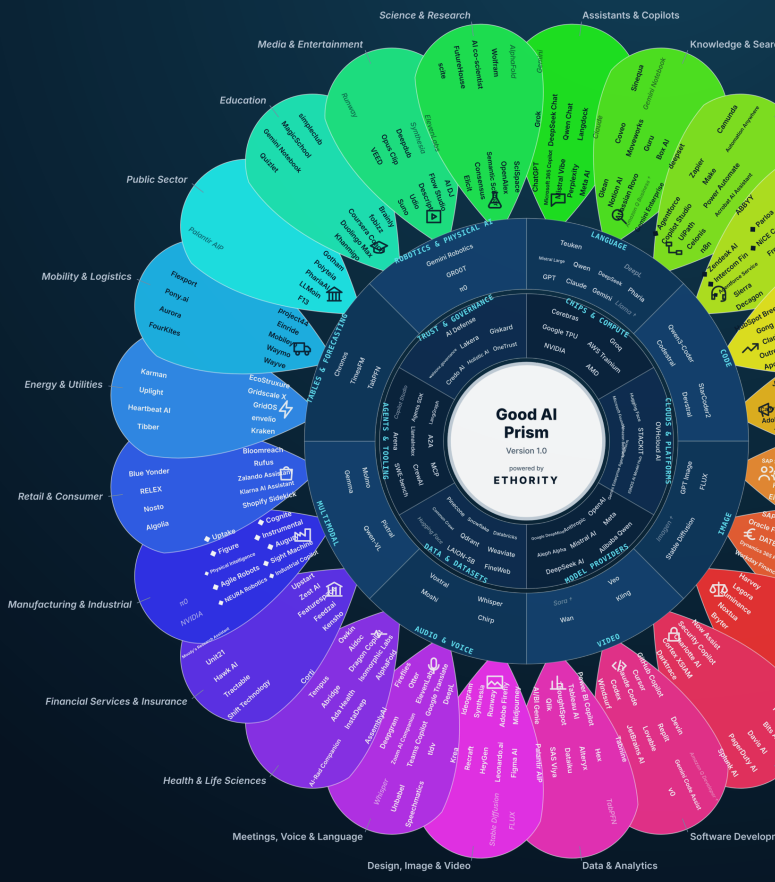
ETHORITY
AI BUSINESS OPERATING SYSTEM



GOOD AI PRISM · TECHNOLOGY BRIEF 2026/27 · ROBOTICS & PHYSICAL AI · GLOBAL EDITION

Put AI to work in robots and machines

Where AI already sees, picks, inspects and moves in the physical world, what the market offers, and the rules by jurisdiction.

5 million
industrial robots in operation worldwide, a record (IFR, Sep 2026)

20 Jan 2027
the EU Machinery Regulation applies, including to AI-enabled safety functions

~7,000
full-size humanoid robots sold in 2025, in IFR's first count: the pilot stage

Created by Sten Franke with a people and governance lens by Severin L. Wilson · October 2026

AT A GLANCE

Physical AI moves from the cell to the shop floor

Robots have worked in factories for decades. AI now lets them see, grasp unknown items, walk and take instructions, and robot foundation models make these skills available across many machines.

This brief applies the Good AI Prism Market Study 2026/27 to one technology field: robotics and physical AI. It combines the study's market map of 12 AI offerings with current evidence on installations, service robots, work and rules across major jurisdictions. Europe is ETHORITY's hub market and Germany its home and test market, so both get the closest look. The brief ends with the questions to settle before a pilot and with how ETHORITY helps.

600,000+
industrial robots installed worldwide in 2025, up 11% (IFR, Sep 2026)

1,220
robots per 10,000 manufacturing employees in Korea, the highest density; Germany 449, US 307 (IFR, Apr 2026)

~250,000
professional service robots sold in 2025, up 24%, nearly half in transport and logistics (IFR)

~7,000
full-size humanoids (over 140 cm) sold worldwide in 2025, in IFR's first count

8,400
surgical robots sold in 2025, up 57% (IFR)

1 million
robots deployed across Amazon's operations by July 2025 (Amazon)

About this brief

Market figures come from the Good AI Prism 2026/27 study dataset: every entry is recorded with a dated source from the provider's own pages. Job groups are ETHORITY's classification. External figures name their source, population and date; IFR figures come from its World Robotics reports. Company targets and orders are not counted as deployments. This brief is not legal or safety-engineering advice.

WHERE ROBOTICS STANDS

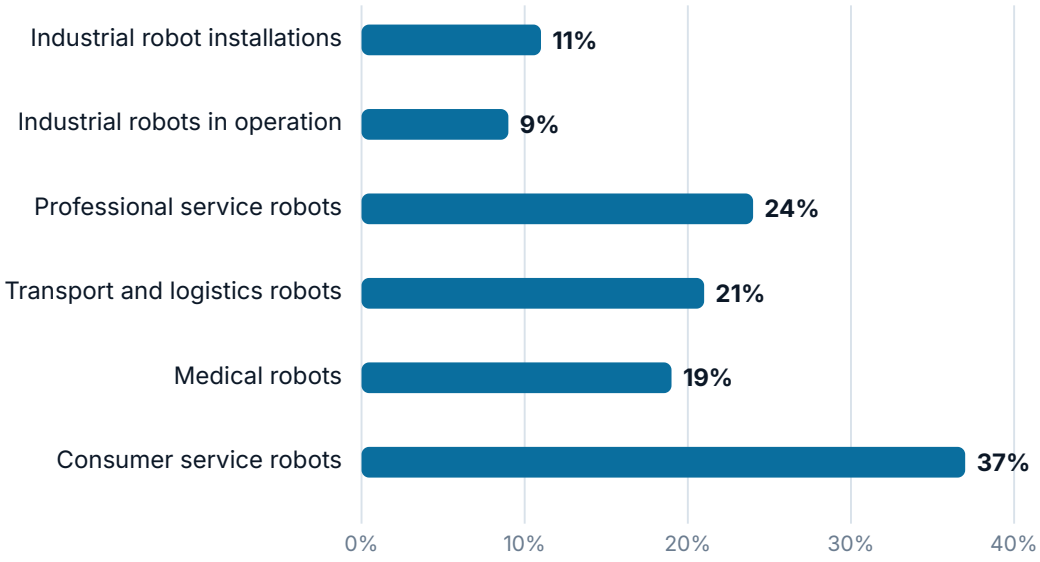
Record installations, faster growth beyond the factory

Industrial robots are at a record. The International Federation of Robotics counts more than 600,000 installations in 2025, up 11%, and 5 million robots in operation. Density is highest in Korea with 1,220 robots per 10,000 manufacturing employees, followed by Singapore, Germany (449) and Japan (446); the US stands at 307 and China at 166, on revised labour data.

Service robots grow faster: almost 250,000 professional service robots were sold in 2025, up 24%, nearly half of them in transport and logistics. IFR counts humanoids for the first time, about 7,000 full-size units. On the model layer, NVIDIA GR00T and Google DeepMind's Gemini Robotics 2 family offer robot foundation models across hardware.

Exhibit 1 · Robots grow fastest beyond the factory

Change in units sold or in operation, 2025 compared with 2024, by segment



IFR, World Robotics 2026: Industrial Robots (24 Sep 2026) and Service Robots (30 Sep 2026, 238 suppliers)

THE WORKFORCE SIDE

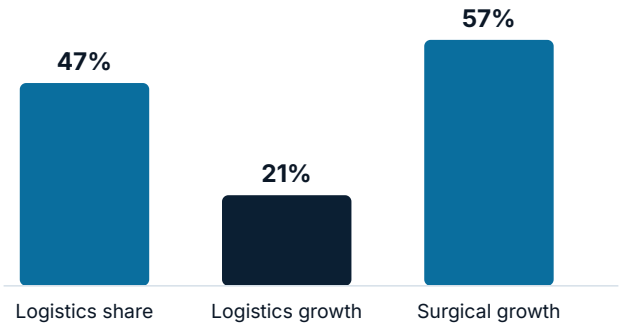
Robots change work; adoption decides the outcome

The evidence on jobs is mixed and depends on how adoption is managed. In US labour markets, one more robot per 1,000 workers reduced the employment-to-population ratio by 0.2 percentage points and wages by 0.42% (Acemoglu and Restrepo, 2020). In Germany, robots did not reduce total local employment from 1994 to 2014: manufacturing losses were offset in business services, although fewer young people entered manufacturing (Dauth et al.).

In Japanese nursing homes, robot adoption was associated with higher employment and retention of care workers, less use of restraints and fewer pressure ulcers (NBER, 2024). Service robots now work beside people in warehouses, hospitals and homes.

Exhibit 2 · Where service robots work beside people

Professional service robots, 2025: logistics share of units and growth by segment



IFR, World Robotics 2026: Service Robots, 30 Sep 2026 · 238 suppliers

117,500

transport and logistics robots sold in 2025, up 21%, the largest application (IFR)

449

robots per 10,000 manufacturing employees in Germany, third worldwide (IFR)

THE RULES

Europe sets the reference dates

ETHORITY reads the rules by jurisdiction. Europe is the hub market: from 20 January 2027 the Machinery Regulation sets the safety requirements for robots, including AI-enabled safety functions, and the AI Act adds duties for AI in products from August 2028. Germany, the home and test market, adds co-determination at work. The next pages map other major jurisdictions.

European Union: the hub market

Feb 2025	ISO 10218	ISO 10218-2:2025 on robot applications and cells published; with Part 1 it is the 2025 reference for industrial robot safety, alongside ISO/TS 15066 for collaborative operation.
2 Feb 2025	AI ACT	Prohibited AI practices apply; providers and deployers take measures to support AI literacy (Art. 4, as amended).
20 Jan 2027	MACHINERY	Machinery Regulation (EU) 2023/1230 replaces the Machinery Directive: essential requirements cover self-evolving behaviour, AI-enabled safety functions and cyber-safety, with third-party assessment for listed high-risk machinery.
2 Aug 2028	ANNEX I	AI Act high-risk duties for AI in products under EU harmonisation law apply. Commission delegated acts on AI health and safety requirements for machinery are due by this date.

AI Act dates as amended by the Digital Omnibus on AI, Regulation (EU) 2026/1744, in force since 27 July 2026. Published summaries report that machinery moves to Annex I Section B, so the Machinery Regulation governs and selected AI Act articles apply; Commission guidelines on the interplay are due by 1 Aug 2027.

Germany, the home and test market, adds its own building blocks

- The Machinery Regulation applies directly from 20 Jan 2027 and replaces the national Machinery Ordinance (9. ProdSV).
- Works councils co-determine the introduction of technical systems that can monitor performance (BetrVG § 87(1) no. 6) and are informed early when new technical installations are planned (§ 90).
- With 449 robots per 10,000 manufacturing employees, Germany is third worldwide and almost twice the EU average of 231 (IFR, 2026).

RULES BY JURISDICTION · EUROPE AND THE AMERICAS

Where you build and deploy decides which rules apply

Robot safety rests on machinery law and international standards. The EU adds AI-specific duties for products; the US relies on a voluntary national standard enforced through general workplace safety law. Status October 2026.

JURISDICTION	INSTRUMENT	APPLIES	WHAT IT MEANS FOR ROBOTICS
European Union	Machinery Regulation (EU) 2023/1230; AI Act as amended by Reg. 2026/1744	Machinery from 20 Jan 2027; Annex I from 2 Aug 2028	One conformity file for robots, mobile robots and humanoids, covering AI-enabled safety functions and cyber-safety.
Germany	Machinery Regulation, directly applicable; Works Constitution Act	From 20 Jan 2027; co-determination in force	Replaces the national Machinery Ordinance; works councils co-determine systems that can monitor performance.
International	ISO 10218-1/-2:2025; ISO/TS 15066	Part 2 published Feb 2025	Reference standards for industrial robots, robot cells and collaborative operation, adopted nationally in many markets.
United States	ANSI/A3 R15.06-2025, adopting ISO 10218-1/-2:2025	Published Oct 2025	Voluntary national standard with far more safety functions than the 2012 edition; OSHA has no robot-specific standard and enforces through the General Duty Clause and machine-guarding rules.

RULES BY JURISDICTION · ASIA

Asia: the largest robot markets set the pace

China, Japan and Korea combine industrial policy, standards work and AI laws that promote adoption, with Korea's AI Basic Act adding binding duties.

JURISDICTION	INSTRUMENT	APPLIES	WHAT IT MEANS FOR ROBOTICS
China	MIIT technical committee for humanoid robot and embodied intelligence standards; 15th Five-Year Plan	Committee plenary Jul 2026; plan from 2026	National standards for humanoids, with a new working group on data. China installed 54% of the world's industrial robots in 2024 (IFR).
Japan	AI Promotion Act	Since 2025	Promotion-led AI law; robot density of 446, fourth worldwide, and evidence of better staff retention with care robots.
South Korea	AI Basic Act; Intelligent Robots Development and Distribution Promotion Act	AI Basic Act since 22 Jan 2026	Highest robot density worldwide at 1,220; duties for high-impact AI and transparency apply alongside robot promotion law.

Sources: EU Official Journal, ISO, A3/ANSI, IFR, national ministries and trade press. Status October 2026. Not legal or safety-engineering advice.

Where the 12 providers are headquartered

9
Europe, of which 2 in Germany and 3 in Switzerland

2
North America

1
Japan

Headquarters as of October 2026 from provider pages and public sources. Parent companies: Teradyne owns Universal Robots, KUKA Group (Midea) owns Swisslog, Alphabet owns Google DeepMind; ABB agreed in October 2025 to sell ABB Robotics to SoftBank Group, subject to approvals.

THE MARKET MAP

12 AI offerings for robots, from the model layer to the humanoid

The Good AI Prism 2026/27 places 12 offerings in Robotics. Two are robot foundation models that run across many machines. Four add AI to industrial and collaborative robots: vision control, programming and autonomous motion. Three pick items in warehouses and logistics, and three are mobile robots for inspection and handling, including two humanoids.

Exhibit 3 · The Robotics map by job

Number of offerings per job group; names alphabetical, not a ranking

2 **Robot foundation models**

Gemini Robotics (Google DeepMind) · GR00T (NVIDIA)

Model layer: the machine maker that integrates it answers for conformity under the Machinery Regulation from Jan 2027

4 **Industrial and collaborative robot AI**

AI Accelerator (Universal Robots) · MIRAI (Micropsi Industries) · Motoman NEXT (Yaskawa) · Wandelbots NOVA

Machinery Regulation from 20 Jan 2027; ISO 10218-1/-2:2025 for robots and cells

3 **Picking and logistics robots**

ItemPiQ (Swisslog) · Nomagic Pick · Robotic Item Picking (ABB)

Machinery Regulation from Jan 2027; AI Act duties for AI in products from 2 Aug 2028

3 **Inspection, legged and humanoid robots**

AEON (Hexagon) · ANYmal (ANYbotics) · Digit (Agility Robotics)

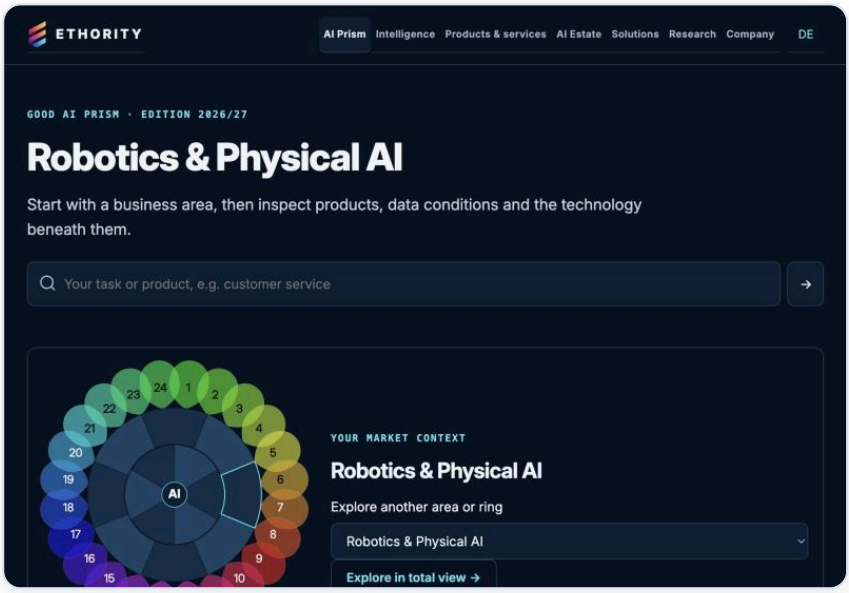
Machinery Regulation from Jan 2027; site risk assessment and zoned operation around people

Good AI Prism 2026/27 study dataset · job groups: ETHORITY classification · The AI Act and the Machinery Regulation look at the machine and its intended use. Whether an offering triggers third-party assessment depends on how it is integrated.

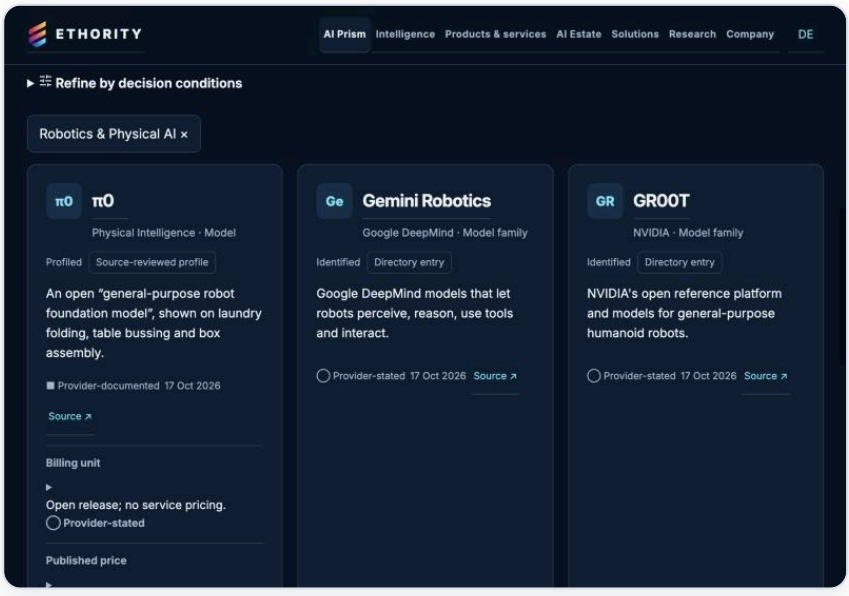
ONLINE VIEW

The Robotics area in the Good AI Prism

The online Good AI Prism places each offering in its business area and shows the source and date behind every entry. The preview below shows the Robotics area as it appears in October 2026. Select an area to see the offerings placed there, then open a profile to check the provider's own statement, its date and the decision facts recorded for it, such as pricing basis, deployment model and integration where documented.



Good AI Prism online preview: Robotics selected, October 2026.



Entries with their source and date. This brief counts all 12 entries recorded for the edition.

NEEDS AND DECISIONS

What operations leaders need, and what to ask before a pilot

What the evidence shows

Scale
Installations and density are at record levels, and professional service robots grew 24% in 2025 (IFR).

Humanoids
About 7,000 full-size humanoids were sold in 2025 (IFR); Boston Dynamics committed all 2026 Atlas units to Hyundai and Google DeepMind. Real pilots, small volumes.

Work
Outcomes depend on adoption: lower US wages and employment, stable local employment in Germany, better retention in Japanese care.

Rules
Machinery Regulation from 20 Jan 2027; AI Act duties for AI in products from 2 Aug 2028.

Seven questions before a robot works beside people

1. Does the robot or cell fall under the Machinery Regulation from 20 Jan 2027, and who becomes the manufacturer when we integrate AI ourselves?
2. Which safety functions depend on AI or self-evolving behaviour, and how are they validated and documented?
3. Does the cell meet ISO 10218-1/-2:2025, in the US ANSI/A3 R15.06-2025, including collaborative operation?
4. Where does the model run, on the device or in the cloud, how often is it updated, and who revalidates safety after an update?
5. How do we review cyber-safety, data flows and supply chain for robots, components and models?
6. Were the works council and the people who work beside the robot involved from the start?
7. Which measures decide scaling: uptime, cycle time, picks per hour, incidents, quality and redeployed hours?

WORKFORCE PLAN

Plan the people side with the technology

When agendas change quickly, the people side breaks first: half-adopted tools, skills that lag the system, employees who were not involved, and decisions no one owns. Plan adoption, training, employee participation and accountable oversight as part of every staged commitment, not after it.

Severin L. Wilson, workforce lens in the Good AI Prism Market Study 2026/27

Workforce annex to the pilot charter

Affected roles	Which operator, picker, maintenance, inspection and logistics roles the pilot touches, and how many people
Baseline workload	Cycle times, picks per hour, downtime, injuries and quality rates today, measured before the pilot
Skills needed	Operating, teaching, maintaining and stopping the robot; training plan and owner
Staff involvement	Works council and employee representatives where applicable
Safety owner	The named person accountable for the risk assessment and for people working beside the robot
Escalation and stop	How staff report incidents or stop the robot, and the response time
Capacity plan	Where returned time goes: quality, maintenance, new tasks or reskilling; who decides
Measured quality	Incidents, near misses, error rates and audit findings, tracked with the outcome measure

Saved time is not realised value. Count it when returned time has demonstrably gone into quality, safety or new work.

NEXT STEPS

A 90-day start for robotics and physical AI

01
Inventory
List every robot, cell, mobile robot and AI function, including vision and planning software, in one register.

02
Classify
Mark AI-enabled safety functions and machinery in scope from Jan 2027; map all uses to the rules where you operate.

03
Involve
Bring in safety engineering, operators and employee representatives early; in Germany, the works council.

04
Enable
Train operators and maintainers, document AI literacy and name an owner for each cell.

05
Pilot
Run one picking, inspection or handling use with a baseline, safety review and the workforce annex.

06
Decide
Scale only on measured uptime, throughput, quality, incidents and redeployed hours.

ETHORITY recommendation, derived from the rules and evidence in this brief.

CONCLUSIONS

What the evidence adds up to

Physical AI is moving from demonstrations into cells, warehouses and inspection rounds. The question is no longer whether robots can do more, but how to prove they are safe, useful and accepted. Five conclusions for decisions now.

1 **Start with a robot and AI register**

Evidence. Five million industrial robots operate worldwide, and AI functions arrive through software updates and add-ons.

What to do. Record every robot, cell, mobile robot and AI function with owner, safety relevance and update path. · Where robotics stands

2 **Prepare one conformity file for 2027**

Evidence. The Machinery Regulation applies from 20 Jan 2027 and covers AI-enabled safety functions; AI Act product duties follow from Aug 2028.

What to do. Bring safety engineering, AI validation and cyber-safety into one file per machine. · The rules

3 **Win in logistics and inspection first**

Evidence. Transport and logistics make up nearly half of professional service robots, which grew 24% in 2025.

What to do. Pilot where throughput, uptime and incidents are measured daily, with a baseline. · Exhibit 1; market map

4 **Treat humanoids as pilots**

Evidence. About 7,000 full-size humanoids were sold in 2025; leading makers commit early units to a few partners.

What to do. Contract on milestones, run zoned trials and compare with proven automation. · Needs and decisions

5 **Bring the workforce along**

Evidence. Employment outcomes range from losses in the US to stable local employment in Germany and better retention in Japanese care.

What to do. Plan skills, redeployment and the works council with the technology. · The workforce side

THE PROBLEM

Robotics is not short of capability. It is short of decisions it can defend on the shop floor.

Manufacturers and logistics operators must choose AI-enabled robots that are safe, productive and accepted, prove conformity, and keep their people on board.

THE PROBLEM	WHAT WE SEE IN THE EVIDENCE	WHAT IT COSTS
Many options, unclear evidence	12 offerings in this map alone, from foundation models to humanoids, each with its own claims.	**Wrong platform choices and stranded pilots.**
Rules from many sides	Machinery Regulation, AI Act, standards, workplace safety and co-determination apply together.	**Delays, rework and blocked launches.**
Software that changes the machine	Models are updated and retrained; safety must hold after every change.	**Unvalidated behaviour and safety gaps.**
Vendor and supply stability	Ownership changes, new listings and funding-led growth reshape the supplier base.	**Support risk and lock-in.**
People and skills	Operators, maintainers and safety engineers must teach, run and stop AI-enabled robots.	**Robots idle or trusted too much.**

The question behind every project

What should improve, which options are credible, what evidence is missing, what implementation requires, and who owns the outcome?

HOW ETHORITY HELPS

From robot ambition to decisions you can defend

ETHORITY helps manufacturers and logistics operators choose, govern and prove AI in robots: from independent market evidence to decisions that hold on the shop floor and outcomes that can be measured.

01
Discover
Find and qualify the opportunity: options, evidence, constraints and rules.

02
Create
Design and build the solution with your data, systems and people.

03
Run
Operate it responsibly, with owners, controls and support.

04
Improve
Measure against the objective and adjust.

05
Grow
Turn what was learned into new capability and value.

WHERE A PROJECT CAN BEGIN

AI opportunity case
One use, such as item picking, inspection or flexible handling, assessed against evidence, cost and rules, ending in a decision: pilot, redesign, expand or stop.

Vendor and evidence due diligence
Good AI Prism research profiles and comparisons of the 12 offerings, with a structured check of performance, safety and integration claims.

Robot and AI estate audit
A register of robots, cells and AI functions, mapped to owners, safety relevance, update paths, costs and overlaps.

Machinery and AI Act readiness
Each use mapped to the Machinery Regulation, the AI Act and robot safety standards, with proportionate controls.

AI literacy for operations teams
Role-based training for operators, maintainers, safety engineers and management, with named owners.

From pilot to operation
A pilot charter with baseline, threshold and stop conditions, then building and running the solution on ETHORITY's AI Business Operating System.

Who we work with

Manufacturers and the Mittelstand, logistics and warehouse operators, robot makers and integrators, inspection and energy operators, associations.

Start with one question. Talk to us: sten@ethority.ai · severin@ethority.ai · ethority.ai/ai-prism-study

ABOUT ETHORITY

From understanding markets to building AI capability

ETHORITY connects market intelligence, research and practical delivery to help organisations put AI to work. It is built as an AI1st organisation: humans and AI agents work on one AI Business Operating System, with the research, engineering and operations to build and run AI after the pilot. Its roots lie in the digital intelligence business Sten Franke founded in 2005, which combined monitoring, research and advisory work to help organisations understand changing markets.

The Good AI Prism is the entry point: research profiles, documented relationships and comparisons help users investigate their options. Advisory, governance and transformation work connect those options with an organisation's objectives, data, systems, people and operating conditions.

SELECTED REFERENCES AND PARTNERS SINCE 2005

Bosch · Bayer · BMW · Siemens · Mercedes-Benz · Coca-Cola · Deutsche Bank · T-Mobile · Telefónica o2 · DHL · EDEKA · AIDA Cruises

Selected historical references and partners from the group's market-intelligence and advisory heritage, in projects or through former group companies.

METHOD

Market figures: Good AI Prism 2026/27 study dataset, Robotics area, 12 entries, each with a dated source from the provider's own pages (October 2026). Job groups and rule relevance: ETHORITY classification by intended use. Installations, density and service robots: IFR World Robotics. Jurisdictions: status October 2026. Company targets, orders and analyst shipment estimates are not counted as deployments. External figures as cited and not combined. Not legal or safety-engineering advice.

MAIN SOURCES

- IFR, World Robotics 2026: Industrial Robots, press release, 24 Sep 2026
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- Regulation (EU) 2023/1230 (Machinery Regulation); Regulation (EU) 2024/1689 (AI Act); Regulation (EU) 2026/1744 (Digital Omnibus on AI)
- ISO 10218-2:2025; ISO/TS 15066:2016; ANSI/A3 R15.06-2025 (ISHN, 31 Oct 2025)
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- Good AI Prism Market Study 2026/27 and study dataset (ETHORITY, October 2026)

ETHORITY
AI BUSINESS OPERATING SYSTEM



FROM BUSINESS AMBITION TO AI THAT WORKS

Put AI to work, with evidence.

ETHORITY helps organisations choose, govern and prove AI: from independent market evidence to decisions that can be defended and outcomes that can be measured.

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06	**The Social Media Prisma 2009–2025**	Historic paper · EN and DE

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