoption.** Built from aggregated anonymised telemetry adjusted for operating-system share, internet penetration and population; not a survey
L2	Enterprise adoption	The enterprise answers whether it uses at least one AI technology from a list	All enterprises (typically a threshold of 10 or more employees)	EU-27 **20.0%** in 2025[19]; US BTOS **19.8%** for the collection period ending 3 May 2026[20]	Different technology lists make figures incomparable; changes in question wording create breaks in series
L3	Piloting	The share of organisations in experimentation or pilots	Surveyed organisations	India: **23%** at the pilot stage[21]; commercial real estate: **88%** of investors and **92%** of occupiers have launched AI pilots[22]	A high pilot count is not capability; JLL notes implementation is broad but "most initiatives remain experimental with limited scaling"
L4	Production deployment and scaling	Entry into real production processes or enterprise-wide rollout	Surveyed organisations or use cases	India: **47%** have multiple use cases live in production[21]; construction: only **1%** have scaled AI across projects[23]; agents: **23%** scaled[24]	"Production" has no common definition; vendor surveys systematically overstate it
L5	Financial value conversion	The share reporting revenue, cost, EBIT, ROI or productivity improvement	Organisations using AI	Cost **38%**, profitability **36%**, organic revenue growth **33%**, market share **25%**[25]; Denmark: **seven in ten** AI-using firms report more efficient workflows[26]	All figures are **self-assessed perceptions**, not audited financials; the same chart notes that as many respondents report improvement as report no impact
L6	Physical deployment	AI embedded in robots, edge devices, industrial control and smart terminals	All enterprises, or manufacturing employment	Germany: only **6%** of AI-using enterprises use autonomous machine movement[27]; Denmark **2%** for two consecutive years[28]; global robot density **132 units per 10,000 employees** in 2024[29]	Robot density measures the automation stock, not AI; the IFR describes it as a common basis for relating robot numbers to the size of an economy measured by its workforce

Sources

18. Microsoft AI Economy Institute, Global AI Adoption 2025 — https://www.microsoft.com/en-us/corporate-responsibility//topics/ai-economy-institute/reports/global-ai-adoption-2025/
19. Eurostat: Use of AI in enterprises, 2025 — https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2
20. US Census Bureau, BTOS — https://www.census.gov/library/stories/2026/05/ai-use-businesses.html
21. EY–CII survey of Indian enterprises, November 2025 — https://www.ey.com/en_in/newsroom/2025/11/india-s-ai-shift-from-pilots-to-performance-47-percent-of-enterprises-have-multiple-ai-use-cases-live-in-production-ey-cii-report
22. JLL, 2025 Global Real Estate Technology Survey — https://www.jll.com/en-us/newsroom/real-estates-ai-reality-check-companies-piloting-only-achieved-all-ai-goals
23. RICS, AI in Construction 2025 — https://www.rics.org/news-insights/optimism-high-for-ai-in-construction-but-skills-shortages-and-integration-challenges-adoption
24. McKinsey, State of AI 2025 — https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai
25. Stanford AI Index 2026, chapter 4 (Economy) — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
26. Danish Agency for Digital Government, news release April 2025 — https://digst.dk/nyheder/nyhedsarkiv/2025/april/syv-ud-af-ti-virksomheder-er-blevet-mere-effektive-ved-brug-af-ai/
27. Destatis (Federal Statistical Office of Germany) — https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Unternehmen/IKT-in-Unternehmen-IKT-Branche/Tabellen/ikti-unternehmen-kuenstliche-intelligenz.html
28. Statistics Denmark (Danmarks Statistik) — https://www.dst.dk/nytpdf/55352
29. IFR density data (via The Robot Report) — https://www.therobotreport.com/ifr-reports-robot-density-increase-across-europe-asia-americas/

Chapter 1 continued — Three-stage maturity and six methodological warnings

The model to use consistently, and the caveats that must travel with it

1.2 The three-stage maturity model

Table 3 Three-stage maturity model

Stage	Content	Layers	First-hand evidence
Stage 1 Tool access and experimentation	Employees use general-purpose assistants individually; no process redesign	L1 and part of L2	In BCG's five-level model of employee adoption, **more than 85%** of employees remain at levels two and three[30]
Stage 2 Workflow integration and scaling	AI enters existing business processes and spreads across functions	L3 → L4 → L5	**More than two-thirds** of organisations use AI in more than one function and **half** in three or more[31]
Stage 3 Industrial / physical AI	Determinism, latency, safety certification and edge compute become the gating factors	L6	NVIDIA's own term is "production-scale physical AI", delivered through "an open, integrated platform to design, train, test and deploy"[32]

1.3 Six warnings that must be published with any figure

- **The definition of "using AI" differs by country.** The 2024 Eurostat questionnaire listed seven technologies and produced **13.48%** for the EU-27[33]; in 2025 image, video and audio generation was added, taking France from seven to **eight** technologies[34]. Extending the list raises the adoption rate by construction.
- **US BTOS contains a documented break.** The original question asked about AI use "in producing goods or services in the last two weeks"; from November 2025 it asks about use "in any business function"[3536]. Figures before and after cannot be joined into one trend line.
- **One country at one point in time can show radically different rates depending on weighting.** Late 2025 in the United States: BTOS firm-weighted **about 18%**; the Atlanta Fed's SBU employment-weighted **about 78%**, with an equal-weighted estimate of **69.4%**. The Federal Reserve itself describes 78% as "a good upper bound on the range of workplace access to AI tools"[36].
- **The UK statistical office warns explicitly about its headline measure.** The ONS states that the indicator "treats all reported use as equivalent and does not distinguish light use, user-level use and more deeply embedded production-grade adoption"[37].
- **France separates organised use from sporadic personal use.** The INSEE survey asks about AI used "in an organised way within the enterprise's departments" and "in principle excludes sporadic, personal use by employees"[34].
- **Uncalibrated country rankings are not comparable.** This white paper therefore assigns an A/B/C comparability grade to every country; see chapter 2.

Sources

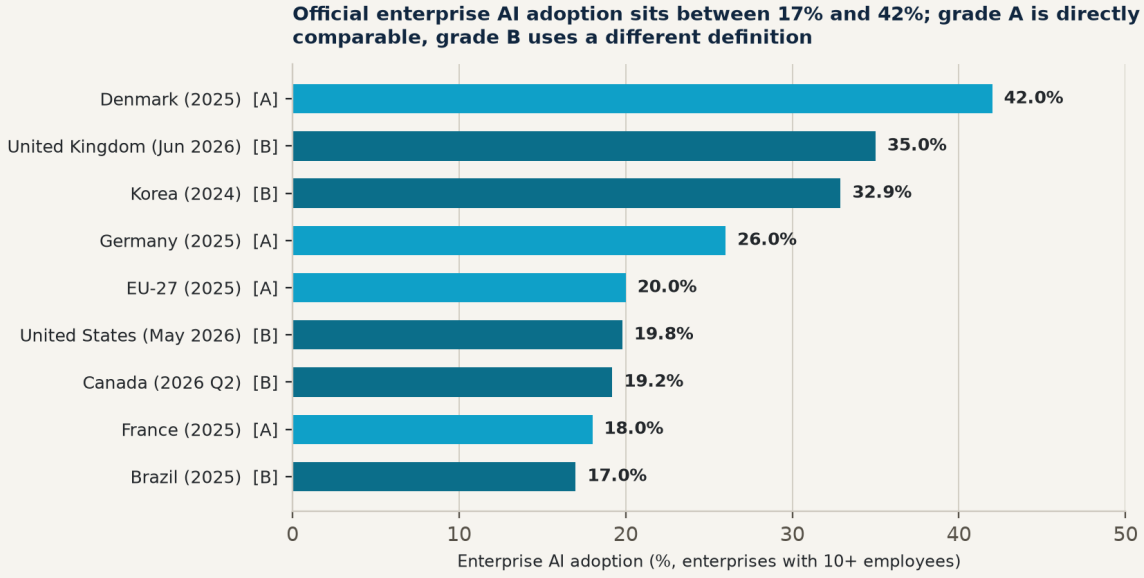
30. BCG, The AI Adoption Puzzle — https://www.bcg.com/publications/2025/ai-adoption-puzzle-why-usage-up-impact-not
31. McKinsey, State of AI 2025 — https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai
32. NVIDIA Newsroom, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world
33. Eurostat Statistics Explained — https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises
34. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
35. US Census Bureau, BTOS — https://www.census.gov/library/stories/2026/05/ai-use-businesses.html
36. Federal Reserve, FEDS Notes: monitoring AI adoption — https://www.federalreserve.gov/econres/notes/feds-notes/monitoring-ai-adoption-in-the-u-s-economy-20260403.html
37. Office for National Statistics (ONS) — https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/articles/artificialintelligenceinukbusinesses/2023to2026

Chapter 2 — Country comparison, part 1: official enterprise adoption

Only enterprise-based official statistics, graded for comparability

The chart below includes only official statistics that use the enterprise as the unit of observation, each labelled A or B for comparability. Grade A countries share the Eurostat framework and can be compared directly; grade B countries differ in threshold, recall period or sector coverage and support only judgements of magnitude. China, Japan, India, the United Arab Emirates and Saudi Arabia are excluded because no verifiable enterprise-based figure exists.

Figure 1 Enterprise AI adoption on an official statistical basis, latest available year



A = Eurostat ICT enterprise survey framework (directly comparable); B = official statistics on a different basis (size threshold, recall period, sector coverage). Not a ranking.
Sources: Eurostat (11 Dec 2025); Danish Agency for Digital Government ITAV 2025; Destatis; INSEE Premiere no.2120; ONS BICS wave 159; US Census BTOS; Statistics Canada CSBC; NIA / Etnews; Cetic.br TIC Empresas 2025.

Three facts that belong together

- The three largest advanced economies cluster tightly between **19% and 20%**: the United States at **19.8%**[38], Canada at **19.2%**[39] and the EU-27 at **20.0%**[40].
- Dispersion within the European Union exceeds dispersion between continents: in 2025 Denmark led at **42.0%**, followed by Finland at **37.8%** and Sweden at **35.0%**, while Romania recorded **5.2%**, Poland **8.4%** and Bulgaria **8.5%**[40].
- The growth itself is real: the EU-27 moved from **8.1%** in 2023 and **13.5%** in 2024 to **20.0%** in 2025; the United Kingdom rose from **about 12%** in September 2023 to **about 35%** in June 2026[41]; Canada moved from **6.1%** in Q2 2024 through **12.2%** in 2025 to **19.2%** in Q2 2026[39].

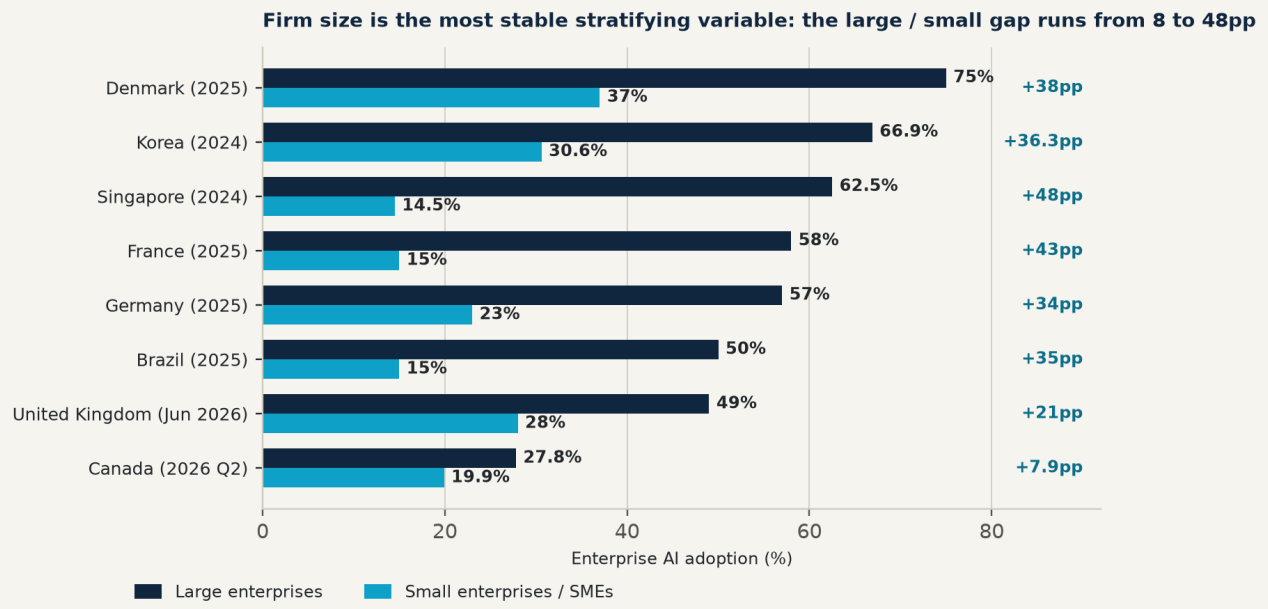
Sources

38. US Census Bureau, BTOS — https://www.census.gov/library/stories/2026/05/ai-use-businesses.html
39. Statistics Canada, CSBC Q2 2026 — https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2026010-eng.htm
40. Eurostat: Use of AI in enterprises, 2025 — https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2
41. Office for National Statistics (ONS) — https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/articles/artificialintelligenceinukbusinesses/2023to2026

Chapter 2 continued — The structural gap between large firms and SMEs

The most reproducible finding in the entire dataset

Figure 2 Enterprise AI adoption, large firms versus small firms and SMEs, latest available year



Definitions differ by country: Denmark / France / Germany / Korea compare 250+ employees with 10-49; Singapore compares non-SMEs with SMEs; Brazil compares large with small firms; the UK compares 250+ with 0-9; Canada compares 100+ with 1-4. Size bands are not cross-comparable.
Sources: Danish Agency for Digital Government ITAV 2025; NIA 2025 Enterprise Informatisation Statistics (via Etnews); IMDA Singapore Digital Economy Report 2025; INSEE; Destatis; Cetic.br; ONS; Statistics Canada.

The gap is widening, not converging

French official data show that between 2023 and 2025 the gap between enterprises with fewer than 50 employees and those with 250 or more **widened from 16 to 43 percentage points**[42]. In Denmark, firms with 10–49 employees moved from **12%** to **37%** over three years while those with 250 or more moved from **51%** to **75%**[43]. The cause is not appetite: in Korea the leading reason for not using AI is "the burden of economic cost" at **39.6%**, followed by "lack of infrastructure and staff" at **34.9%** and "no AI that meets our needs" at **26.8%**[44]; in Canada **40.0%** of businesses simply consider AI "not relevant" to them, rising to **41.4%** among firms with 1–4 employees[45].

A structural point: AI-using firms already account for most economic activity

French official data show that in 2025 enterprises using AI accounted for **66% of turnover** and **59% of total employment** within the survey scope, up from 49% and 40% in 2024. INSEE states explicitly that 59% "does not mean that 59% of French employees directly use AI". This is why the employment-weighted US figure (about 78%) and the firm-weighted figure (about 18%) can both be correct.

Sources

42. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
43. Danish Agency for Digital Government, ITAV fact sheet 2023–2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf
44. NIA, 2025 Enterprise Informatisation Statistics (via Etnews) — https://www.etnews.com/20260120000071
45. Statistics Canada, CSBC Q2 2026 — https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2026010-eng.htm

Chapter 2 continued — Country data table 1 of 5

United States, China, United Kingdom

Table 4 Country data table 1 of 5

Country / territory	Latest enterprise AI adoption (year, unit, definition)	Generative AI	Large firms vs SMEs	Production / scaling	Financial or productivity outcome	Leading sectors / main use cases	Grade
United States	**19.8%** for the collection period ending 3 May 2026 ("used AI in any business function in the last two weeks", BTOS)[46]; **about 18%** firm-weighted in December 2025 and **about 78%** employment-weighted in November 2025 (Atlanta Fed SBU)[47]	Workforce level: **about 41%** of workers used generative AI at work in November 2025 (RPS); **about 54%** of firms had adopted LLMs (SBU, employment-weighted)[47]	250+ employees **37%**; 100–249 **32%**; 4 or fewer **below 20%**[46]	n.a. (BTOS does not separate pilots from production)	No official rate of financial conversion	Information, finance and insurance, and professional, scientific and technical services all **above 30%** in late 2025; information firms with 250+ employees **about 73%** in early 2026[48]	**B**
China	**n.a.** No verifiable official enterprise adoption rate was found; the 57th CNNIC report gives no enterprise rate and CAICT publishes industry scale and company counts rather than adoption[49]	Individual basis: **602 million** generative AI users as at December 2025, up **141.7%** on end-2024, a penetration rate of **42.8%** — this is **L1 and cannot substitute for enterprise adoption**[49]	n.a.; CAICT describes lightweight, modular and distributed architectures rather than adoption rates[50]	Industry-side proxy: as at Q1 2025 China had **more than 30,000** basic-level, **over 1,200** advanced-level and **over 230** excellence-level smart factories, covering **more than 80%** of manufacturing categories[51]	Smart-factory basis: R&D cycles shortened by **28.4%** and production efficiency up **22.3%** on average (the report does not state that AI is the sole cause)[51]; MaaS call success rate **87.01% → 99.36%**[50]	Large models are being deployed fastest in electronics, raw materials and consumer goods, covering R&D, pilot validation, production and operations[51]; public-cloud model calls concentrate in text processing, role play, assistants, search, coding and marketing, together **more than half**[50]	**C** (industry-side indicators are B)
United Kingdom	**About 35%** in June 2026 (BICS wave 159, enterprises with 10+ employees reporting use of at least one AI technology; about 12% in September 2023)[52]	n.a. (BICS does not publish a separate generative AI headline)	250+ employees **49%** versus 0–9 employees **28%** (June 2026)[52]	Wave 159 added questions on the breadth of AI use within the firm and the share of staff using AI in daily work; the ONS states the headline does not distinguish production-grade adoption[52]	n.a. (no official rate of financial conversion)	Information and communication **58%** versus construction **13%** (June 2026)[52]; for financial services see chapter 3 (Bank of England / FCA **75%**)	**B** (the BICS sample excludes finance and insurance)

Sources

46. US Census Bureau, BTOS — https://www.census.gov/library/stories/2026/05/ai-use-businesses.html

47. Federal Reserve, FEDS Notes — https://www.federalreserve.gov/econres/notes/feds-notes/monitoring-ai-adoption-in-the-u-s-economy-20260403.html

48. PIIE analysis of BTOS by sector — https://www.piie.com/blogs/realtime-economics/2026/adoption-ai-industrial-sectors

49. CNNIC, 57th Statistical Report on Internet Development in China — https://cnnic.cn/n4/2026/0304/c88-11549.html

50. CAICT, AI Industry Development Research Report 2025 — https://www.caict.ac.cn/kxyj/qwfb/bps/202602/P020260202487301304903.pdf

51. CNNIC, 56th report — https://www.cnnic.net.cn/NMediaFile/2025/0730/MAIN1753846666507QEK67ZS9DH.pdf

52. Office for National Statistics (ONS) — https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/articles/artificialintelligenceinukbusinesses/2023to2026

Chapter 2 continued — Country data table 2 of 5

Germany, France, Denmark

Table 5 Country data table 2 of 5

Country / territory	Latest enterprise AI adoption (year, unit, definition)	Generative AI	Large firms vs SMEs	Production / scaling	Financial or productivity outcome	Leading sectors / main use cases	Grade
Germany	**26%** in 2025 (share of all enterprises; the EU enterprise concept applies from the 2025 reporting year)[53]	Destatis does not use the term generative AI; among AI-using enterprises, generation of natural language including program code **35%** and generation of images, video or audio **52%**[53]	250+ employees **57%**; 50–249 **36%**; 10–49 **23%**[53]	n.a. (the table does not cover pilots, production or scaling)	n.a. (the table does not cover financial or productivity outcomes)	Most common technologies among AI users: text mining **52%**, image, video or audio generation **52%**, speech recognition **42%**; autonomous machine movement only **6%**[53]	**A**
France	**18%** (reference period Q1 2025, enterprises with 10+ employees in the main market sectors, excluding agriculture and financial services; 8 points above 2024 and 12 points above 2023)[54]	Image, video and audio generation was added in 2025, taking the list from seven to **eight** technologies[54]	250+ employees **58%**; 50–249 **31%**; 10–49 **15%**; the gap widened from **16 to 43 percentage points**[54]	n.a.	Structural fact: AI-using enterprises accounted for **66% of turnover** and **59% of total employment** in scope (49% and 40% in 2024); INSEE states 59% does not mean 59% of employees use AI[54]	n.a. (the INSEE page retrieved does not publish a sector ranking)	**A**
Denmark	**42%** in 2025 (enterprises with 10+ employees in private non-financial urban industries; 15% in 2023 and 28% in 2024)[55]; Eurostat published Denmark as the EU's highest at **42.0%**[56]	In 2024 the most common uses were generating written or spoken language **18%** and text analysis **17%**[57]	250+ **75%**; 100–249 **62%**; 50–99 **56%**; 10–49 **37%** (N=4,071)[55]	n.a. (ITAV does not separate pilots from production)	Official basis: among AI-using enterprises, **seven in ten** report more efficient workflows, **more than half** see improved products or services and **one third** report higher earnings[58]	2025: information and communication **79%**; business services **51%**; industry **39%**; trade and transport **38%**; construction **24%**[55]	**A**

Sources

53. Destatis (Federal Statistical Office of Germany) — https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Unternehmen/IKT-in-Unternehmen-IKT-Branche/Tabellen/ikti-unternehmen-kuenstliche-intelligenz.html
54. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
55. Danish Agency for Digital Government, ITAV 2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf
56. Eurostat: Use of AI in enterprises, 2025 — https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2
57. Statistics Denmark (Danmarks Statistik) — https://www.dst.dk/nytpdf/55352
58. Danish Agency for Digital Government, news release April 2025 — https://digst.dk/nyheder/nyhedsarkiv/2025/april/syv-ud-af-ti-virksomheder-er-blevet-mere-effektive-ved-brug-af-ai/

Chapter 2 continued — Country data table 3 of 5

Canada, Japan, Korea

Table 6 Country data table 3 of 5

Country / territory	Latest enterprise AI adoption (year, unit, definition)	Generative AI	Large firms vs SMEs	Production / scaling	Financial or productivity outcome	Leading sectors / main use cases	Grade
Canada	**19.2%** in Q2 2026 ("used AI in producing goods or delivering services over the past 12 months", CSBC; sample 21,105, responses 9,251)[59]; **12.2%** in Q2 2025 and **6.1%** in Q2 2024	n.a. (the release does not publish a separate generative AI headline)	100+ employees **27.8%**; 1–4 employees **19.9%**[59]	n.a.	Official micro research links AI adoption and productivity using pooled SDTIU 2019 and 2021 data — **the data years are 2019 and 2021 and cannot support conclusions about 2025–2026**[60]	**40.0%** (two in five) of businesses say AI is not relevant to them: **41.4%** of firms with 1–4 employees and **21.3%** of those with 100 or more[59]	**B** (includes micro firms of 1–4 employees; 12-month recall)
Japan	**n.a.** No official rate using the enterprise as the unit of observation, comparable with Eurostat, was found. The available official figure is **55.2%** of respondents answering that generative AI is used in some part of their work[61]	**55.2%** as above; assistance with email, minutes and document preparation **47.3%**[61]	Qualitative: about **half** of SMEs report no clearly defined policy; the white paper states SMEs lag large firms[61]	n.a. (this section covers no pilot, production or scaling shares)	n.a. (no revenue, cost, productivity or ROI figures). Qualitatively, Japanese respondents most often cite efficiency gains and relief of labour shortages, whereas the other three countries cite business expansion, new customers and innovation[61]	Enterprises with a policy of active or targeted use: **49.7%** in FY2024 and **42.7%** in FY2023; the white paper notes this remains persistently below other countries[61]	**C** (**the base is informed employees, not enterprises**; no sample size published)
Korea	**32.9%** (reference year 2024, national establishments with 10+ employees, population of 211,615 units, "use of AI technologies and services"; 30.3% the previous year)[62]	n.a. (the compendium does not publish a separate generative AI rate)	250+ employees **66.9%**; 10–49 **30.6%** (27.4% the previous year); incorporated firms **34.0%** versus sole proprietorships **28.7%**[62]	Mode of use as a depth proxy: freeware **65.1%**, purchased commercial software **21.8%**, contracts with external suppliers **11.1%** — **a predominance of free tools indicates stage one**[62]	Digital-industry basis: **24.9%** apply AI in decision-making and business activities (15.5% in 2023); **43.5%** developed or acquired AI over the past three years (10,323 firms)[63]	2024: finance and insurance **63.1%**, ICT **56.0%**, education services **41.4%**; construction **15.9%** and real estate **16.1%** trail[62]	**B** (the questionnaire draws on Eurostat[64])

Sources

59. Statistics Canada, CSBC Q2 2026 — https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2026010-eng.htm
60. Statistics Canada, AI and productivity study, 22 April 2026 — https://www150.statcan.gc.ca/n1/pub/36-28-0001/2026004/article/00002-eng.htm
61. MIC Japan, Information and Communications White Paper 2025 — https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/nd112220.html
62. NIA, 2025 Enterprise Informatisation Statistics (via Etnews) — https://www.etnews.com/20260120000071
63. Ministry of Science and ICT (MSIT), Korea — https://www.msit.go.kr/eng/bbs/view.do?sCode=eng&mPid;=2&mId;=4&bbsSeqNo;=42&nttSeqNo;=1283
64. Dong-A Science: Korea aligns its survey with Eurostat — https://m.dongascience.com/en/news/63090

Chapter 2 continued — Country data table 4 of 5

Singapore, India, United Arab Emirates

Table 7 Country data table 4 of 5

Country / territory	Latest enterprise AI adoption (year, unit, definition)	Generative AI	Large firms vs SMEs	Production / scaling	Financial or productivity outcome	Leading sectors / main use cases	Grade
Singapore	Overall rate **n.a.** (IMDA publishes no single figure for all enterprises). By segment: non-SMEs **62.5%** (44.0% in 2023); SMEs **14.5%** (4.2% in 2023)[65]	Among AI-using enterprises, **84%** use off-the-shelf generative AI tools, **52%** adopt digital solutions with AI features and **44%** have implemented custom or proprietary AI (pulse survey of about 500 firms)[65]	As shown: **62.5%** versus **14.5%**; SME growth is driven mainly by micro and small firms[65]	Depth proxy: average number of functions covered — SMEs **3**, non-SMEs **5**[65]	n.a. (the quantified benefits section of the report was not retrieved). Macro: the digital economy reached **18.6%** of GDP in 2024, from 14.9% in 2019[66]	2024: information and communication **35.9%**, professional services **25.7%**, finance and insurance **22.6%**, manufacturing **18.0%**, retail **8.9%**, accommodation and food **4.7%**; functions: IT **49%**, customer service **43%**, finance and accounting **40%**[65]	**B** (the AI definition is broader than Eurostat)
India	Official **n.a.** Authoritative survey: **47%** of enterprises have multiple AI or generative AI use cases live in production and **23%** are piloting (EY–CII; 200 organisations across more than 20 industries; C-suite and senior executives, 16 November 2025)[67]	n.a. (AI and generative AI adoption are not separated)	n.a.	**47%** in production and **23%** piloting[67]	Input constraint: **more than 95%** of organisations allocate less than 20% of the IT budget to AI and only **4%** cross the 20% threshold; **64%** report selective workforce transformation and **59%** a persistent shortage of AI talent[67]	**91%** of leaders cite speed of deployment as the leading factor in build-versus-buy; **nearly 60%** co-create with start-ups and **78%** use a hybrid model[67]; the NASSCOM index page publishes no adoption figure[68]	**C** (n=200, self-selected C-suite sample)
United Arab Emirates	**n.a.** No official enterprise rate was found. At the individual level, **70.1%** of the working-age population (15–64) has used a generative AI product (Q1 2026; 59.4% in H1 2025 and 64.0% in H2), described as the first economy to pass the 70% threshold[69]	**70.1%** as above (use of generative AI products)	n.a.	n.a.	n.a.	n.a. (no official sector or use-case breakdown)	**C** (a telemetry-derived population diffusion rate, **not enterprise adoption**[70])

Sources

65. IMDA, Singapore Digital Economy Report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf
66. IMDA press release: Singapore digital economy — https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2025/singapore-digital-economy
67. EY–CII, November 2025 — https://www.ey.com/en_in/newsroom/2025/11/india-s-ai-shift-from-pilots-to-performance-47-percent-of-enterprises-have-multiple-ai-use-cases-live-in-production-ey-cii-report
68. NASSCOM AI Adoption Index — https://www.nasscom.in/knowledge-center/publications/nasscom-ai-adoption-index
69. Aletihad, citing the Microsoft AI Economy Institute — https://en.aletihad.ae/news/uae/4664430/uae-continues-to-top-world-in-ai-adoption-with-70-1--usage-r
70. Microsoft AI Economy Institute definition — https://www.microsoft.com/en-us/corporate-responsibility//topics/ai-economy-institute/reports/global-ai-adoption-2025/

Chapter 2 continued — Country data table 5 of 5

Saudi Arabia, Brazil, EU-27 total

Table 8 Country data table 5 of 5

Country / territory	Latest enterprise AI adoption (year, unit, definition)	Generative AI	Large firms vs SMEs	Production / scaling	Financial or productivity outcome	Leading sectors / main use cases	Grade
Saudi Arabia	Enterprise basis **n.a.** Government basis: **about 39%** of participating entities currently use AI or are actively experimenting with it and **about 56%** plan future adoption (SDAIA readiness and adoption survey, July 2024, **n=80**)[71]	n.a.	n.a.	**55%** are developing AI solutions, **43%** procure commercial solutions and **38%** integrate AI into existing applications and operations (n=80)[71]	Among entities using or piloting AI, **81%** report significantly improved service delivery and **61%** improved decision-making (n=80)[71]	Leading use cases: optimising services and processes **71%**, data analytics and BI **55%**, forecasting **48%**, chatbots and user support **45%**, document processing **42%**, content generation **16%**[71]	**C** (n=80, government entities only, July 2024)
Brazil	**17%** in 2025 (active enterprises with 10+ employees using some form of artificial intelligence, TIC Empresas 2025, sample 4,174)[72]. A second official basis covers industry: **41.9%** in 2024 (10,167 extractive and manufacturing firms with 100+ employees; 16.9% in 2022)[73] — **the two bases are entirely different and must not be merged**	Cetic.br does not use the term generative AI; among AI users, natural language generation rose from **20%** in 2024 to **30%** in 2025[72]	2025: large firms **50%**, medium **32%**, small **15%** (38%, 29% and 10% in 2024)[7274]	n.a. (Cetic.br states that pilot, production and scaling data are not provided)[74]	n.a. (no revenue, cost, productivity or ROI data). On the industrial side, AI used in **production** fell from **56.4%** in 2022 to **52.0%** in 2024, while management reached **87.9%**, commercialisation **75.2%** and product or process development **73.1%**[73]	2025: information and communication **49%**, professional activities **24%**, services **19%**, trade **17%**, industry **14%**, construction **14%**, accommodation and food **10%**; by type, workflow automation **68%** and autonomous machine movement **7%**[72]	**B** (CATI survey; see the methodology note)
EU-27 total	**20.0%** in 2025 (enterprises with 10+ employees, NACE Rev.2 C–J, L–N and group 95.1; 13.5% in 2024, 8.1% in 2023 and 7.7% in 2021)[75]	2025: image, video or audio generation **9.5%**; generation of written or spoken language **8.8%**[75]	2024: large enterprises **41.17%** versus **13.48%** for all; of 1.54 million enterprises about **83% are small, 14% medium and 3% large**, with a sample of **157,000**[76]	n.a. (the questionnaire does not measure pilots, production or scaling)	n.a. (the questionnaire does not measure financial outcomes)	2025 most common uses: text mining **11.8%**, image, video or audio generation **9.5%**, generation of written or spoken language **8.8%**, converting speech to machine-readable format **7.2%**[75]	**A** (the reference basis)

Sources

71. SDAIA, State of AI in Saudi Arabia — https://sdaia.gov.sa/en/MediaCenter/KnowledgeCenter/ResearchLibrary/StateofAIinSaudiArabia.pdf
72. Cetic.br, TIC Empresas 2025 — https://cetic.br/media/analises/TIC-Empresas-2025-lancamento.pdf
73. IBGE, PINTEC Semestral — https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/44551-de-2022-a-2024-percentual-de-empresas-industriais-utilizando-inteligencia-artificial-subiu-de-16-9-para-41-9
74. Cetic.br indicator H9 (methodology note) — https://cetic.br/pt/tics/pesquisa/2024/empresas/H9/
75. Eurostat: Use of AI in enterprises, 2025 — https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2
76. Eurostat Statistics Explained — https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises

Chapter 2 continued — Two cross-country series that must be kept separate

Population-level diffusion and organisation-level survey series

Chapter 4 of the Stanford AI Index 2026 reproduces the Microsoft AI Economy Institute's **population-level AI diffusion rate**. It is currently the only time series covering a large number of countries on a single basis, but it measures **individual use, not enterprise adoption**[77].

Table 9 Population-level AI diffusion, 13 of the top 30 economies

Economy	H1 2025	H2 2025	Change
United Arab Emirates	59.40%	64.00%	+4.60%
Singapore	58.60%	60.90%	+2.30%
Norway	45.30%	46.40%	+1.10%
Ireland	41.70%	44.60%	+2.90%
France	40.90%	44.00%	+3.10%
United Kingdom	36.40%	38.90%	+2.50%
Canada	33.50%	35.00%	+1.50%
Sweden	31.20%	33.30%	+2.10%
Denmark	26.60%	28.70%	+2.10%
Germany	26.50%	28.60%	+2.10%
United States	26.30%	28.30%	+2.10%
Korea	25.90%	30.70%	+4.80%
Finland	25.60%	27.30%	+1.70%

Table 10 Organisation-level series by region (McKinsey survey)

Region	2023	2024	2025
North America	61%	77%	91%
Europe	58%	75%	90%
Asia-Pacific	48%	78%	88%
Greater China	57%	80%	82%
Developing markets	49%	72%	88%
All regions	49%	78%	88%

Risk of misreading

Table 9 must never appear on the same ranking chart as Tables 4 to 8. France ranks fifth on population diffusion at 44.0%, yet its official enterprise adoption rate is only **18%**, below the EU-27 figure of **20.0%**[7879]. The AI Index makes the same point in reverse: "despite leading in AI investment and model development, the United States fell to 24th with a population-level adoption rate of 28.3%", and it finds a strong, statistically significant positive correlation between diffusion and GDP per capita[77]. Table 10 is an executive-survey series; the AI Index notes in the same place that China and Europe posted the largest year-on-year gains, at 13 and 11 percentage points respectively.

Sources

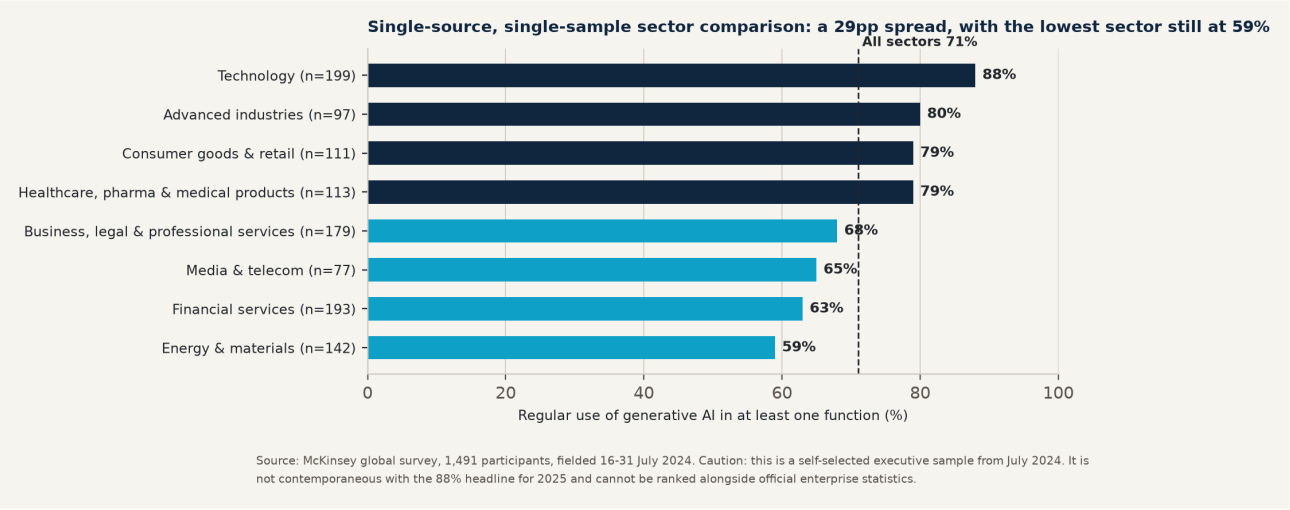
77. Stanford AI Index 2026, chapter 4 (Economy) — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
78. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
79. Eurostat, 11 December 2025 — https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2

Chapter 3 — Sector comparison, part 1: a single consistent benchmark

One source, one sample, one basis for cross-sector comparison

The most common error in sector comparison is placing figures from different surveys side by side. This section therefore begins with the **only single-source, single-sample** sector benchmark available: the McKinsey global survey of 1,491 participants fielded from 16 to 31 July 2024, measuring regular use of generative AI in at least one function[80]. The sample dates from July 2024, is **not contemporaneous with the 88% headline for 2025**, and cannot be ranked alongside official enterprise statistics.

Figure 3 Generative AI adoption by sector on a single consistent sample, July 2024



Why sector divergence matters more than country divergence

- Within the consistent sample the sector spread is **29 percentage points** (technology **88%** versus energy and materials **59%**), whereas on official bases the spread can exceed **60 percentage points** (Danish information and communication **79%** versus Singaporean accommodation and food **4.7%**)[8182].
- Sector ceilings determine product strategy: finance and information and communication are the only two sectors in the high-adoption band, with **75%** of UK regulated financial firms already using AI[83].
- The functional pattern is consistent across sectors: functions tied to information processing, software, customer interaction and internal knowledge work adopt fastest, while strategy and corporate finance and risk and compliance "remain low in most industries" — **with financial services the sole exception**[84].

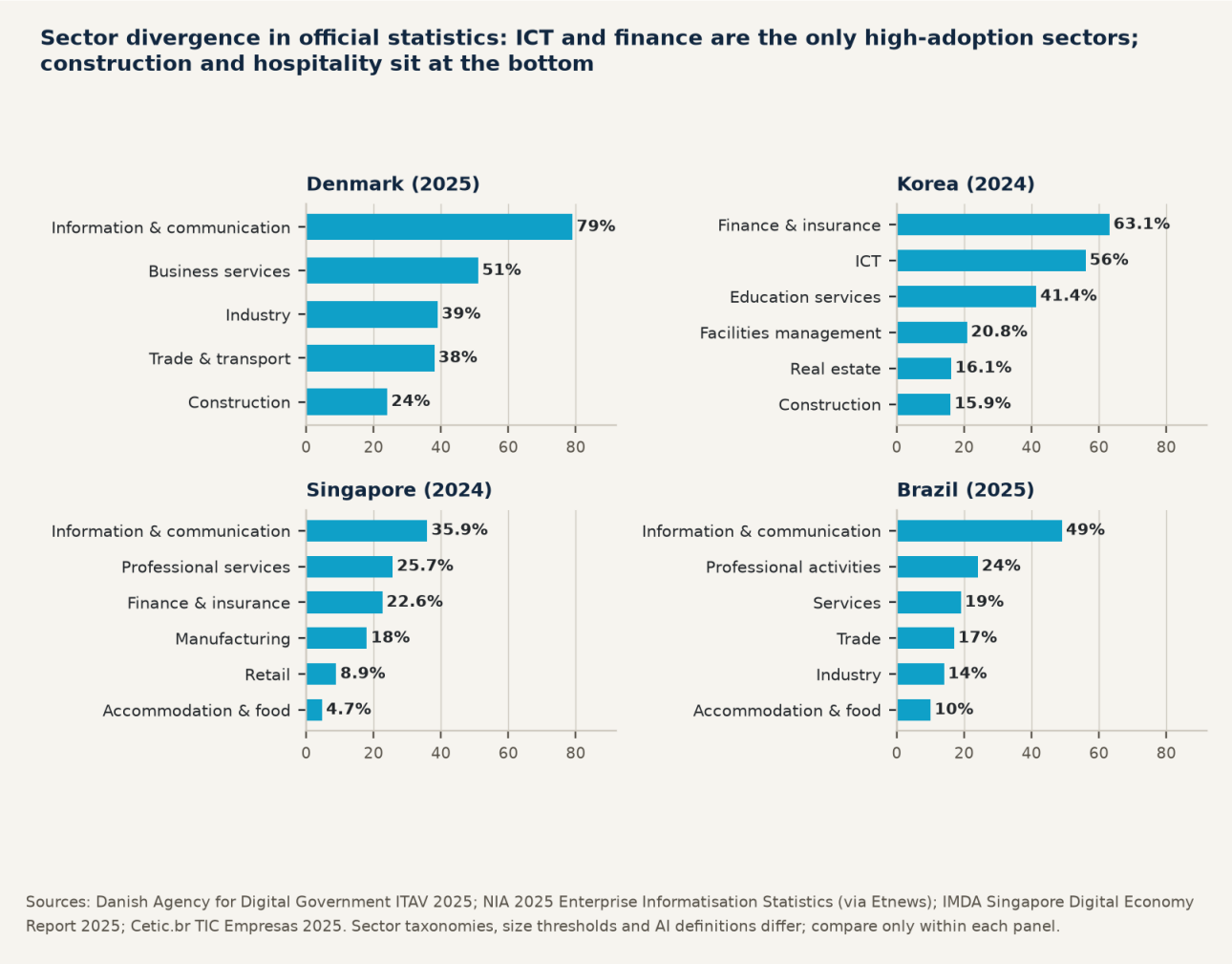
Sources

80. McKinsey, The State of AI (PDF) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf
81. Danish Agency for Digital Government, ITAV 2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf
82. IMDA, Singapore Digital Economy Report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf
83. Bank of England and FCA, AI in UK financial services 2024 — https://www.bankofengland.co.uk/report/2024/artificial-intelligence-in-uk-financial-services-2024
84. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf

Chapter 3 continued — Sector comparison, part 2: divergence in official statistics

Lower levels, identical ordering

Figure 4 Sector AI adoption in four national statistical systems; comparable within panels only



Sources: Danish Agency for Digital Government ITAV 2025; NIA 2025 Enterprise Informatisation Statistics (via Etnews); IMDA Singapore Digital Economy Report 2025; Cetic.br TIC Empresas 2025. Sector taxonomies, size thresholds and AI definitions differ; compare only within each panel.

Absolute levels on official bases are far below executive surveys, but **the ordering is highly consistent**: information and communication leads, construction and accommodation and food trail. That ordering recurs across four mutually independent official statistical systems — Denmark[85], Korea[86], Singapore[87] and Brazil[88] — which makes it the most robust sector conclusion in this white paper. Sector taxonomies, size thresholds and AI definitions differ, so comparison is valid only within each panel.

Sources

85. Danish Agency for Digital Government, ITAV 2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf
86. NIA statistics (via Etnews) — https://www.etnews.com/20260120000071
87. IMDA, Singapore Digital Economy Report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf
88. Cetic.br, TIC Empresas 2025 — https://cetic.br/media/analises/TIC-Empresas-2025-lancamento.pdf

Chapter 3 continued — Sector data table 1 of 4

Software and ICT, Financial services, Professional and legal services

Table 11 Sector data table 1 of 4

#	Sector	AI / generative AI adoption (year)	Production / scaling	Most common use cases	Quantified outcomes	Main deployment barriers	Source and sample notes
1	Software and ICT	Technology sector generative AI **88%** (July 2024, n=199)[89]; official bases: Denmark information and communication **79%** (2025)[90]; United Kingdom **58%** (June 2026)[91]; US information firms with 250+ employees **about 73%** (early 2026)[92]; Korea ICT **56.0%** (2024)[93]	Functions where agents are **already scaled** in the technology sector: software engineering **24%**, IT **22%**, service operations **21%** (2025) — **the highest anywhere, and still around one in five**[94]	Software engineering and code generation; IT operations; knowledge management; customer interaction	GitHub Copilot users completed **26%** more pull requests (Cui et al. 2025); marketing teams increased multimodal ad output by **50%** (Ju & Aral 2025); **counter-evidence**: METR found experienced open-source developers were **19% slower** with AI, a result later work did not replicate[94]	A counter-intuitive learning penalty: engineers who leaned heavily on AI to learn new libraries showed no statistically significant speed gain (Shen & Tamkin 2025)[94]	Multiple sources; official statistics are enterprise-based, McKinsey is a self-selected executive sample
2	Financial services	**75%** of UK regulated financial firms already use AI and a further **10%** plan to within three years (58% plus 14% in 2022; **118 responses**)[95]; McKinsey basis, generative AI **63%** (July 2024, n=193)[89]; Korea finance and insurance **63.1%**[93]; Singapore finance and insurance **22.6%**[96]	Sub-sector divergence: insurance **95%** and international banks **94%** already use AI; financial market infrastructure firms are lowest at **57%**[95]	Risk and compliance (**the only sector with high adoption in that function**); fraud detection; customer service; marketing and sales (generative AI **29%**)	n.a. (the Bank of England and FCA survey publishes no sector-level financial returns)	Regulation and model risk dominate; the 2024 survey added generative AI questions in response to its growth[95]	Regulator questionnaire, n=118; **the UK ONS BICS sample excludes finance and insurance, so the two are not complementary**
3	Professional and legal services	Organisational use **22%** in 2025, close to double the **12%** of a year earlier (nearly 1,800 legal, tax, accounting, corporate risk and government professionals worldwide)[97]; McKinsey basis **68%** (July 2024, n=179)[89]	Generative AI adoption in corporate tax departments rose to **75%**, up 20 points in a year[97]	Document-intensive workflows; research and retrieval; advisory work; knowledge management (**58%**)	Accountants increased throughput by **55%** in weekly client support (Choi & Xie 2025)[94]	**64%** of professionals have had no training in the professional use of generative AI, and about **one third** of legal and risk professionals remain unsure whether their field should use it at all[97]	**Vendor survey** (Thomson Reuters sells legal AI), n≈1,800

Sources

89. McKinsey (PDF) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf

90. Danish Agency for Digital Government, ITAV 2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf

91. Office for National Statistics (ONS) — https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/articles/artificialintelligenceinukbusinesses/2023to2026

92. PIIE analysis of BTOS by sector — https://www.piie.com/blogs/realtime-economics/2026/adoption-ai-industrial-sectors

93. NIA compendium (via Etnews) — https://www.etnews.com/20260120000071

94. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf

95. Bank of England and FCA (2024) — https://www.bankofengland.co.uk/report/2024/artificial-intelligence-in-uk-financial-services-2024

96. IMDA report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf

97. Thomson Reuters, 2025 Generative AI in Professional Services Report — https://www.thomsonreuters.com/en/press-releases/2025/april/from-incubation-to-integration-generative-ai-adoption-nearly-doubles-as-professional-services-reach-crossroads

Chapter 3 continued — Sector data table 2 of 4

Media and telecom, Manufacturing, Healthcare and life sciences

Table 12 Sector data table 2 of 4

#	Sector	AI / generative AI adoption (year)	Production / scaling	Most common use cases	Quantified outcomes	Main deployment barriers	Source and sample notes
4	Media and telecom	McKinsey basis, generative AI **65%** (July 2024, n=77)[98]; NVIDIA's third annual telecom survey (**450+** practitioners) reports that almost all respondents say their company is actively deploying or evaluating AI projects[99]	**More than one third** are investing or plan to invest in AI-RAN; **40%** are deploying AI in network planning and operations[99]	Customer experience optimisation (**44%**); network planning and operations (**40%**); field operations optimisation (**33%**)	**84%** say AI helped raise annual revenue, of which **21%** report revenue growth **above 10%** in specific areas; **77%** say it reduced annual operating costs; **60%** cite employee productivity as the largest benefit[99]	n.a. (the survey does not quantify barriers)	**Vendor survey; NVIDIA sells the related hardware, so these outcomes are not industry averages**; n>450, self-selected
5	Manufacturing	AI/ML in use at facility or network scale **29%** and generative AI deployed at the same scale **24%**; piloting AI/ML **23%** and piloting generative AI **38%** (**600 executives**, revenue of $500m or more, more than 1,000 employees)[100]; official bases: Brazilian industry with 100+ employees **41.9%** (2024)[101]; Danish industry **39%**[102]; Singapore manufacturing **18.0%**[103]	**Production is the weakest link**: the share of Brazilian industrial firms applying AI in production fell from **56.4%** in 2022 to **52.0%** in 2024 while management reached **87.9%**[101]; on the McKinsey basis the manufacturing function shows only **7%** generative AI use[98]	Predictive maintenance; quality inspection; digital twins and virtual commissioning; production scheduling; R&D and design	Foxconn cut factory build and planning time by **about 50%** and accelerated CFD thermal simulation **150-fold**[104]; on the Chinese smart-factory basis, R&D cycles **−28.4%** and production efficiency **+22.3%**[105]	An insufficient data and technology foundation: **78%** of leaders direct more than 20% of their improvement budget to smart manufacturing to build it, and respondents rate their own maturity as barely at industry standard[100]	Deloitte n=600 (skewed to large firms); IBGE is an official survey of 10,167 enterprises
6	Healthcare and life sciences	Individual use by physicians: **81%** use AI in practice in 2026, more than double the **38%** of 2023, with average use cases per physician rising from **1.1** to **2.3**[106]; organisational level, McKinsey basis **79%** (July 2024, n=113)[98]	Regulated products provide evidence of production deployment unique to this sector: the FDA maintains an AI-Enabled Medical Device List, stating these devices have met applicable premarket requirements while also noting the list "is not a comprehensive resource"[107]	Summarising medical research; clinical documentation; diagnostic support; software engineering (**37%**)	**More than three quarters** of physicians say AI has improved their ability to care for patients (65% in 2023) and **70%** see it as a way to automate burnout-inducing tasks[106]	Robust validation of safety and efficacy (**88%**) and data privacy (**86%**) are seen as decisive for wider adoption; **88%** worry about skill atrophy[106]	The AMA survey is an annual industry-body survey (no sample size published); the FDA list is a regulatory register

Sources

98. McKinsey (PDF) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf
99. NVIDIA, State of AI in Telecommunications 2025 — https://resources.nvidia.com/en-us-cross-industry-briefcase/ai-telcos-survey-2025
100. Deloitte, 2025 Smart Manufacturing and Operations Survey — https://www.deloitte.com/us/en/about/press-room/deloitte-2025-smart-manufacturing-survey.html
101. IBGE, PINTEC Semestral — https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/44551-de-2022-a-2024-percentual-de-empresas-industriais-utilizando-inteligencia-artificial-subiu-de-16-9-para-41-9
102. Danish Agency for Digital Government, ITAV 2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf
103. IMDA report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf
104. NVIDIA case study: Foxconn (Fii) — https://www.nvidia.com/en-us/case-studies/foxconn-develops-physical-ai-enabled-smart-factories-with-digital-twins/
105. CNNIC, 56th report — https://www.cnnic.net.cn/NMediaFile/2025/0730/MAIN1753846666507QEK67ZS9DH.pdf
106. AMA, Physician Survey on Augmented Intelligence — https://www.ama-assn.org/press-center/ama-press-releases/ama-ai-usage-among-doctors-doubles-confidence-technology-grows
107. US FDA, AI-enabled medical devices — https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-enabled-medical-devices

Chapter 3 continued — Sector data table 3 of 4

Retail and consumer goods, Transport and logistics, Hospitality and travel

Table 13 Sector data table 3 of 4

#	Sector	AI / generative AI adoption (year)	Production / scaling	Most common use cases	Quantified outcomes	Main deployment barriers	Source and sample notes
7	Retail and consumer goods	McKinsey basis **79%** (July 2024, n=111)[108]; official bases are markedly lower: Singapore retail **8.9%**[109] and Brazilian trade **17%**[110]; US BTOS places retail, accommodation and food services among the laggards[111]	n.a. (the IBM–NRF study publishes no production or scaling share)	Marketing and sales (**51%**, the sector's highest function); product search and recommendation; customer service; supply chain and inventory management	Demand has already been reshaped: **45%** of consumers use AI somewhere in the purchase journey, including researching products **41%**, interpreting reviews **33%** and finding deals **31%**[112]	**54%** of brand executives report cross-channel, cross-system and data challenges[112]	The IBM–NRF executive sample is only 200; official statistics are more conservative
8	Transport and logistics	**44%** of shippers already use AI in transport planning and optimisation; **42%** of carriers deploy AI in pricing and route optimisation and **39%** for real-time tracking (**230+** European and North American executives)[113]; official bases: Singapore transport and storage **10.3%**[109] and Brazilian transport **16%**[110]	The report states explicitly that most companies remain at an early stage and provides no quantified split between pilots, production and scaling[113]	Transport planning and optimisation; rate and route optimisation; real-time visibility and ETA monitoring (**52%**); freight procurement	n.a. (no quantified revenue or cost outcomes). On expectations: **86%** of shippers expect AI to affect transport planning significantly within three to five years and **59%** of carriers see pricing and route optimisation as the main source of value[113]	Limited trust in automation: **two thirds** of shippers and **more than half** of carriers still see AI as augmenting rather than replacing human decisions[113]	**Vendor survey**, n>230, Europe and North America
9	Hospitality and travel	**41%** of European hotels use AI technologies, **43%** use none and **16%** plan to adopt soon (1,485 hotels across Austria, France, Germany, Greece, Italy and Switzerland)[114]; official bases: Singapore accommodation and food **4.7%**, the lowest of any sector[109], and Brazil **10%**[110]	Very shallow: **29%** of adopters implemented within the past two years and only **4%** have more than three years of experience[114]	The study lists application areas as operations, decision support and competitiveness (the full use-case ranking requires returning to the source)	n.a.	Structural barriers: **82%** of the sample are independent hotels, **81%** have fewer than 100 rooms and **49%** employ fewer than 10 people[114]; in Korea the leading reason for non-adoption in accommodation and food is cost, at **49.0%**[115]	Joint academic and industry-body survey, n=1,485, six countries only

Sources

108. McKinsey (PDF) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf

109. IMDA report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf

110. Cetic.br, TIC Empresas 2025 — https://cetic.br/media/analises/TIC-Empresas-2025-lancamento.pdf

111. PIIE analysis of BTOS by sector — https://www.piie.com/blogs/realtime-economics/2026/adoption-ai-industrial-sectors

112. IBM Institute for Business Value and NRF, January 2026 — https://newsroom.ibm.com/2026-01-07-ibm-nrf-study-brands-and-retailers-navigate-a-new-reality-as-ai-shapes-consumer-decisions-before-shopping-begins

113. Trimble, Transportation Pulse Report 2026 — https://news.trimble.com/Transportation-Pulse-Report-2026-Transportation-Industry-at-AI-Inflection-Point-as-Adoption-Accelerates

114. Schegg 2025, Artificial Intelligence in European Hotels — https://www.hotellerie.de/fileadmin/user_upload/Dokumente/Studien_und_Umfragen/Schegg_2025_AI_Adoption_in_European_Hotels_03072025.pdf

115. NIA compendium (via Etnews) — https://www.etnews.com/20260120000071

Chapter 3 continued — Sector data table 4 of 4

Energy and utilities, Construction and real estate, Public sector and education

Table 14 Sector data table 4 of 4

#	Sector	AI / generative AI adoption (year)	Production / scaling	Most common use cases	Quantified outcomes	Main deployment barriers	Source and sample notes
10	Energy and utilities	North American utilities: **41%** of executives report AI-related technology is now "fully integrated" and a further **40%** have made major investments with mature projects under way (**500** US and Canadian executives)[116]; McKinsey basis, energy and materials **59%** (n=142, the lowest of any sector)[117]	As shown: **41%** fully integrated versus only **27%** of executives a year earlier who expected full integration within five years — **reality ran ahead of expectations**[116]	Grid optimisation (**57%**); safety and hazard identification (**53%**); demand forecasting (**51%**); predictive maintenance	The IEA finds that widespread use of existing AI applications to optimise industrial processes could save energy equivalent to **more than the total energy consumption of Mexico today**, and improve forecasting and integration of variable renewables[118]	The IEA lists missing or inaccessible data and digital infrastructure, skills shortages and persistent digital and physical security concerns that "often outweigh potential efficiency gains"; only **2%** of energy start-up equity funding goes to companies with an AI value proposition[118]	The IEA is an intergovernmental report with no adoption percentage; Itron is a **vendor survey**, n=500
11	Construction and real estate	Construction: **45%** of organisations report no AI use at all (more than 2,200 professionals worldwide)[119]; commercial real estate: **88%** of investors and **92%** of occupiers have launched AI pilots (**1,500+** senior decision-makers, 16 markets)[120]; official bases: UK construction **13%**[121], Danish construction **24%**[122], Korean construction **15.9%**[123]	**The most extreme adoption-to-value gap in this white paper**: only **1%** of construction firms have scaled AI across projects[119]; in commercial real estate, piloting is near universal yet only **5%** report achieving all their AI goals and **47%** achieved two or three[120]	Design optioneering; scheduling; risk management; cost control; JLL identifies **56 AI use cases** across the CRE value chain	n.a. (RICS states it publishes no quantified revenue, cost, productivity, quality or risk outcomes). On expectations, **nearly 70%** of project managers and quantity surveyors believe AI will help deliver greater value[119]	Skills shortages and integration challenges: **one quarter** of firms plan to increase AI spending over the next 12 months, **28%** have no plans and **22%** are unsure[119]; **more than 60%** of property investors are still not ready[120]	RICS n>2,200; JLL n>1,500 across 16 markets; both are industry-body surveys
12	Public sector and education	**67%** of OECD countries use AI to improve the design and delivery of public services (2024)[124]; Saudi government entities **about 39%** use or are piloting AI (n=80)[125]; Korean education services **41.4%** (2024)[123]	n.a. (the OECD states it provides no pilot, production or scaling shares and publishes neither the sample size nor the method behind the 67%)[124]	Process automation; resource allocation such as staff scheduling; decision support; citizen engagement; personalised service pathways	Saudi Arabia: among entities using or piloting AI, **81%** report significantly improved service delivery and **61%** improved decision-making (n=80)[125]; the OECD publishes no quantified outcomes	The OECD emphasises that how people perceive, trust and interact with AI-driven decisions will determine effectiveness and legitimacy, and notes that civil servants are "taking matters into their own hands" (shadow use)[124]	The OECD is an intergovernmental study (no sample size for the 67%); SDAIA n=80

Sources

116. Itron report, 27 October 2025 — https://www.globenewswire.com/news-release/2025/10/27/3174611/0/en/itron-report-reveals-81-of-north-american-utilities-already-use-ai.html
117. McKinsey (PDF) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf
118. IEA, Energy and AI, executive summary — https://www.iea.org/reports/energy-and-ai/executive-summary
119. RICS, AI in Construction 2025 — https://www.rics.org/news-insights/optimism-high-for-ai-in-construction-but-skills-shortages-and-integration-challenges-adoption
120. JLL, 28 October 2025 — https://www.jll.com/en-us/newsroom/real-estates-ai-reality-check-companies-piloting-only-achieved-all-ai-goals
121. Office for National Statistics (ONS) — https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/articles/artificialintelligenceinukbusinesses/2023to2026
122. Danish Agency for Digital Government, ITAV 2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf
123. NIA compendium (via Etnews) — https://www.etnews.com/20260120000071
124. OECD, Governing with Artificial Intelligence — https://www.oecd.org/en/publications/2025/06/governing-with-artificial-intelligence_398fa287/full-report/ai-in-public-service-design-and-delivery_09704c1a.html
125. SDAIA report — https://sdaia.gov.sa/en/MediaCenter/KnowledgeCenter/ResearchLibrary/StateofAIinSaudiArabia.pdf

Chapter 3 continued — Four kinds of "use" that must be separated

Why 81% and 1% can both be true of the same sector

A single sector can report **81%** and **1%** without contradiction, because the two figures measure different things. Any sector conclusion must first state which layer it belongs to.

Table 15 Four kinds of use, compared across sectors

Layer	Representative figure	Meaning and caveats
Individual employee use	**81%** of physicians use AI in practice (2026)[126]	Individual behaviour; implies nothing about institutional process, validation or governance
Shadow employee use	**54%** of employees say they use AI tools even without formal authorisation[127]	Shows tools are easy to obtain but not organised into products; also a governance risk
Organisational adoption	Organisational generative AI use in professional services is only **22%**, although 89% of the same professionals see use cases[128]	Formally deployed by the institution, but not necessarily in core processes
Production and scaling	Construction **1%** scaled across projects; commercial real estate **5%** achieved all AI goals; agentic systems scaled enterprise-wide **23%**[129][130][131]	The only layer that can be connected to the profit and loss account, and the narrowest point in the chain

Sector conclusions

First, the ordering of sectors is consistent across official statistics and surveys and can be used to prioritise market entry. Second, absolute levels must never be quoted across measurement systems. Third, the sectors with the widest gap — construction and commercial real estate — are also the sectors with the most pilots, which shows that pilot counts are not a measure of capability.

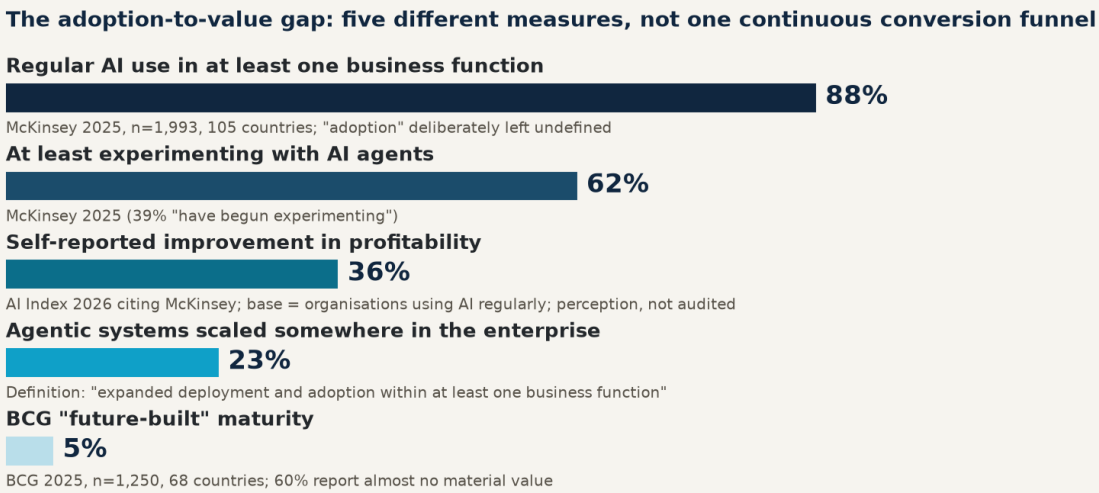
Sources

126. AMA survey — https://www.ama-assn.org/press-center/ama-press-releases/ama-ai-usage-among-doctors-doubles-confidence-technology-grows
127. BCG, The AI Adoption Puzzle — https://www.bcg.com/publications/2025/ai-adoption-puzzle-why-usage-up-impact-not
128. Thomson Reuters (2025) — https://www.thomsonreuters.com/en/press-releases/2025/april/from-incubation-to-integration-generative-ai-adoption-nearly-doubles-as-professional-services-reach-crossroads
129. RICS (2025) — https://www.rics.org/news-insights/optimism-high-for-ai-in-construction-but-skills-shortages-and-integration-challenges-adoption
130. JLL (2025) — https://www.jll.com/en-us/newsroom/real-estates-ai-reality-check-companies-piloting-only-achieved-all-ai-goals
131. McKinsey, State of AI 2025 — https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai

Chapter 4 — The adoption-to-value gap

Five measures, five different bases

Figure 5 Five maturity measures on different bases; not one continuous conversion funnel



Sources: McKinsey State of AI 2025; Stanford AI Index 2026 ch.4; BCG, The Widening AI Value Gap (2025). Caution: 88%, 62% and 23% come from one survey but different bases; 36% is self-assessed financial perception; 5% comes from a separate four-level maturity score. These figures cannot be subtracted or divided into one another.

Finding: the evidence supports "diffusion outpaces value", but only at organisational level

This must not be restated as "AI does not work". The correct formulation is that personal exposure and tool-level use are close to mainstream while organisational workflow redesign and auditable financial returns remain a minority achievement. The gap exists inside a single survey: **88%** use AI regularly, **62%** are at least experimenting with agents, and only **23%** have scaled agentic systems anywhere in the enterprise[132]. Fully scaled agent use is in **single digits** in almost every business function, and even in IT and knowledge management **about two thirds or more** of respondents report no use at all[133].

A definitional discrepancy that must accompany any citation

The web version of the AI Index 2026 Economy chapter states that generative AI is now used in at least one business function by **70%** of organisations, whereas figure 4.3.1 in the PDF of the same chapter gives **79%** for generative AI in 2025 (and 88% for AI). This white paper cites the PDF values and flags the discrepancy rather than merging the two.

Sources

132. McKinsey, State of AI 2025 — https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai
133. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf

Chapter 4 continued — Value conversion table 1 of 3: adoption, scaling and self-reported gains

Value conversion table 1 of 3

Table 16 Value conversion table 1 of 3

Indicator	Value	Year	Research body and sample	Definition and basis
Organisations using AI regularly in at least one business function	**88%** (78% the previous year)[134]	2025	McKinsey; 1,993 participants across 105 countries, fielded 25 June to 29 July 2025, weighted by each country's contribution to global GDP; 38% of respondents are at organisations with revenue above $1bn	"Adoption" is explicitly left undefined and spans early experimentation by a few employees through to embedding across rewired business units[135]
Organisations using generative AI	**79%** (71% in 2024)[136]	2025	As above (reproduced as AI Index figure 4.3.1)	Regular use of generative AI in at least one business function
Using AI in more than one function	**More than two thirds**; three or more functions **half**	2025	As above	—
At least experimenting with agents	**62%**, of which 39% "have begun experimenting"	2025	As above	—
Agentic systems scaled somewhere in the enterprise	**23%**	2025	As above	"Expanded deployment and adoption within at least one business function"; most report only one or two functions
Agents "fully scaled" by function	**Single digits in almost every function**; the highest in the technology sector are software engineering **24%**, IT **22%** and service operations **21%**	2025	As above (AI Index figures 4.3.7 and 4.3.8)	In most functions, most respondents report no agent use at all; even in IT and knowledge management **about two thirds or more** report none
Executives describing their generative AI rollout as "mature"	**1%**[135]	2024	McKinsey (developed-market supplementary survey)	"Mature"
Reported improvement in organisational metrics (organisations using AI regularly)	Innovation **64%**, employee satisfaction **45%**, customer satisfaction **45%**, competitive differentiation **45%**, cost **38%**, profitability **36%**, organic revenue growth **33%**, talent attraction and retention **33%**, market share **25%**	2025	McKinsey (AI Index figure 4.3.5)	Self-assessed as improved, no impact, worse or unknown; as many respondents report improvement as report no impact, and **at most 7%** say AI made cost metrics worse
EBIT impact	Organisations investing **$25m or more** in responsible AI are "far more likely to realise material AI benefits, including **EBIT impact above 5%**"[137]	2026	McKinsey, 2026 AI Trust Maturity Survey; about 500 organisations, December 2025 to January 2026	The page gives no **share** of respondents reporting EBIT impact, only this association

Sources

134. McKinsey, State of AI 2025 — https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai
135. McKinsey (PDF) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf
136. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
137. McKinsey, 2026 AI Trust Maturity Survey — https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/tech-forward/state-of-ai-trust-in-2026-shifting-to-the-agentic-era

Chapter 4 continued — Value conversion table 2 of 3: maturity distribution and pilot failure

Value conversion table 2 of 3

Table 17 Value conversion table 2 of 3

Indicator	Value	Year	Research body and sample	Definition and basis
Distribution of corporate AI maturity	Future-built **5%**, scaling **35%**, and the remaining **60%** obtain "almost no material value, reporting minimal revenue and cost benefits despite significant investment"[138]	2025	BCG Build for the Future 2025, **n=1,250** across **68 countries** in Asia, Europe and North America	The four levels are scored on **41** underlying capabilities (0–25 stalled, >25–50 emerging, >50–75 scaling, >75–100 future-built)[139]
Organisations with agents broadly embedded in workflows	**13%**[140]	n.a. (no year on the BCG page)	BCG	"Broadly integrated these agents into workflows"
Depth of employee adoption	**More than 85%** remain at stage two (task assistance) and stage three (delegation); **fewer than 10%** reach stage four (semi-autonomous collaboration) or beyond	n.a.	BCG survey of software developers at three different organisations (no sample size published)	Five stages: information assistance → task assistance → delegation → semi-autonomous collaboration → fully autonomous orchestration
"Pilot failure"	"For **95%** of companies in the dataset, generative AI implementation fell short of expectations"; about **5%** of AI pilots achieved rapid revenue acceleration[141]	2025	MIT NANDA, The GenAI Divide, built on **150 leader interviews, 350 employee surveys and analysis of 300 public AI deployments**	**"Failure" is operationalised as falling short of expectations, stalling, or having almost no measurable effect on the profit and loss account**; the reporting page does not state which part of the research the 95% base comes from, nor its geographic scope
Build versus buy	Purchasing AI tools from specialist vendors and building partnerships succeeds "about **67%** of the time"; internal builds succeed only **one third** as often	2025	As above	The page gives no sample size for either route
Firm size and deployment stage	"Larger companies are the most likely to report that their AI projects have reached the scaling stage"	2025	McKinsey (AI Index figure 4.3.6, five revenue bands)	The figures cannot be aligned one-to-one with the bands; precise values require the original AI Index chart[142]

Sources

138. BCG, The Widening AI Value Gap — https://www.bcg.com/publications/2025/are-you-generating-value-from-ai-the-widening-gap
139. BCG (PDF, pages 19–20) — https://media-publications.bcg.com/The-Widening-AI-Value-Gap-Sept-2025.pdf
140. BCG, The AI Adoption Puzzle — https://www.bcg.com/publications/2025/ai-adoption-puzzle-why-usage-up-impact-not
141. Fortune reporting on the MIT NANDA study — https://fortune.com/2025/08/18/mit-report-95-percent-generative-ai-pilots-at-companies-failing-cfo/
142. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf

Chapter 4 continued — Value conversion table 3 of 3: structural constraints and value pools

Value conversion table 3 of 3

Table 18 Value conversion table 3 of 3

Indicator	Value	Year	Research body and sample	Definition and basis
Governance capability and returns	About **two thirds** of respondents cite security and risk concerns as the leading barrier to fully scaling agentic AI[143]	2026	McKinsey AI Trust Maturity Survey, about 500 organisations	—
Data and digital foundation and value	**78%** of manufacturing leaders direct more than 20% of their improvement budget to smart manufacturing to build the data and technology foundation[144]	Fielded August–September 2024	Deloitte, n=600	—
Insufficient investment and value	**More than 95%** of Indian organisations allocate less than 20% of the IT budget to AI and only **4%** cross the 20% threshold[145]	2025	EY–CII, n=200, C-suite and senior executives	—
Distribution of value pools	**70%** of AI value potential sits in core business functions (62% in 2024); the IT share rose **6 percentage points** to **13%**; R&D and innovation alone account for **15%**[146]	2025	BCG Build for the Future 2025, n=1,250	This is the distribution of value **potential**, not adoption by function
Tool availability and maturity	In less mature industries **fewer than 50%** of employees have access to generative AI tools such as Copilot or ChatGPT; in more mature industries **more than 70%** do[146]	2025	As above	—
Firm size and breadth of generative AI	Companies with revenue **above $500m** use generative AI more broadly across the organisation	2024	McKinsey[147]	—

Sources

143. McKinsey, 2026 AI Trust Maturity Survey — https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/tech-forward/state-of-ai-trust-in-2026-shifting-to-the-agentic-era

144. Deloitte (2025) — https://www.deloitte.com/us/en/about/press-room/deloitte-2025-smart-manufacturing-survey.html

145. EY–CII, November 2025 — https://www.ey.com/en_in/newsroom/2025/11/india-s-ai-shift-from-pilots-to-performance-47-percent-of-enterprises-have-multiple-ai-use-cases-live-in-production-ey-cii-report

146. BCG (PDF, pages 6–7) — https://media-publications.bcg.com/The-Widening-AI-Value-Gap-Sept-2025.pdf

147. McKinsey (PDF) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf

Chapter 4 continued — Productivity evidence: seven task-level studies that cannot be averaged

Results range from −19% to +200% for comparable work

Table 19 Task-level productivity studies compiled in AI Index 2026, figure 4.4.27[148]

Study	Occupation	Application	Change in productivity	Who benefits most
Reimers & Waldfogel (2026)	Software engineers	LLM-generated content	**+200%** in output volume; publications tripled	New entrants drive volume; pre-AI authors maintain quality
Brynjolfsson et al. (2025)	Customer support agents	Conversational assistant	**+14% to +15%** in issues resolved per hour	Less experienced or lower-skilled agents, **+30% to +35%**
Cui et al. (2025)	Software developers	GitHub Copilot	**+26%** in pull requests completed	Junior and less experienced developers
Ju & Aral (2025)	Marketing teams	Multimodal ad creation	**+50%** in output per person	Human–machine teams
Choi & Xie (2025)	Accountants	AI bookkeeping	**+55%** in weekly client-support throughput	Experienced accountants using AI confidence scores to target review
Shen & Tamkin (2025)	Developers	Learning new libraries	**0%**; the change in speed is not statistically significant	High scorers who use AI for conceptual enquiry and avoid the learning penalty
Becker et al. (2025)	Developers	Open-source tooling	**−19%**; slower when using AI	None; "a significant gap between perceived help and actual performance"

Macroeconomic evidence is equally dispersed

- Aldasoro et al. (2026), **12,000 European firms, 2019–2024**: labour productivity **+4%**, with each 1% of spending on training adding **5.9 percentage points** of gain.
- Yotzov et al. (2026), **6,000** executives in the United States, United Kingdom, Germany and Australia: expected productivity **+1.4%**, output **+0.8%** and employment **−0.7%** over three years; the AI Index summarises this as broad adoption with minimal realised productivity gains.
- Brynjolfsson (2026): US productivity grew **2.7%** in 2025, close to double the **1.4%** annual average of the preceding decade.
- Filippucci et al. (OECD, 2025), a ten-year horizon for the G7: annual labour productivity growth **+0.4 to +1.3 percentage points** for the United States and United Kingdom, and **+0.2 to +0.8** for Italy and Japan.
- Penn Wharton Budget Model (2025): a contribution to total factor productivity of **+0.01 percentage points**, described as negligible.
- Brynjolfsson et al. (2025), US ADP payroll data to 2025: employment of early-career workers **−15% to −16%**.

The AI Index's own qualitative judgement is that the evidence is "neither settled nor uniformly positive", with smaller gains on tasks requiring deeper reasoning[148].

Sources

148. Stanford AI Index 2026, figure 4.4.27 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf

Chapter 4 continued — Five datasets behind the core finding, and the caveats

What supports the conclusion, and what must be said alongside it

1. **The gap inside a single survey.** 88% of organisations use AI regularly, but only **23%** have scaled agentic systems anywhere in the enterprise[149], and fully scaled agent use is in **single digits** in almost every function[150].
2. **Self-reported financial outcomes run well below adoption.** Only **36%** see improved profitability and **33%** improved organic revenue growth, and as many respondents report improvement as report no impact[150].
3. **An independent second source reaches the same conclusion.** BCG (n=1,250, 68 countries) finds **60%** of companies obtain almost no material value and only **5%** are future-built[151].
4. **Extreme sector cases.** Commercial real estate pilots at **88% to 92%**, yet only **5%** achieve all their AI goals[152], and only **1%** of construction firms scale across projects[153].
5. **The mismatch between individual and organisational use.** French generative AI diffusion reached **44.0%** of the population in H2 2025 against official enterprise adoption of **18%**; US population-level diffusion of **28.3%** compares with BTOS enterprise adoption of **about 18% to 19.8%**[150154155].

The caveat that must always accompany the "95% failure rate"

The MIT NANDA figure of 95% is widely quoted as "95% of AI projects fail". The original wording is that "for 95% of companies in the dataset, generative AI implementation fell short of expectations", where failure is operationalised as stalling or having almost no measurable effect on the profit and loss account. The research rests on 150 interviews, 350 employee surveys and analysis of 300 public deployments; it is **not a probability sample of the enterprise population and its geographic scope is not published**[156]. This white paper requires all three qualifications to be stated whenever the number is used.

> "Personal exposure and tool-level usage are close to mainstream. Organisational workflow redesign and auditable financial returns remain a minority achievement. The gap does not lie in model capability but in depth of deployment, the data and governance foundation, and process change that can be booked in the profit and loss account."

The finding of chapter 4; quotable in full.

Sources

149. McKinsey, State of AI 2025 — https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai
150. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
151. BCG, The Widening AI Value Gap — https://www.bcg.com/publications/2025/are-you-generating-value-from-ai-the-widening-gap
152. JLL (2025) — https://www.jll.com/en-us/newsroom/real-estates-ai-reality-check-companies-piloting-only-achieved-all-ai-goals
153. RICS (2025) — https://www.rics.org/news-insights/optimism-high-for-ai-in-construction-but-skills-shortages-and-integration-challenges-adoption
154. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
155. US Census Bureau, BTOS — https://www.census.gov/library/stories/2026/05/ai-use-businesses.html
156. Fortune reporting on the MIT NANDA study — https://fortune.com/2025/08/18/mit-report-95-percent-generative-ai-pilots-at-companies-failing-cfo/

Chapter 5 — Physical AI and hardware integration, part 1

Dated first-hand statements and the division of labour between platforms

This chapter uses only dated, verifiable first-hand statements and deployed cases. It contains no market forecasts.

Table 20 NVIDIA's strategic statements, verbatim and dated

Date	Source	Statement (extract)
16 Mar 2026	NVIDIA Newsroom	**"Physical AI has arrived — every industrial company will become a robotics company."** NVIDIA's full-stack platform, spanning computing, open models and software frameworks, is described as the foundation for the robotics industry[157]
5 Jan 2026	NVIDIA Newsroom (CES)	**"The ChatGPT moment for robotics is here."** "Breakthroughs in physical AI — models that understand the real world, reason and plan actions — are unlocking entirely new applications"[158]
March 2026 (GTC)	Data Center Frontier, on-site report	"We have digital agents. Now we have physically embodied agents. We call them robots."; "Tokens are the new commodity. AI factories are the infrastructure that produces them."; **"If you have the wrong architecture, even if it's free, it's not cheap enough."**[159]
18 Mar 2025	NVIDIA Newsroom (Rev Lebaredian, VP of Omniverse)	**"Omniverse is an operating system that connects the world's physical data to the realm of physical AI."**[160]

Why this is more than a marketing narrative

Four robot manufacturers — FANUC, ABB Robotics, YASKAWA and KUKA, with **more than two million robots installed worldwide** — have integrated Omniverse libraries and the Isaac simulation framework into their virtual commissioning offerings and are embedding **Jetson modules** in controllers for real-time inference on the line[157]. That is a change to the production process chain, verifiable at the enterprise level, rather than a roadmap commitment.

Sources

157. NVIDIA Newsroom, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world
158. NVIDIA Newsroom, 5 January 2026 — https://nvidianews.nvidia.com/news/nvidia-releases-new-physical-ai-models-as-global-partners-unveil-next-generation-robots
159. Data Center Frontier, NVIDIA GTC 2026 — https://www.datacenterfrontier.com/machine-learning/news/55364406/jensen-huang-maps-the-ai-factory-era-at-nvidia-gtc-2026
160. NVIDIA Newsroom, 18 March 2025 — https://nvidianews.nvidia.com/news/nvidia-omniverse-physical-ai-operating-system-expands-to-more-industries-and-partners

Chapter 5 continued — Division of labour: from simulation to inference at the edge

What each platform does, and the quantified claims attached to it

Table 21 Division of labour across the physical AI stack

Platform	Role (verbatim or near-verbatim)	Key quantified facts
Omniverse	"An operating system built on the OpenUSD framework that lets developers unify physical-world data and applications"; at GTC 2026 NVIDIA introduced the **Omniverse DSX** blueprint, allowing operators to create a physically accurate digital twin of an AI factory — layout, power distribution, cooling, network fabric and load behaviour — before construction begins	—[161][162]
Isaac / Isaac Sim	Used "to create and train robots in simulation before deploying them in the real world"; Foxconn uses Isaac Sim for "simulation-driven design and evaluation ahead of physical deployment", simulating tasks such as screw driving and cable insertion	—[163]
Isaac GR00T	A general-purpose robot foundation model. **GR00T N2** previewed in March 2026, with availability planned for late 2026	"Helps robots complete new tasks in new environments with more than **twice** the success rate of leading vision-language-action models" and currently ranks **first** on the MolmoSpaces and RoboArena generalist robot policy leaderboards; the CES 2026 release was GR00T N1.6[164][165]
Cosmos	A world foundation model. **Cosmos 3** was announced in March 2026 as "the first world foundation model to unify synthetic world generation and vision"	The CES 2026 release comprised Cosmos Transfer 2.5, Cosmos Predict 2.5 and Cosmos Reason 2[165]
Jetson / Jetson Thor	Robotics compute at the edge; "built for generative reasoning models", letting physical AI agents "run in real time at the edge while minimising reliance on the cloud"	**7.5x** the AI compute, **3.1x** the CPU performance and **2x** the memory of the previous Jetson Orin; the **Jetson T5000** module starts at **$2,999 per 1,000 units** and the developer kit at **$3,499**[166]
Jetson T4000 / IGX Thor	Blackwell-architecture edge modules launched in January 2026; IGX Thor "extends robotics to the industrial edge with high-performance AI compute, enterprise software support and **functional safety**"	**$1,999 per 1,000 units**, **4x** the performance of the previous generation, **1,200 FP4 TFLOPS**, **64GB** of memory, a configurable **70W** power envelope, and a **4x** improvement in energy efficiency and compute[165]
Mega / Metropolis	Mega is "an Omniverse blueprint for testing multi-robot fleets at scale in industrial digital twins"; Metropolis underpins the video search and summarisation blueprint used to build agents that monitor activity across a facility	—[161]
Nemotron / PhysicsNeMo	Nemotron 3 is "a family of open models, data and libraries to support **transparent, efficient and specialised** agentic AI development across industries"; PhysicsNeMo is a physics-informed machine learning framework	Foxconn used PhysicsNeMo to accelerate CFD simulation **150-fold** against conventional methods[167][163]

Sources

161. NVIDIA, 18 March 2025 — https://nvidianews.nvidia.com/news/nvidia-omniverse-physical-ai-operating-system-expands-to-more-industries-and-partners

162. Data Center Frontier, GTC 2026 — https://www.datacenterfrontier.com/machine-learning/news/55364406/jensen-huang-maps-the-ai-factory-era-at-nvidia-gtc-2026

163. NVIDIA case study: Foxconn (Fii) — https://www.nvidia.com/en-us/case-studies/foxconn-develops-physical-ai-enabled-smart-factories-with-digital-twins/

164. NVIDIA, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world

165. NVIDIA, 5 January 2026 — https://nvidianews.nvidia.com/news/nvidia-releases-new-physical-ai-models-as-global-partners-unveil-next-generation-robots

166. NVIDIA blog: Jetson Thor and physical AI at the edge — https://blogs.nvidia.com/blog/jetson-thor-physical-ai-edge/

167. NVIDIA, 15 December 2025: Nemotron 3 — https://nvidianews.nvidia.com/news/nvidia-debuts-nemotron-3-family-of-open-models

Chapter 5 continued — Deployed enterprise and factory cases, not forecasts

Verifiable deployments and their quantified outcomes

Table 22 Deployed physical AI cases

Company	What was deployed	Quantified outcome	Source
FANUC, ABB Robotics, YASKAWA, KUKA	**More than two million robots installed worldwide**; all four are integrating Omniverse libraries and the Isaac simulation framework into their virtual commissioning offerings "to develop and validate complex robotic applications and entire production lines through physically accurate digital twins", and are embedding Jetson modules in controllers for real-time inference on the line	**2 million** robots installed	NVIDIA, 16 March 2026[168]
Foxconn (Fii)	The Fii Omniverse Digital Twin platform builds virtual replicas of factories using Omniverse libraries and OpenUSD; Isaac Sim supports simulation-driven design and evaluation; PhysicsNeMo handles thermal analysis; standardised USD assets allow entire lines to be assembled virtually and replicated across sites, for example from Taiwan to Mexico; the new Houston plant validated every mechanical, electrical and piping system virtually before construction	Leo Guo, general manager of Fii's robotics group: **"We believe we can reduce [time to market, factory build and factory planning] by about 50%"**; CFD thermal simulation **150x faster** (minutes rather than hours); the FoxBrain large model was trained in **four weeks**	NVIDIA case study[169]; NVIDIA, 18 March 2025[170]
General Motors	"The largest US automaker, announced adoption of Omniverse to enhance its factories and train platforms for material handling, transport and precision welding"	—	NVIDIA, 18 March 2025[170]
SAP and Unilever	SAP customers and partners can use Omniverse to develop their own virtual environments for warehouse management; Unilever adopted Omniverse and physically accurate digital twins to streamline and optimise marketing content creation for its products	—	NVIDIA, 18 March 2025[170]
Agility Robotics and Boston Dynamics	Agility has integrated Jetson into the fifth generation of Digit and plans to use Jetson Thor as the onboard compute platform for the sixth; Boston Dynamics is integrating Jetson Thor into the Atlas humanoid	—	NVIDIA blog[171]
Salesforce	Agents applied to incident resolution	Incident resolution time **halved**	NVIDIA, 5 January 2026[172]
Automotive and autonomous driving	NVIDIA announced a further group of automotive partnerships including BYD, Hyundai, Nissan and Geely, alongside existing work with Mercedes-Benz and Toyota	The company states its platform will support "autonomous systems in tens of millions of vehicles a year" — **a company claim, not independently verified**	Data Center Frontier[173]

Sources

168. NVIDIA Newsroom, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world

169. NVIDIA case study: Foxconn (Fii) — https://www.nvidia.com/en-us/case-studies/foxconn-develops-physical-ai-enabled-smart-factories-with-digital-twins/

170. NVIDIA, 18 March 2025 — https://nvidianews.nvidia.com/news/nvidia-omniverse-physical-ai-operating-system-expands-to-more-industries-and-partners

171. NVIDIA blog: Jetson Thor — https://blogs.nvidia.com/blog/jetson-thor-physical-ai-edge/

172. NVIDIA, 5 January 2026 — https://nvidianews.nvidia.com/news/nvidia-releases-new-physical-ai-models-as-global-partners-unveil-next-generation-robots

173. Data Center Frontier, GTC 2026 — https://www.datacenterfrontier.com/machine-learning/news/55364406/jensen-huang-maps-the-ai-factory-era-at-nvidia-gtc-2026

Chapter 5 continued — Global industrial robot data (IFR World Robotics 2025, reference year 2024)

Installations, operational stock, shares and density

Table 23 Installations and operational stock[174][175]

Indicator	Value
Global installations, 2024	**542,076 units** ("542,000" in the press release), the second-highest year on record and only **2%** below the peak two years earlier; the fourth consecutive year above 500,000
Historical series	500,000 first passed in 2021; **552,946 units** in 2022 (the record); **541,302 units** in 2023
Global operational stock, 2024	**4,664,000 units**, up **9%** year on year
Regional shares, 2024	Asia **74%** of new installations (401,665 units, +5%); Europe **16%** (85,006 units, −8%); the Americas **9%** (50,077 units, −10%)
EU-27, 2024	**67,819 units** (−8%), or **80%** of European installations
2025 forecast	Global **+6% to 575,000 units**; Asia about **435,000**; Europe below **79,000**; North America about **43,500**
2028 forecast	Above **700,000 units**

Table 24 Major countries, 2024 (density in units per 10,000 employees)[176]

Country	2024 installs	Change	Share	Density
China	295,045	+7%	**54%**	166
Japan	44,453	−4%	8%	446
United States	34,164	−9%	6%	307
Korea	30,596	−3%	6%	**1,220**
Germany	26,982	−5%	5%	449
Singapore	n.a.	—	—	818
India	9,100	+7%	—	n.a.
Italy	8,783	−16%	—	top 20
Mexico	5,594	−4%	—	62
Spain	5,086	+1%	—	top 20
France	4,900	−24%	—	top 20
Canada	3,787	−12%	—	241
United Kingdom	2,500	−35%	—	112

China's operational stock exceeds **two million units**, the largest in the world and roughly 4.5 times that of Japan, whose stock stands at **450,500 units** (+3%). The UK density figure of **112** is on a Make UK basis and trails the EU average of **208**. China, Japan, the United States, Korea and Germany together account for **80% (431,240 units)** of global installations in 2024, and the domestic market share held by Chinese manufacturers "climbed to **57%** last year, against roughly **28%** over the past decade"[174][175].

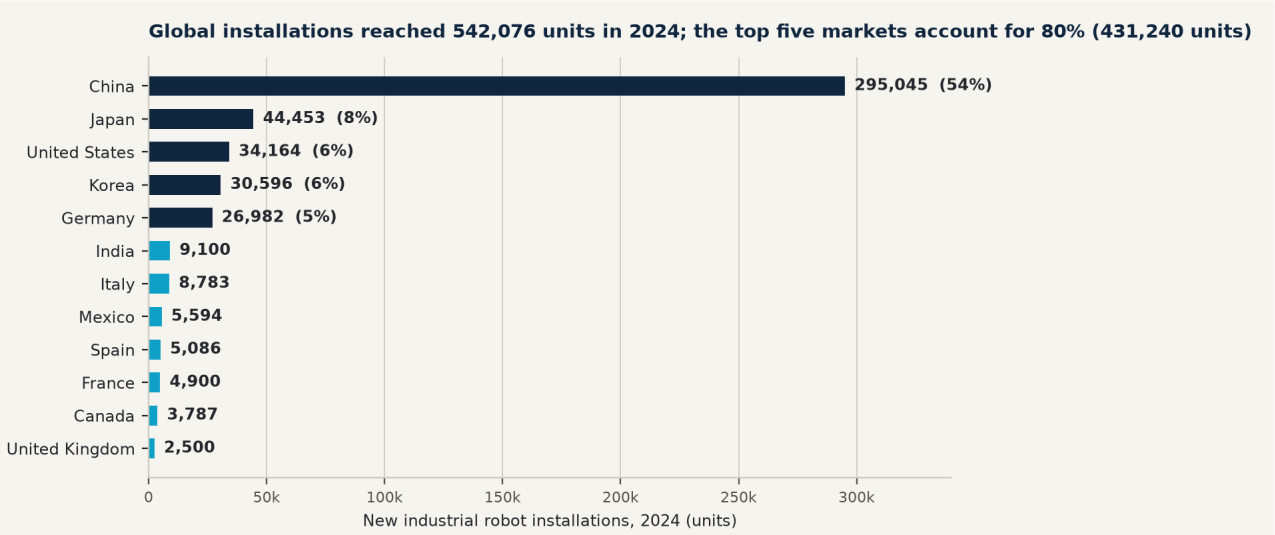
Sources

174. IFR press release, 25 September 2025 — https://ifr.org/ifr-press-releases/news/global-robot-demand-in-factories-doubles-over-10-years
175. IFR executive summary (PDF) — https://ifr.org/img/worldrobotics/Executive_Summary_WR_2025_Industrial_Robots.pdf
176. IFR density data (via The Robot Report) — https://www.therobotreport.com/ifr-reports-robot-density-increase-across-europe-asia-americas/

Chapter 5 continued — Installations and density must be read separately

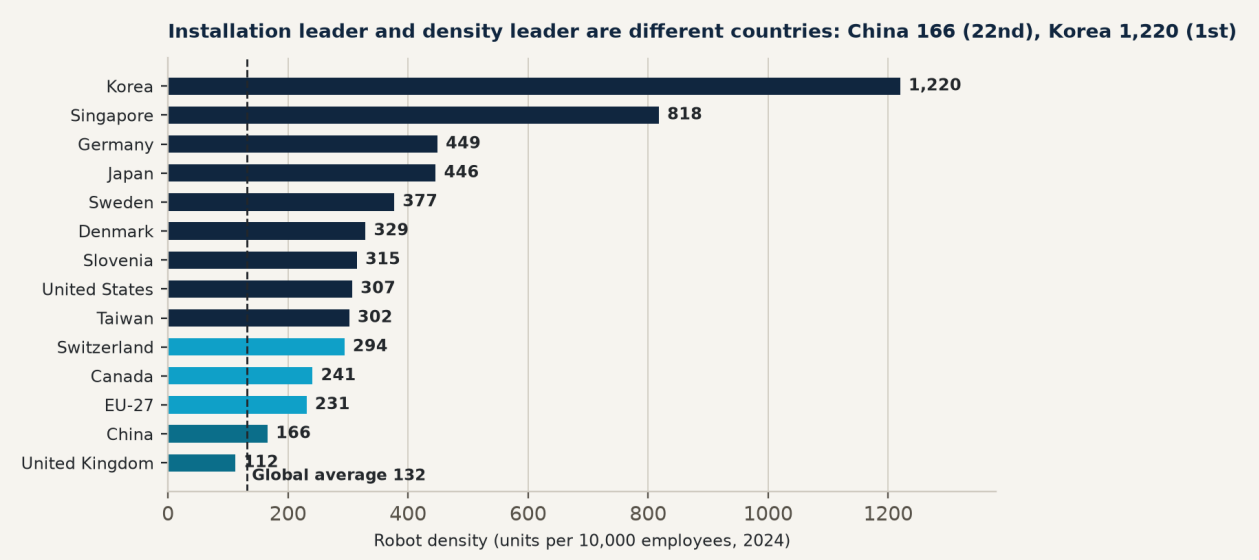
The installation leader and the density leader are different countries

Figure 6 Industrial robot installations and global share by country, 2024



Source: IFR World Robotics 2025 (reference year 2024), press release and executive summary. Operational stock reached 4,664,000 units (+9%); Asia took 74% of new installations, Europe 16%, the Americas 9%. Shares are shown only where IFR published them.

Figure 7 Robot density in units per 10,000 employees, 2024



Source: IFR World Robotics 2025 density data (via The Robot Report, reference year 2024). The UK figure of 112 is on a Make UK basis. China's 166 uses revised National Bureau of Statistics labour data. Density measures automation stock, not AI.

Sources for Figures 6 and 7: IFR World Robotics 2025 press release and executive summary for installations, stock and shares[177][178], and IFR robot density data for the 2024 reference year as published by The Robot Report[179]. The two charts must not be merged: installations measure the annual addition, density measures the ratio of the installed stock to the workforce.

Sources

177. IFR press release, 25 September 2025 — https://ifr.org/ifr-press-releases/news/global-robot-demand-in-factories-doubles-over-10-years
178. IFR executive summary (PDF) — https://ifr.org/img/worldrobotics/Executive_Summary_WR_2025_Industrial_Robots.pdf
179. IFR density data (via The Robot Report) — https://www.therobotreport.com/ifr-reports-robot-density-increase-across-europe-asia-americas/

Chapter 5 continued — Three structural facts that must be presented together

Concentration, localisation and the difference between volume and density

1. **Concentration in five markets.** China, Japan, the United States, Korea and Germany together accounted for **80% (431,240 units)** of global installations in 2024[180].
2. **Localisation in China.** The domestic market share of Chinese manufacturers "climbed to **57%** last year, against roughly **28%** over the past decade"[181].
3. **Density and installations must be read separately.** China leads installations (**54%**) but has a density of only **166**, ranking 22nd; Korea ranks fourth on installations but first on density at **1,220**. Global average density reached **132 units per 10,000 employees** in 2024, having doubled between 2014 and 2024: EU-27 **231**, western Europe **267** (+3%), North America **204** (+4%) and Asia **131** (+11%)[182].

> "The robot density metric provides a common basis for comparison by relating the total number of robots in use in a country to the size of its economy as measured by its workforce."
>
> Takayuki Ito, President of the IFR[182]

Set against enterprise-level penetration

The other side of the picture must be shown at the same time: among enterprises that use AI, technologies for autonomous machine movement remain in single digits — **6%** in Germany[183], **2%** in Denmark for two consecutive years and the only category with no growth[184], and **7%** in Brazil[185]. **Robot density measures the automation stock; it is not a measure of AI penetration.**

The asymmetry between capital signals and installed penetration

Between January and April 2025 China recorded **140** robotics-related financing deals, **38.7%** of all AI financing events, while enterprise use of autonomous machine movement remains at **2% to 7%**. Capital is entering faster than the technology is penetrating production lines, and this is the structural feature investors in physical AI most need to understand.

Sources

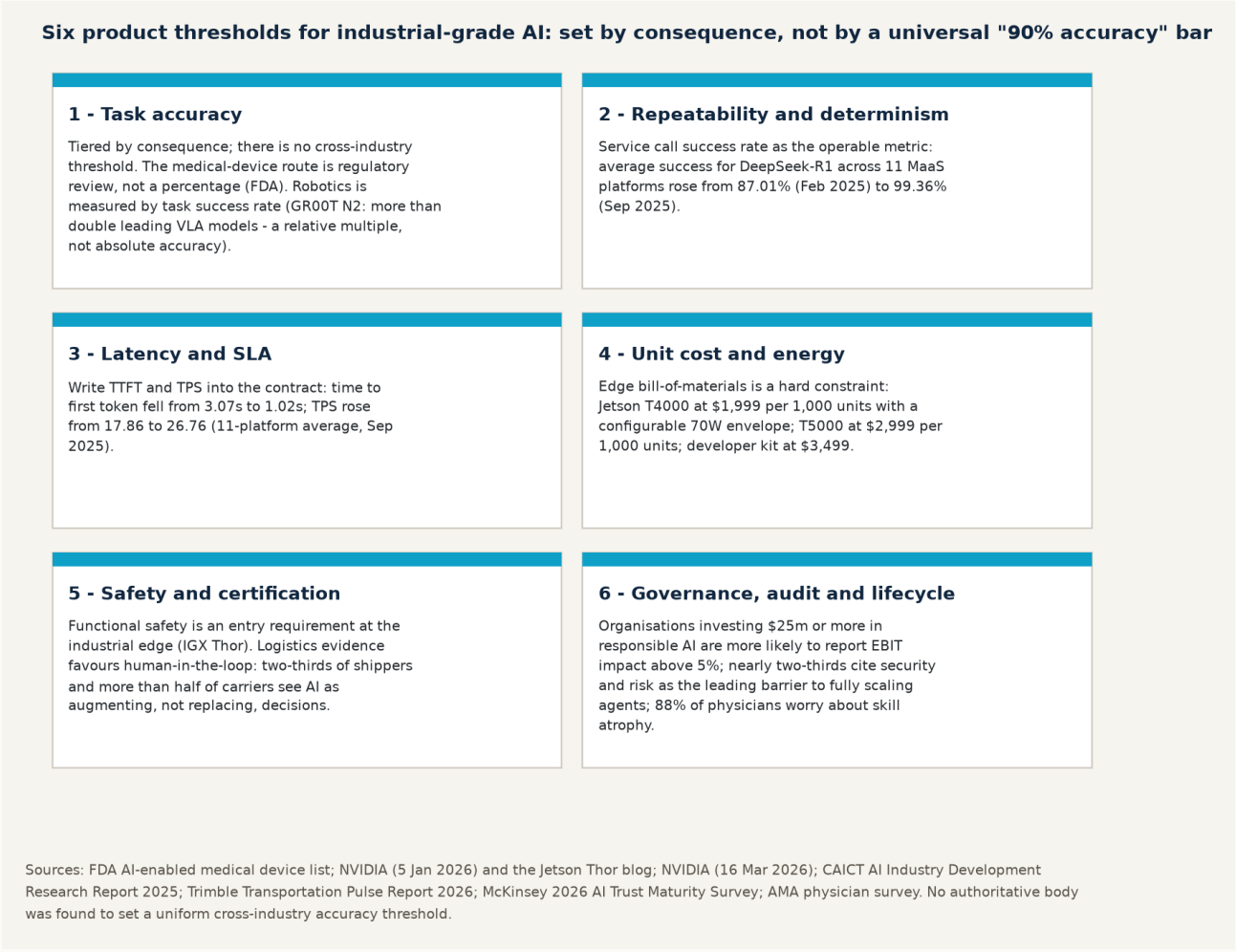
180. IFR executive summary (PDF) — https://ifr.org/img/worldrobotics/Executive_Summary_WR_2025_Industrial_Robots.pdf
181. IFR press release, 25 September 2025 — https://ifr.org/ifr-press-releases/news/global-robot-demand-in-factories-doubles-over-10-years
182. IFR density data (via The Robot Report) — https://www.therobotreport.com/ifr-reports-robot-density-increase-across-europe-asia-americas/
183. Destatis — https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Unternehmen/IKT-in-Unternehmen-IKT-Branche/Tabellen/ikti-unternehmen-kuenstliche-intelligenz.html
184. Statistics Denmark (Danmarks Statistik) — https://www.dst.dk/nytpdf/55352
185. Cetic.br (2025) — https://cetic.br/media/analises/TIC-Empresas-2025-lancamento.pdf

Chapter 6 — Product thresholds for industrial-grade AI, part 1

Why there is no universal "90% accuracy" bar

No authoritative body was found to set a uniform cross-industry accuracy threshold. Any claim that "90% is enough to go live" has no source behind it. The evidence shows thresholds are set by the consequence of the task, across six separate dimensions.

Figure 8 A six-threshold framework for industrial-grade AI



Sources: FDA AI-enabled medical device list; NVIDIA (5 Jan 2026) and the Jetson Thor blog; NVIDIA (16 Mar 2026); CAICT AI Industry Development Research Report 2025; Trimble Transportation Pulse Report 2026; McKinsey 2026 AI Trust Maturity Survey; AMA physician survey. No authoritative body was found to set a uniform cross-industry accuracy threshold.

First-hand basis for each threshold in Figure 8: the FDA list of AI-enabled devices, where the route is regulatory review rather than a percentage[186]; CAICT data on service success rate, TPS and time to first token[187]; NVIDIA Jetson T4000 and T5000 pricing, power envelope and functional safety[188][189]; the GR00T N2 task success claim[190]; the human-in-the-loop preference in logistics[191]; the link between responsible-AI investment and EBIT impact[192]; and physicians' views on validation and skill atrophy[193].

Sources

186. US FDA, AI-enabled medical device list — https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-enabled-medical-devices
187. CAICT, AI Industry Development Research Report 2025 — https://www.caict.ac.cn/kxyj/qwfb/bps/202602/P020260202487301304903.pdf
188. NVIDIA, 5 January 2026 — https://nvidianews.nvidia.com/news/nvidia-releases-new-physical-ai-models-as-global-partners-unveil-next-generation-robots
189. NVIDIA blog: Jetson Thor — https://blogs.nvidia.com/blog/jetson-thor-physical-ai-edge/
190. NVIDIA, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world
191. Trimble (2026) — https://news.trimble.com/Transportation-Pulse-Report-2026-Transportation-Industry-at-AI-Inflection-Point-as-Adoption-Accelerates
192. McKinsey, State of AI trust in 2026 — https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/tech-forward/state-of-ai-trust-in-2026-shifting-to-the-agentic-era
193. AMA survey — https://www.ama-assn.org/press-center/ama-press-releases/ama-ai-usage-among-doctors-doubles-confidence-technology-grows

Chapter 6 continued — First-hand evidence for each threshold dimension

Statements and metrics, not generalities

Table 25 Threshold dimensions for industrial and edge AI, with first-hand evidence

Threshold dimension	First-hand evidence
Determinism and real-time performance	Jetson Thor is positioned to bring "high-speed sensor data processing and visual reasoning to the edge — workflows that were previously too slow to run in dynamic real-world environments", with "the low latency and high performance real-world applications require"[194]
Operation without connectivity	Jetson Thor lets next-generation physical AI agents "run in real time at the edge while **minimising reliance on the cloud**"[194]
Functional safety certification	**NVIDIA IGX Thor** "extends robotics to the industrial edge with high-performance AI compute, enterprise software support and **functional safety**"[195]
Unit cost and energy (a bill-of-materials constraint)	Jetson T4000: **$1,999 per 1,000 units**, **1,200 FP4 TFLOPS**, **64GB** of memory and a configurable **70W** envelope, positioned as a cost-effective upgrade path[195]; against Jetson T5000 at **$2,999 per 1,000 units** and a developer kit at **$3,499**[194]. **The economics of edge deployment are set by component cost and power envelope, not by benchmark scores.**
Architectural efficiency over "free"	Jensen Huang at GTC 2026: **"If you have the wrong architecture, even if it's free, it's not cheap enough."**[196]
Pre-deployment validation instead of trial and error	The four major robot manufacturers use Omniverse and Isaac "to develop and validate complex robotic applications and entire production lines through physically accurate digital twins"; Foxconn assembles and validates every mechanical, electrical and piping system virtually before construction begins[197][198]
Reliability as an engineered metric	CAICT reports that across 11 Chinese MaaS platforms the **average call success rate** for DeepSeek-R1 rose from **87.01%** in February 2025 to **99.36%** in September, **TPS** from **17.86** to **26.76**, and **time to first token** fell from **3.07 seconds** to **1.02 seconds**[199]
The industrial significance of energy	The IEA states that "widespread adoption of existing AI applications to optimise industrial processes could deliver energy savings equivalent to **more than the total energy consumption of Mexico today**", while noting that missing or inaccessible data and digital infrastructure, skills shortages and persistent digital and physical security concerns "often outweigh potential efficiency gains"[200]
Human-in-the-loop rather than full autonomy	In transport and logistics, **two thirds** of shippers and **more than half** of carriers still see AI as augmenting rather than replacing human decisions, and most prefer human-in-the-loop designs[201]
Validation thresholds in healthcare	**88%** of physicians regard robust validation of safety and efficacy, and **86%** data privacy, as decisive for wider adoption[202]; the FDA's AI device list uses satisfaction of applicable premarket requirements, including focused review of overall safety and effectiveness, as the entry standard[203]

Sources

194. NVIDIA blog: Jetson Thor — https://blogs.nvidia.com/blog/jetson-thor-physical-ai-edge/
195. NVIDIA, 5 January 2026 — https://nvidianews.nvidia.com/news/nvidia-releases-new-physical-ai-models-as-global-partners-unveil-next-generation-robots
196. Data Center Frontier, GTC 2026 — https://www.datacenterfrontier.com/machine-learning/news/55364406/jensen-huang-maps-the-ai-factory-era-at-nvidia-gtc-2026
197. NVIDIA, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world
198. NVIDIA case study: Foxconn — https://www.nvidia.com/en-us/case-studies/foxconn-develops-physical-ai-enabled-smart-factories-with-digital-twins/
199. CAICT, AI Industry Development Research Report 2025 — https://www.caict.ac.cn/kxyj/qwfb/bps/202602/P020260202487301304903.pdf
200. IEA, Energy and AI, executive summary — https://www.iea.org/reports/energy-and-ai/executive-summary
201. Trimble (2026) — https://news.trimble.com/Transportation-Pulse-Report-2026-Transportation-Industry-at-AI-Inflection-Point-as-Adoption-Accelerates
202. AMA survey — https://www.ama-assn.org/press-center/ama-press-releases/ama-ai-usage-among-doctors-doubles-confidence-technology-grows
203. US FDA, AI-enabled medical devices — https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-enabled-medical-devices

Chapter 6 continued — A threshold checklist for procurement and contracts

How to set each threshold, with citable evidence

Table 26 Product threshold checklist for industrial-grade AI

Threshold	How to set it, with citable first-hand evidence
Task accuracy	Tier by consequence; set no single value. The medical-device route is **regulatory review**, not a percentage[204]; robotics is measured by **success rate**: GR00T N2 achieves more than **twice** the success rate of leading VLA models on new tasks in new environments — a relative multiple, not an absolute accuracy[205]
Repeatability and determinism	Use the **service call success rate** as the operable metric: an average of **99.36%** across 11 MaaS platforms in September 2025[206]
Exception handling and human oversight	Logistics evidence favours human-in-the-loop: **two thirds** of shippers and **more than half** of carriers see AI as augmenting rather than replacing decisions[207]
SLA and latency	Write **TTFT** and **TPS** into the contract: time to first token **1.02 seconds** and TPS **26.76** (11-platform average, September 2025)[206]; the edge requirement is "low latency and high performance" for dynamic real-world environments[208]
Audit and governance	Directly related to returns: organisations investing **$25m or more** in responsible AI are more likely to report **EBIT impact above 5%**, and **nearly two thirds** cite security and risk as the leading barrier to scaling agents[209]; financial services are monitored continuously by the Bank of England and FCA, whose 2024 survey drew **118 responses**[210]
Unit cost	Edge bill-of-materials cost is a hard constraint: Jetson T4000 at **$1,999 per 1,000 units** against T5000 at **$2,999**[211]. On the inference side, 12 billion of 120 billion parameters are activated, and NVFP4 runs up to **4x faster than FP8 on Hopper with no loss of accuracy**[212]
Energy	A configurable **70W** envelope and a **4x** improvement in energy efficiency (Jetson T4000)[211]; for sector-level savings potential see the IEA (equivalent to more than Mexico's national energy consumption)[213]
Operation without connectivity	An explicit product requirement: "run in real time at the edge while minimising reliance on the cloud"[208]
Safety certification	**Functional safety** is an entry requirement at the industrial edge (NVIDIA IGX Thor)[211]; the energy sector cites digital and physical security concerns as barriers that often outweigh efficiency gains[213]
Lifecycle maintenance	"With NVIDIA CUDA ecosystem support across the full lifecycle, Jetson Thor is expected to deliver better throughput and faster response through future software releases"[208]; the long-run risk in healthcare is **skill atrophy**, a concern for **88%** of physicians[214]

Sources

204. US FDA, AI-enabled medical devices — https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-enabled-medical-devices
205. NVIDIA, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world
206. CAICT, 2025 report — https://www.caict.ac.cn/kxyj/qwfb/bps/202602/P020260202487301304903.pdf
207. Trimble (2026) — https://news.trimble.com/Transportation-Pulse-Report-2026-Transportation-Industry-at-AI-Inflection-Point-as-Adoption-Accelerates
208. NVIDIA blog: Jetson Thor — https://blogs.nvidia.com/blog/jetson-thor-physical-ai-edge/
209. McKinsey, 2026 AI Trust Maturity Survey — https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/tech-forward/state-of-ai-trust-in-2026-shifting-to-the-agentic-era
210. Bank of England and FCA (2024) — https://www.bankofengland.co.uk/report/2024/artificial-intelligence-in-uk-financial-services-2024
211. NVIDIA, 5 January 2026 — https://nvidianews.nvidia.com/news/nvidia-releases-new-physical-ai-models-as-global-partners-unveil-next-generation-robots
212. NVIDIA blog: Nemotron 3 Super — https://blogs.nvidia.com/blog/nemotron-3-super-agentic-ai/
213. IEA executive summary — https://www.iea.org/reports/energy-and-ai/executive-summary
214. AMA survey — https://www.ama-assn.org/press-center/ama-press-releases/ama-ai-usage-among-doctors-doubles-confidence-technology-grows

Chapter 6 continued — The engineering turn: not the strongest model, but the more reliable one

Three candidates, ranked by strength of evidence

Industry frequently asks which recent product represents the shift towards precision, low error rates, cost and speed rather than frontier capability. **The available evidence does not point uniquely to one product**, but three candidates can be ranked by strength of evidence.

Table 27 Candidate identification and assessment

Candidate	Official positioning (verbatim or near-verbatim)	Assessment
Candidate 1: NVIDIA Nemotron 3 (Nano / Super / Ultra), released 15 December 2025	Announced as "the most efficient family of open models, with leading accuracy" for building agentic AI applications, introducing a "hybrid latent mixture-of-experts architecture" that helps developers build and deploy **reliable** multi-agent systems; Jensen Huang emphasised **"transparency and efficiency"**; the ServiceNow CEO described "unmatched **efficiency, speed and accuracy**"[215]. Quantified claims for Nemotron 3 Super: 120 billion parameters with **only 12 billion activated at inference**; a **1 million token** context window; up to **5x** higher throughput and up to **2x** higher accuracy than the previous generation; Mamba layers giving **4x** memory and compute efficiency; multi-token prediction giving **3x** faster inference; and NVFP4 running up to **4x faster than FP8 on Hopper with no loss of accuracy**[216]	**The strongest evidence.** The description matches leading accuracy for its size class combined with top-ranked efficiency and cost, throughput and latency as the core selling points. Note that NVIDIA also describes Nemotron 3 Ultra as "America's smartest open-weights AI model"; that wording appears in third-party reproductions and could not be verified on an official page, so it is not treated as evidence
Candidate 2: Isaac GR00T N2 (previewed March 2026)	The official claim concerns **task success rate rather than general capability**: it "helps robots complete new tasks in new environments with more than **twice** the success rate of leading vision-language-action models" and ranks **first** on the MolmoSpaces and RoboArena leaderboards[217]	**A partial match**: success rates and real physical tasks are emphasised. **Against**: it is claimed to rank first on its own leaderboards, which does not fit the description of not being the most advanced
Candidate 3: Jetson T4000 and IGX Thor (January 2026)	The T4000's official selling points are entirely **cost, energy efficiency and an upgrade path**: **$1,999 per 1,000 units**, 4x performance, 4x energy efficiency and a configurable 70W envelope; IGX Thor is sold on **functional safety**[218]	**A partial match**: cost, speed and reliability. **Against**: these are hardware modules, not models

Overall assessment: NVIDIA's product line from late 2025 into early 2026 shows a clear engineering turn towards products that are not the most capable but are more reliable, cheaper and faster. The clearest example is the Nemotron 3 family of open models, sold on efficiency and accuracy within a size class, alongside Jetson T4000 and IGX Thor for the industrial edge, sold on cost, energy efficiency and functional safety.

Sources

215. NVIDIA, 15 December 2025: Nemotron 3 — https://nvidianews.nvidia.com/news/nvidia-debuts-nemotron-3-family-of-open-models
216. NVIDIA blog: Nemotron 3 Super — https://blogs.nvidia.com/blog/nemotron-3-super-agentic-ai/
217. NVIDIA, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world
218. NVIDIA, 5 January 2026 — https://nvidianews.nvidia.com/news/nvidia-releases-new-physical-ai-models-as-global-partners-unveil-next-generation-robots

Chapter 7 — OpenAI hardware fact-check, part 1 of 3

Claim-by-claim assessment

Claim under review: "OpenAI poached four to five hundred hardware staff from Apple, effectively an entire department, triggering litigation, and may build smart glasses to replace the phone." **All status statements are as at 15 August 2026; the disputes are undecided.**

Table 28 Claim-by-claim assessment, part 1 of 3

#	Claim under review	Assessment	Evidence (verbatim or key points)
1	OpenAI has a transaction with Jony Ive and io	**Confirmed**	OpenAI's letter of 21 May 2025, updated 9 July 2025: "the io Products, Inc. team has officially merged with OpenAI"; "Jony Ive and LoveFrom remain independent and have assumed deep design and creative responsibilities across OpenAI"; io was co-founded by Jony Ive with Scott Cannon, Evans Hankey and Tang Tan[219]
2	The transaction was worth $6.5bn	**Partly confirmed** (press reporting, not official disclosure)	The official OpenAI page **gives no figure**[219]. Reuters reported that "OpenAI announced the acquisition of Jony Ive's hardware start-up io Products in a deal valued at **$6.5bn**", an all-stock transaction, and that according to sources OpenAI already held a **23%** stake in io, reflecting an OpenAI valuation of **$300bn**[220]; MacRumors describes it as "an estimated $6.5bn"[221]
3	The size of the io team	**Not confirmed** (no public figure)	OpenAI's letter describes assembling "the best hardware and software engineers, technologists, physicists, scientists, researchers and experts in product development and manufacturing" but **gives no headcount**[219]; none of the Reuters, MacRumors, 9to5Mac, Bloomberg Law or IPWatchdog pages reviewed provides a figure for the io team
4	"Four to five hundred hardware staff poached from Apple"	**Partly confirmed, but the figure must be recharacterised**: it is "400+ former Apple employees" company-wide, not 400–500 hardware staff	Apple's complaint of 10 July 2026, as reproduced by 9to5Mac: "With **over four hundred former Apple employees** now working at OpenAI…"[222]; Reuters likewise reports "**more than 400 former Apple employees** now work for OpenAI"[223]; Business Insider: "in the complaint, Apple says the total number of Apple alumni now at OpenAI is **more than 400**"[224]. **Key qualification: this is Apple's own figure in its pleading, covers all former Apple employees and is not broken down by hardware function.**

Sources

219. OpenAI, A letter from Sam and Jony — https://openai.com/sam-and-jony/

220. Reuters, 21 May 2025 — https://www.reuters.com/business/openai-acquire-jony-ives-hardware-startup-io-products-2025-05-21/

221. MacRumors, 9 July 2025 — https://www.macrumors.com/2025/07/09/openai-jony-ive-io-acquisition-complete/

222. 9to5Mac, 13 July 2026 — https://9to5mac.com/2026/07/13/apple-lawsuit-reveals-how-many-former-employees-now-work-at-openai/

223. Reuters, 10 July 2026 — https://www.reuters.com/legal/litigation/apple-sues-openai-alleging-misappropriation-trade-secrets-court-records-show-2026-07-10/

224. Business Insider — https://www.businessinsider.com/openai-apple-lawsuit-trade-secrets-ai-talent-war-2026-8

Chapter 7 continued — OpenAI hardware fact-check, part 2 of 3

Claim-by-claim assessment

Table 29 Claim-by-claim assessment, part 2 of 3

#	Claim under review	Assessment	Evidence (verbatim or key points)
5	"Effectively an entire department"	**Incorrect attribution (overstated)**	No source supports "an entire department". What is verifiable is breadth rather than a wholesale move: Mark Gurman reported that OpenAI "brought in more than 40 people in the past month alone", spanning camera engineering, iPhone and Mac hardware, silicon, device test and reliability, industrial design, manufacturing, audio, smartwatches, Vision Pro development, software and human factors[225]; the Wall Street Journal, reviewing LinkedIn data, reported that "**dozens**" of Apple engineers and designers had left for OpenAI in recent months[226]; Bloomberg reports that "most" of OpenAI's Apple hires come from the engineering organisation led by incoming CEO John Ternus[227]
6	"It triggered litigation" — did Apple sue OpenAI directly	**Confirmed** (but the cause of action is trade secrets, not hiring as such)	On 10 July 2026 Apple sued OpenAI and two former employees in the **US District Court for the Northern District of California**, alleging misappropriation of its trade secrets to benefit the ChatGPT owner's move into consumer hardware; the defendants also include OpenAI Foundation, OpenAI Group PBC and io Products; the two former Apple employees are **Chang Liu**, a former senior systems electrical engineer, and **Tang Yew Tan**, a former vice-president of product design for iPhone and Apple Watch[228]. TechCrunch adds that the claims are trade-secret theft **and breach of contract**, and notes that io is named in the complaint while Ive is not a defendant[229]
7	Was the litigation caused by hiring	**Partly confirmed; the parties' positions conflict**	Apple's central allegation is that "OpenAI orchestrated a broad campaign to systematically obtain and exploit Apple's confidential information through former employees, recruiting practices and supplier relationships in order to accelerate its entry into the consumer hardware business"[228]. In its August 2026 motion OpenAI responded that "**Apple should not be allowed to use a baseless and pretextual lawsuit to make up for its shortcomings in the talent market and in employee retention**"[230]
8	Whether other parties and disputes are involved	**Confirmed** — a second, unrelated line of litigation exists (iyO v OpenAI)	iyO, Inc. sued IO, OpenAI, Inc., OpenAI, LLC, Sam Altman and Jonathan Paul Ive, alleging that the IO mark is "confusingly similar" to its IYO mark; **the Ninth Circuit affirmed the preliminary injunction in December 2025**[231]; Bloomberg Law notes the injunction "does not bar all use of the 'io' trademark but restricts marketing and sales of products 'sufficiently similar' to iyO's AI audio computer"[232]; iyO subsequently added **trade-secret** claims[233]; on 27 April 2026 iyO issued a release stating that a federal court had granted a preliminary injunction and adding Tang Yew Tan to its amended claims[234]; the trademark case was **stayed** on 28 July 2026 pending settlement talks

Sources

225. 9to5Mac, 24 November 2025 — https://9to5mac.com/2025/11/24/openai-poaching-apple-hardware-engineers/
226. MacRumors citing the WSJ, 5 December 2025 — https://www.macrumors.com/2025/12/05/apple-bleeding-talent-to-openai/
227. 9to5Mac, 13 July 2026 — https://9to5mac.com/2026/07/13/apple-lawsuit-reveals-how-many-former-employees-now-work-at-openai/
228. Reuters, 10 July 2026 — https://www.reuters.com/legal/litigation/apple-sues-openai-alleging-misappropriation-trade-secrets-court-records-show-2026-07-10/
229. TechCrunch, 10 July 2026 — https://techcrunch.com/2026/07/10/apple-sues-openai-over-alleged-trade-secret-theft/
230. Business Insider — https://www.businessinsider.com/openai-apple-lawsuit-trade-secrets-ai-talent-war-2026-8
231. IPWatchdog, 4 December 2025 — https://ipwatchdog.com/2025/12/04/ninth-circuit-affirms-trademark-injunction-against-openai-company-dispute-similar-marks/
232. Bloomberg Law — https://news.bloomberglaw.com/ip-law/ban-against-openai-using-io-trademark-backed-by-ninth-circuit
233. 9to5Mac, 28 July 2026 — https://9to5mac.com/2026/07/28/iyos-trademark-lawsuit-against-openai-and-jony-ive-paused-over-settlement-talks/
234. iyO press release, 27 April 2026 — https://www.prnewswire.com/news-releases/federal-court-issues-preliminary-injunction-against-openai-sam-altman-and-sir-jony-ive-iyo-alleges-trade-secret-theft-by-altmans-hardware-chief-302754047.html

Chapter 7 continued — OpenAI hardware fact-check, part 3 of 3

Claim-by-claim assessment

Table 30 Claim-by-claim assessment, part 3 of 3

#	Claim under review	Assessment	Evidence (verbatim or key points)
9	"May build smart glasses"	**Partly confirmed: press reporting, not confirmed by OpenAI**	On 20 February 2026 Reuters, citing The Information, reported that "OpenAI has **more than 200 people** working on a family of AI devices", including a smart speaker[235]; a related report lists "a smart speaker, smart glasses and a smart lamp", says the speaker will come first at an expected **$200 to $300** and "will not ship before February 2027 at the earliest", attributing this to "two people familiar with the project"[236]. **No official OpenAI page confirms any specific product category**[237]
10	"To replace the phone"	**Not confirmed (speculation)**	No source reviewed shows OpenAI officially claiming it will replace the smartphone. The strongest official statement is that the team is "focused on developing products that inspire, empower and enable"[237]; Reuters describes the purpose of the transaction as capturing growing demand for **physical AI and augmented reality**[235]. The closest media formulation is Bloomberg's analysis headline "How Apple's Lawsuit Threatens to Disrupt OpenAI's Bid to Rival the iPhone", which is interpretation rather than an official statement
11	Current status of the litigation (as at 15 August 2026)	**Confirmed: the disputes are undecided**	On 3 August 2026 OpenAI published an official response, "Apple is getting this wrong", updated on 6 August to note that "you can read our motion to dismiss here"; OpenAI argues that Apple's request for a preliminary injunction "is based on false information and is entirely unnecessary because **we do not have, and do not want, any of their trade secrets**"[238]; as at the Business Insider report, "Apple had not yet responded in court to OpenAI's motion and the **judge had not ruled on the request to dismiss**"; an Apple spokesperson said "significant evidence has emerged that individuals employed by OpenAI improperly obtained Apple's confidential information about unreleased technology"[239]

Sources

235. Reuters, 20 February 2026 — https://www.reuters.com/business/openai-developing-ai-devices-including-smart-speaker-information-reports-2026-02-20/

236. Investing.com citing The Information — https://www.investing.com/news/economy-news/openai-developing-smart-speaker-and-glasses-with-over-200-employees-93CH-4516599

237. OpenAI letter — https://openai.com/sam-and-jony/

238. OpenAI, 3 August 2026 — https://openai.com/index/apple-is-getting-this-wrong/

239. Business Insider — https://www.businessinsider.com/openai-apple-lawsuit-trade-secrets-ai-talent-war-2026-8

Chapter 7 continued — The corrected formulation we recommend

A single paragraph that can be quoted in full

> "On 10 July 2026 Apple sued OpenAI and two former Apple employees (Chang Liu and Tang Yew Tan) in the US District Court for the Northern District of California. The causes of action are **trade-secret misappropriation and breach of contract**, not hiring as such. In its complaint Apple states that **more than 400 former Apple employees** now work at OpenAI, a company-wide figure that is not broken down by hardware function. OpenAI has filed a motion to dismiss and publicly denies holding any Apple trade secrets. A separate line of litigation, unrelated to Apple, involves the start-up iyO, which sued OpenAI, Sam Altman and Jony Ive over the 'io' trademark; the Ninth Circuit affirmed a restrictive injunction in December 2025 and the case was stayed in July 2026 pending settlement talks. Product categories such as smart glasses and smart speakers appear only in press reporting, notably by The Information as relayed by Reuters; **OpenAI has never confirmed them and has never officially claimed it will replace the smartphone**."
>
> Recommended for verbatim use. **Status: as at 15 August 2026 neither line of litigation has been finally decided by a court. This white paper makes no prediction about the outcome.**

Three practical implications for corporates and investors

- **Talent mobility is not itself a cause of action.** The verifiable causes are trade secrets and breach of contract, which means due diligence should focus on onboarding procedures, revocation of system access and document segregation rather than on hiring volumes[240][241].
- **Trademark and brand risk exists independently.** The injunction affirmed by the Ninth Circuit restricts marketing and sales of products sufficiently similar to iyO's, rather than banning the mark outright[242].
- **Product categories should not enter an investment thesis.** Hardware categories and timelines rest on anonymous sources and are unconfirmed by the company[243][244].

Sources

240. Reuters, 10 July 2026 — https://www.reuters.com/legal/litigation/apple-sues-openai-alleging-misappropriation-trade-secrets-court-records-show-2026-07-10/
241. TechCrunch, 10 July 2026 — https://techcrunch.com/2026/07/10/apple-sues-openai-over-alleged-trade-secret-theft/
242. Bloomberg Law — https://news.bloomberglaw.com/ip-law/ban-against-openai-using-io-trademark-backed-by-ninth-circuit
243. Reuters, 20 February 2026 — https://www.reuters.com/business/openai-developing-ai-devices-including-smart-speaker-information-reports-2026-02-20/
244. OpenAI letter — https://openai.com/sam-and-jony/

Chapter 8 — Where the value pools are moving over two to five years

Six directions of travel, each with supporting evidence

Table 31 Six directions of travel for AI value pools

Direction of travel	Supporting evidence
From the model layer to core business workflows	BCG finds **70%** of AI value potential in core business functions such as sales and marketing, manufacturing, supply chain and pricing, up from **62%** in its 2024 report; research and innovation alone accounts for **15%**, and the IT share rose **6 percentage points** to **13%** in 2025[245]
From generic functions to sector-specific functions	The AI Index notes higher adoption in functions related to information processing, software, customer interaction and internal knowledge work, while strategy and corporate finance, risk and compliance "remain low in most industries", with **financial services the exception**[246]. BCG reports that in aviation and telecoms the contribution of core functions to AI value approaches **80%**, up 15 and 8 percentage points respectively year on year[245]
From model capability to deployment integration and the data foundation	In manufacturing, **78%** of leaders direct more than 20% of their improvement budget to smart manufacturing foundations[247]; in retail, **54%** of brand executives report cross-channel and data challenges[248]; in energy, the IEA ranks missing or inaccessible data and digital infrastructure as the leading barrier[249]
From building to buying and partnering, with speed of deployment as the decision variable	In India, **91%** of leaders name speed of deployment as the single largest factor in build-versus-buy decisions, **nearly 60%** co-create with start-ups and **78%** use hybrid models[250]. MIT NANDA data, which must be quoted with the caveats in chapter 4, report that purchasing from specialist vendors and building partnerships succeeds "about **67%** of the time", roughly three times the success frequency of internal builds[251]
From the cloud to edge hardware and robots	Jetson T4000 enters the industrial edge at **$1,999 per 1,000 units** in a configurable **70W** envelope, IGX Thor adds **functional safety**, and the four largest robot makers are embedding Jetson modules in controllers for real-time edge inference[252][253]. **Penetration of the physical layer nevertheless remains very low**: Germany **6%**[254], Denmark **2%**[255], Brazil **7%**[256]
From going live to governance and validation	McKinsey's 2026 AI trust maturity survey of about **500 organisations** finds that those investing **$25 million or more** in responsible AI "score significantly higher on maturity and are far more likely to realise material AI benefits, including **EBIT impact above 5%**", while **nearly two-thirds** of respondents name security and risk concerns as the leading barrier to fully scaling agentic AI[257]

Sources

245. BCG (PDF) — https://media-publications.bcg.com/The-Widening-AI-Value-Gap-Sept-2025.pdf
246. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
247. Deloitte, 2025 Smart Manufacturing Survey — https://www.deloitte.com/us/en/about/press-room/deloitte-2025-smart-manufacturing-survey.html
248. IBM Institute for Business Value and NRF, January 2026 — https://newsroom.ibm.com/2026-01-07-ibm-nrf-study-brands-and-retailers-navigate-a-new-reality-as-ai-shapes-consumer-decisions-before-shopping-begins
249. IEA, Energy and AI executive summary — https://www.iea.org/reports/energy-and-ai/executive-summary
250. EY–CII, November 2025 — https://www.ey.com/en_in/newsroom/2025/11/india-s-ai-shift-from-pilots-to-performance-47-percent-of-enterprises-have-multiple-ai-use-cases-live-in-production-ey-cii-report
251. Fortune reporting on the MIT NANDA study — https://fortune.com/2025/08/18/mit-report-95-percent-generative-ai-pilots-at-companies-failing-cfo/
252. NVIDIA, 5 January 2026 — https://nvidianews.nvidia.com/news/nvidia-releases-new-physical-ai-models-as-global-partners-unveil-next-generation-robots
253. NVIDIA, 16 March 2026 — https://nvidianews.nvidia.com/news/nvidia-and-global-robotics-leaders-take-physical-ai-to-the-real-world
254. Destatis — https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Unternehmen/IKT-in-Unternehmen-IKT-Branche/Tabellen/ikti-unternehmen-kuenstliche-intelligenz.html
255. Statistics Denmark — https://www.dst.dk/nytpdf/55352
256. Cetic.br, TIC Empresas 2025 — https://cetic.br/media/analises/TIC-Empresas-2025-lancamento.pdf
257. McKinsey, State of AI trust in 2026 — https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/tech-forward/state-of-ai-trust-in-2026-shifting-to-the-agentic-era

Chapter 8 continued — Implications for corporates and for government

What to do differently once the six layers are separated

For corporates

1. **Locate yourself before you invest.** Use the six layers to establish whether you are at L2 or L4, and benchmark against your own country's official statistics — EU-27 **20.0%**, Germany **26%**, France **18%**[258][259][260] — rather than against the **88%** of executive surveys.
2. **Direct budget at core business functions rather than support functions**: **70%** of the value potential sits in core functions[261].
3. **Fund governance and validation first.** It is the observable input variable associated with **EBIT impact above 5%**[262].
4. **Do not mistake employee usage for organisational capability. 54%** of employees use AI tools without formal authorisation, while only **13%** of organisations have integrated agents broadly into workflows[263].
5. **For SMEs the binding constraint is cost and staffing, not willingness.** In Korea the leading reason for non-use is the burden of economic cost at **39.6%**, followed by missing infrastructure and staff at **34.9%**[264]; in Canada **40.0%** of businesses consider AI not relevant to them[265].

For governments and policymakers

1. **Statistical definitions are a precondition for policy.** Adopting the Eurostat ICT enterprise survey framework yields grade A comparability[266]; Korea has stated that it drew on the Eurostat questionnaire to improve cross-country consistency[267].
2. **Do not rank countries for policy purposes using population-level diffusion.** France shows **44.0%** population diffusion against **18%** enterprise adoption[268][260].
3. **SMEs are the policy lever.** Danish firms with 10–49 employees moved from **12% to 37%** in three years while those with 250 or more moved from **51% to 75%**[269]; the French size gap widened from **16 to 43 percentage points**[260].
4. **Physical-AI policy should track density, not volume.** China accounts for **54%** of global installations but records a density of only **166**, ranking 22nd[270][271].
5. **The public sector is itself an adopter. 67%** of OECD countries use AI to improve the design and delivery of public services (2024)[272].

Sources

258. Eurostat, 11 December 2025 — https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2
259. Destatis — https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Unternehmen/IKT-in-Unternehmen-IKT-Branche/Tabellen/ikti-unternehmen-kuenstliche-intelligenz.html
260. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
261. BCG (PDF) — https://media-publications.bcg.com/The-Widening-AI-Value-Gap-Sept-2025.pdf
262. McKinsey, State of AI trust in 2026 — https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/tech-forward/state-of-ai-trust-in-2026-shifting-to-the-agentic-era
263. BCG, The AI Adoption Puzzle — https://www.bcg.com/publications/2025/ai-adoption-puzzle-why-usage-up-impact-not
264. NIA statistics (via Etnews) — https://www.etnews.com/20260120000071
265. Statistics Canada, CSBC — https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2026010-eng.htm
266. Eurostat Statistics Explained — https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises
267. Dong-A Science: Korean statistics follow the Eurostat questionnaire — https://m.dongascience.com/en/news/63090
268. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
269. Danish Agency for Digital Government, ITAV 2025 — https://digst.dk/media/5vkpv2uj/faktaark-virksomhedernes-anvendelse-af-ai-2023-2025-itav.pdf
270. IFR press release, 25 September 2025 — https://ifr.org/ifr-press-releases/news/global-robot-demand-in-factories-doubles-over-10-years
271. IFR density data (via The Robot Report) — https://www.therobotreport.com/ifr-reports-robot-density-increase-across-europe-asia-americas/
272. OECD, Governing with Artificial Intelligence — https://www.oecd.org/en/publications/2025/06/governing-with-artificial-intelligence_398fa287/full-report/ai-in-public-service-design-and-delivery_09704c1a.html

Chapter 8 continued — Implications for AI start-ups and investors

Why the strongest model is not the most usable product

1. **Sell speed of deployment, not benchmark scores. 91%** of Indian enterprise leaders name speed of deployment as the primary build-versus-buy factor[273].
2. **Target large enterprises and the information, financial and professional services sectors**, and note that sector ceilings differ enormously: Singapore accommodation and food at **4.7%** versus information and communication at **35.9%**[274].
3. **Budget ceilings are a hard reality. More than 95%** of Indian organisations allocate less than 20% of their IT budget to AI[273]; on BCG's basis AI represents roughly **4.4% to 5.2%** of IT budgets by region[275].
4. **In physical AI the capital and ecosystem signals are clear but the installed penetration is not.** China recorded **140** robotics-related financing transactions between January and April 2025, **38.7%** of all AI financing events[276], while enterprise use of autonomous machine movement runs at only **2% to 7%**[277][278].
5. **The energy vertical is severely under-invested.** "Only **2%** of energy start-up equity funding goes to companies with an AI-related value proposition"[279].

Why the strongest model is not the most usable product

1. **On the same task, AI can move outcomes in opposite directions.** Contact-centre agents gained **14–15%**, developer pull requests **26%** and marketing output **50%**, yet METR found experienced open-source developers were **19% slower**, a result later studies failed to replicate[280].
2. **Benefits are distributed very unevenly.** In the contact-centre study the largest gains accrued to less experienced agents, at **30–35%** (same source).
3. **The constraint on scaling is organisational and trust-related, not capability.** Fully scaled agent use is in single digits across almost every function[280].
4. **Architecture and unit cost can veto the "best" model outright.** "If you have the wrong architecture, even if it's free, it's not cheap enough."[281].
5. **Engineering reliability can transform usability with no change of model.** The same DeepSeek-R1 service moved from **87.01% to 99.36%** call success and from **3.07 to 1.02 seconds** time to first token in seven months[282].

Sources

273. EY–CII, November 2025 — https://www.ey.com/en_in/newsroom/2025/11/india-s-ai-shift-from-pilots-to-performance-47-percent-of-enterprises-have-multiple-ai-use-cases-live-in-production-ey-cii-report
274. IMDA, Singapore Digital Economy Report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf
275. BCG (PDF) — https://media-publications.bcg.com/The-Widening-AI-Value-Gap-Sept-2025.pdf
276. CNNIC 56th report — https://www.cnnic.net.cn/NMediaFile/2025/0730/MAIN1753846666507QEK67ZS9DH.pdf
277. Statistics Denmark — https://www.dst.dk/nytpdf/55352
278. Cetic.br, TIC Empresas 2025 — https://cetic.br/media/analises/TIC-Empresas-2025-lancamento.pdf
279. IEA executive summary — https://www.iea.org/reports/energy-and-ai/executive-summary
280. Stanford AI Index 2026, figure 4.4.27 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
281. Data Center Frontier, GTC 2026 — https://www.datacenterfrontier.com/machine-learning/news/55364406/jensen-huang-maps-the-ai-factory-era-at-nvidia-gtc-2026
282. CAICT, AI Industry Development Research Report 2025 — https://www.caict.ac.cn/kxyj/qwfb/bps/202602/P020260202487301304903.pdf

Chapter 9 — Data limitations and rules of use

To be published together with any extract from this white paper

1. **Bases must never be mixed.** The enterprise adoption rates and population diffusion rates in chapter 2 and the industry surveys in chapter 3 come from three non-interchangeable measurement systems. Placing them on a single ranking chart produces false conclusions.
2. **What the A/B/C grades mean.** Grade A is restricted to countries using the Eurostat framework (Germany, France, Denmark, EU-27); grade B covers official statistics on a different basis (United States, United Kingdom, Canada, Korea, Singapore, Brazil); grade C covers institutional or industry surveys and telemetry estimates (China's enterprise adoption, Japan, India, the United Arab Emirates, Saudi Arabia).
3. **Five countries have no verifiable enterprise AI adoption rate. This white paper records n.a. and does not substitute consumer data**: China, Japan (on an enterprise basis), India (official basis), the United Arab Emirates and Saudi Arabia (business-sector basis).
4. **Known breaks in series.** The US BTOS question changed in November 2025 and the two periods cannot be joined into a trend line[283][284]; Eurostat and INSEE added image, video and audio generation in 2025, taking France from seven to eight technologies[285]; Japan's Ministry of Internal Affairs states that the estimation method changed between the 2023 and 2024 surveys, so they "cannot be simply compared"[286].
5. **Vendor and consultancy sources are labelled.** The NVIDIA telecoms survey, the Thomson Reuters professional-services survey, the Itron utilities survey, the Trimble transportation survey and the IBM–NRF retail study are vendor or vendor-commissioned research and **must not be read as industry averages**.
6. **This white paper contains no market-size forecasts.** The only forward-looking figures are the IFR's official projections for 2025 (**575,000 units**) and 2028 (**more than 700,000 units**)[287] and CAICT's estimate that China's core AI industry will exceed RMB 1.2 trillion in 2025[288], both labelled as projections.
7. **Fields that require a return to source.** The total number of FDA-authorised AI-enabled devices (the FDA page gives no total)[289]; the full use-case ranking in the European hotel study[290]; and the quantified benefit section of the IMDA report[291].
8. **A discrepancy between the web and PDF editions of the AI Index 2026.** The web edition states that generative AI is used in **70%** of organisations[292], while figure 4.3.1 of the PDF gives **79%**[293]. This white paper quotes the PDF value and notes the difference rather than merging them.
9. **All self-reported data are not audited financials.** Every proportion at layer L5 (cost 38%, profitability 36%, revenue 33% and so on) reflects respondent judgement[293].
10. **Productivity evidence cannot be averaged.** Within a single compilation, comparable work ranges from **−19%** to **+200%**. Reports should list study, occupation, application and beneficiary group rather than quote a single "AI raises productivity by X%" figure.

Sources

283. US Census Bureau, BTOS — https://www.census.gov/library/stories/2026/05/ai-use-businesses.html
284. Federal Reserve, FEDS Notes — https://www.federalreserve.gov/econres/notes/feds-notes/monitoring-ai-adoption-in-the-u-s-economy-20260403.html
285. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
286. Japan Ministry of Internal Affairs and Communications white paper — https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/nd112220.html
287. IFR press release, 25 September 2025 — https://ifr.org/ifr-press-releases/news/global-robot-demand-in-factories-doubles-over-10-years
288. CAICT, 2025 report — https://www.caict.ac.cn/kxyj/qwfb/bps/202602/P020260202487301304903.pdf
289. US FDA, AI-enabled medical device list — https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-enabled-medical-devices
290. Schegg 2025 — https://www.hotellerie.de/fileadmin/user_upload/Dokumente/Studien_und_Umfragen/Schegg_2025_AI_Adoption_in_European_Hotels_03072025.pdf
291. IMDA, Singapore Digital Economy Report 2025 — https://www.imda.gov.sg/-/media/imda/files/about/resources/corporate-publications/annual-report/imda-sgde-report-fy2024-2025.pdf
292. Stanford AI Index 2026, Economy (web) — https://hai.stanford.edu/ai-index/2026-ai-index-report/economy
293. Stanford AI Index 2026 (PDF, chapter 4) — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf

Chapter 10 — Conclusions: eight findings that can be quoted directly

Each rests on the evidence set out in the preceding chapters

1. **On an official statistical basis, global enterprise AI adoption remains at the order of one in five.** EU-27 **20.0%**, United States **19.8%** and Canada **19.2%** agree closely[294][295][296].
2. **The consultancy basis exceeds the official basis by more than four times because of base and definition, not data quality.** McKinsey explicitly leaves "adoption" undefined[297].
3. **Scaling is the narrowest bottleneck in the chain. 62%** at least experiment with agents, only **23%** have scaled anywhere in the enterprise, and fully scaled use is in single digits across functions[298][299].
4. **Firm size is the most stable structural fact worldwide and is widening in some countries.** The French size gap grew from **16 to 43 percentage points** in three years[300].
5. **Sector divergence exceeds country divergence.** Finance and information and communication are the only sectors in the high-adoption band, while construction has scaled AI across projects in only **1%** of organisations[301][302].
6. **Production, not the back office, is the weakest link in manufacturing AI.** The share of Brazilian industrial firms using AI in production fell from **56.4%** to **52.0%** while administration reached **87.9%**[303].
7. **Physical AI has started in strategy and ecosystem terms while enterprise penetration remains in single digits; both must be shown together.** The installation leader and the density leader are different countries: China takes **54%** of installations at a density of **166**, while Korea leads on density at **1,220**[304][305].
8. **Investment in governance and validation is an observable variable associated with EBIT impact, not a cost centre.** Organisations investing **$25 million or more** in responsible AI are more likely to report **EBIT impact above 5%**[306].

Next step: turn the six layers into an internal dashboard

Bring layers L2 to L6 into auditable definitions: the number of registered AI use cases (L2), the number of use cases in production and the functions they cover (L4), attributable cost and revenue movements (L5), and the number of edge and robotic deployment points (L6). Only when L4 and L5 are written into management-accounting definitions can AI spending enter a serious profit-and-loss discussion.

Sources

294. Eurostat, 11 December 2025 — https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251211-2
295. US Census Bureau, BTOS — https://www.census.gov/library/stories/2026/05/ai-use-businesses.html
296. Statistics Canada, CSBC — https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2026010-eng.htm
297. McKinsey (PDF) — https://www.mckinsey.com/~/media/mckinsey/business%20functions/quantumblack/our%20insights/the%20state%20of%20ai/2025/the-state-of-ai-how-organizations-are-rewiring-to-capture-value_final.pdf
298. McKinsey, State of AI 2025 — https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai
299. Stanford AI Index 2026, chapter 4 — https://hai.stanford.edu/assets/files/ai_index_report_2026_chapter_4_economy.pdf
300. INSEE Premiere no. 2120 — https://www.insee.fr/fr/statistiques/9025878
301. Bank of England and FCA, 2024 — https://www.bankofengland.co.uk/report/2024/artificial-intelligence-in-uk-financial-services-2024
302. RICS, 2025 — https://www.rics.org/news-insights/optimism-high-for-ai-in-construction-but-skills-shortages-and-integration-challenges-adoption
303. IBGE, PINTEC Semestral — https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/44551-de-2022-a-2024-percentual-de-empresas-industriais-utilizando-inteligencia-artificial-subiu-de-16-9-para-41-9
304. IFR executive summary (PDF) — https://ifr.org/img/worldrobotics/Executive_Summary_WR_2025_Industrial_Robots.pdf
305. IFR density data (via The Robot Report) — https://www.therobotreport.com/ifr-reports-robot-density-increase-across-europe-asia-americas/
306. McKinsey, State of AI trust in 2026 — https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/tech-forward/state-of-ai-trust-in-2026-shifting-to-the-agentic-era

Disclaimer and limitations of use

1. Data cut-off. All data in this white paper are based on material publicly available as at **15 August 2026**. Official statistics, industry surveys and litigation developments published after that date are not included.

2. Different bases cannot be ranked directly. The enterprise adoption rates, population-level AI diffusion rates and industry surveys used here come from three non-interchangeable measurement systems whose thresholds, bases, recall periods and technology lists all differ. Without calibration they must not be used to rank or rate countries, regions or industries. The meaning of the A/B/C comparability grades is set out in chapter 9.

3. Vendor surveys are not industry averages. Some data quoted here originate from vendors or vendor-commissioned research, including NVIDIA, Thomson Reuters, Itron, Trimble and IBM–NRF. Such results reflect the experience of self-selected samples and must not be equated with industry-average outcomes. All self-reported financial and productivity results are unaudited.

4. Unresolved disputes. Statements concerning the litigation between Apple and OpenAI, and between iyO and OpenAI, describe the public record as at **15 August 2026**. Those disputes **have not been finally decided by any court**. This white paper makes no prediction about the outcome and does not find any party's claims to be established.

5. Not professional advice. This white paper is not investment, legal or regulatory advice and should not be the sole basis for any investment decision, compliance judgement or procurement choice. Readers should consider their own circumstances and consult suitably qualified professionals.

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When quoting, state the data year, the statistical basis and the comparability grade (A/B/C).