

RESEARCH SERIES 001 • ILLUSTRATED EDITION

PHYSICAL AI

When Artificial Intelligence Enters the Physical World

The machines are changing. The questions are becoming more human.

ROBOTICS • WORK • EVIDENCE • OPPORTUNITY

A RESEARCH PUBLICATION OF ACUVIZORI, LLC

A New Chapter in the Relationship Between People and Machines

A NOTE TO THE READER

Personal computers brought powerful tools into homes and offices. Spreadsheets changed how millions of people worked with numbers. Smartphones put navigation, communication and commerce in our pockets.

Now a different shift is emerging: artificial intelligence is being connected to machines that can sense conditions, move objects and respond to changes in the physical world.

For someone encountering the subject for the first time, the important questions are not only technical: What is actually possible today? What is still being tested? How could this change work, safety, services and daily life?

We created this report to explain the developments in plain language, examine documented evidence, and separate company ambitions from demonstrated results. You will find original sources and opportunities to explore further.

BEGIN WITH CURIOSITY. FOLLOW THE EVIDENCE.

Bring your questions, experience and perspective to the exploration.

WHAT WE HOPE YOU TAKE AWAY

By the end, you should be able to explain Physical AI in your own words, recognize the difference between a demonstration and dependable use, and ask better questions about its effects on people. Follow the story at your own pace; the technical terms are here to support your understanding.

THIS REPORT IS ALSO A GATEWAY TO FURTHER READING

The illustrated story continues on pages 4-15. GO DEEPER links open fuller explanations on our website; each has a Return to the report link. The question guide on page 3 links to a report page or a web explanation, as labeled. EXPLORE FURTHER and OPEN ORIGINAL SOURCE links open research and learning resources. References such as [5] identify sources on page 17. A text edition on our website presents the story and diagram explanations in readable text.

Reading a printed copy? Open the digital PDF to use the links. You can understand the main story without opening every resource.

Your questions guide the story

Choose a question below. Page numbers open the illustrated answer; WEB links open a fuller explanation on our website. QUESTION GUIDE returns here. All explanations are also listed on page 16.

01 What is Physical AI? / 04

02 How is it different from traditional robots? / 05

03 Why is this happening now? / WEB

04 How did we get here? / 06

05 How does a machine actually do this? / 07

06 What is working today, and what does it prove? / WEB

07 Where might I encounter it? / WEB

08 How could it affect work and everyday life? / WEB

09 What could go wrong? / WEB

10 What should we watch next? / 13

11 How can I participate or learn more? / WEB

Start with What is AI? on page 4. Original sources and publication notes are on page 17.

WHAT IS AI—AND WHAT MAKES IT PHYSICAL?

A two-minute introduction for anyone new to the subject.

AI can recognize patterns, interpret information, create content, predict outcomes, or help choose actions. It is not automatically humanlike intelligence.

AI ON A SCREEN

Information that helps people



Analyze, write, and support human decisions.

AI IN A MACHINE

Action in the physical world



Sense changing conditions and act.

THE KEY DISTINCTION

Some AI informs people. Physical AI helps machines act.

A robot may follow fixed instructions, adapt using sensors and algorithms, or combine both. Capabilities depend on the particular system.

EXPLORE FURTHER: What is AI? (IBM) →

EXPLORE FURTHER: Robotics AI (DeepMind RT-2) →

THE NEXT EVOLUTION OF INTELLIGENT MACHINES

What happens when machines can do more than follow instructions?



FROM REPETITION TO ADAPTATION

Industrial robots have long welded car bodies, lifted materials, and repeated intricate movements with extraordinary precision.

New systems can sense changes and adapt their actions. This is not humanlike thinking or general autonomy.

TRADITIONAL ROBOTICS

Precise • repetitive • defined tasks

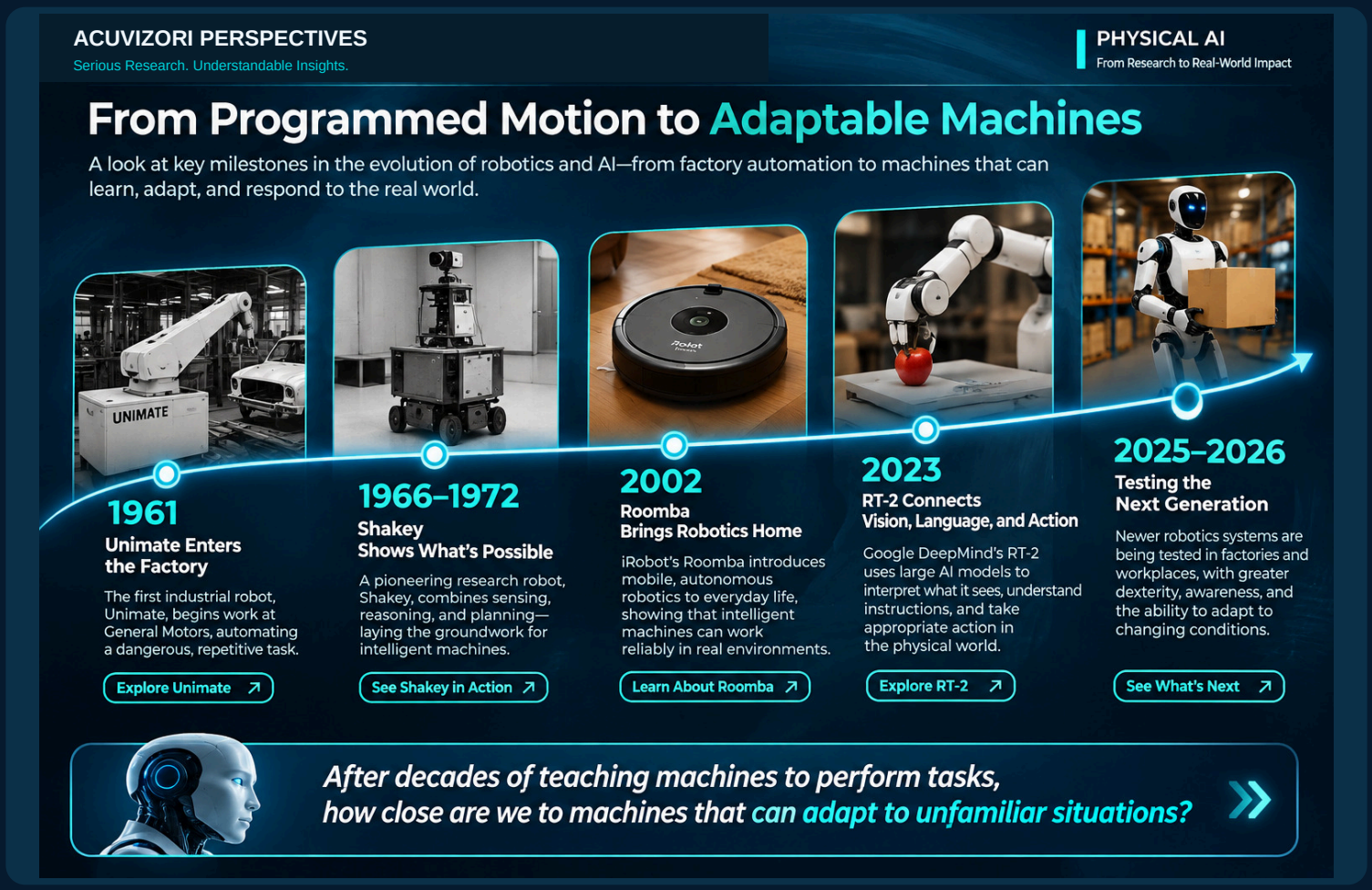
PHYSICAL AI

Perceive • interpret • adapt

A new capability, not a claim of universal autonomy.

GO DEEPER | Why is this happening now? >

From Programmed Motion to Adaptable Machines

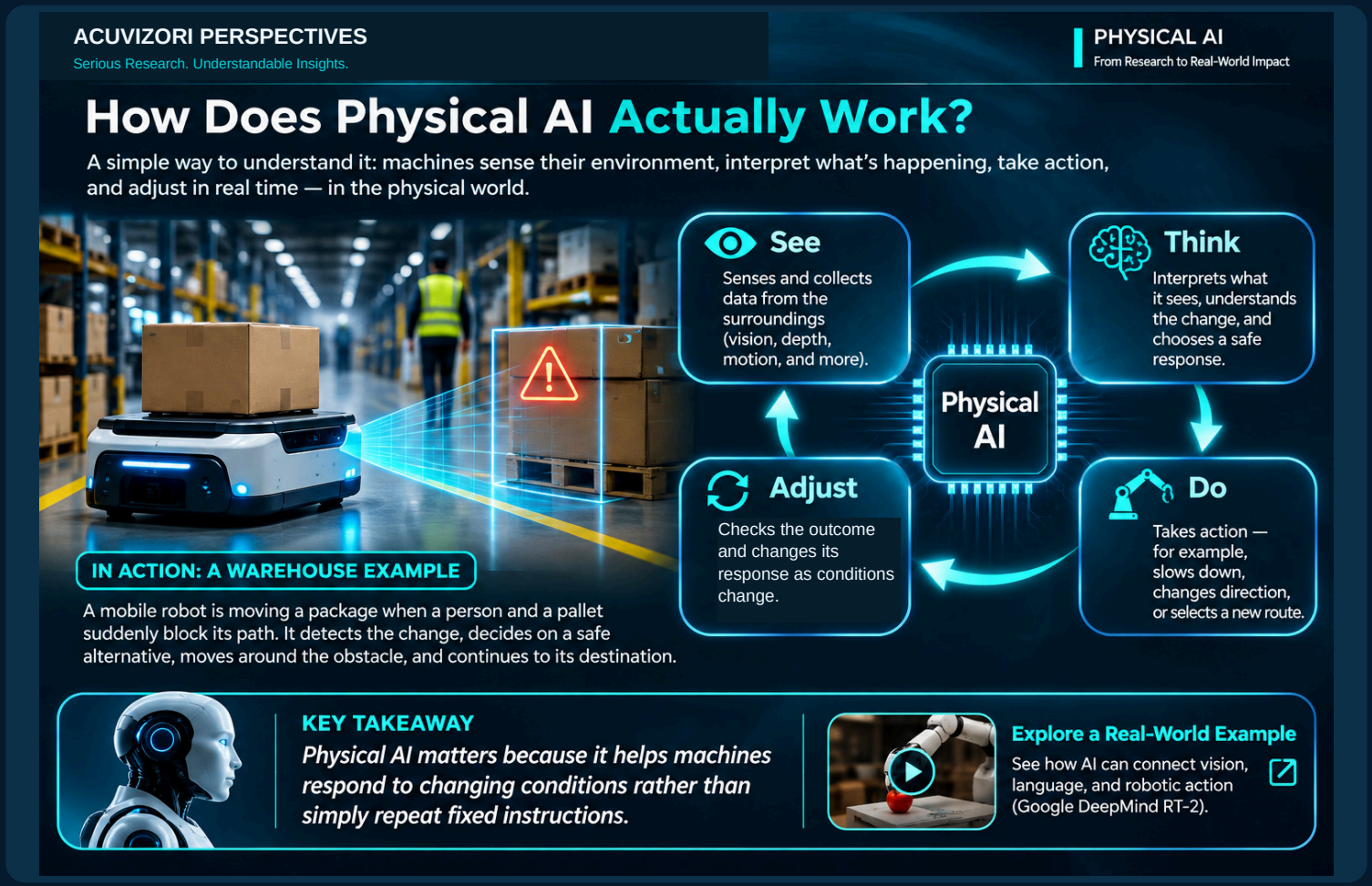


A historical journey, not a claim that every generation of robots possesses humanlike intelligence.

From Unimate and Shakey to Roomba, RT-2 and contemporary factory trials, each milestone expanded what a robot could sense or do.

EXPLORE FURTHER | Explore robotics history →

How Does Physical AI Actually Work?



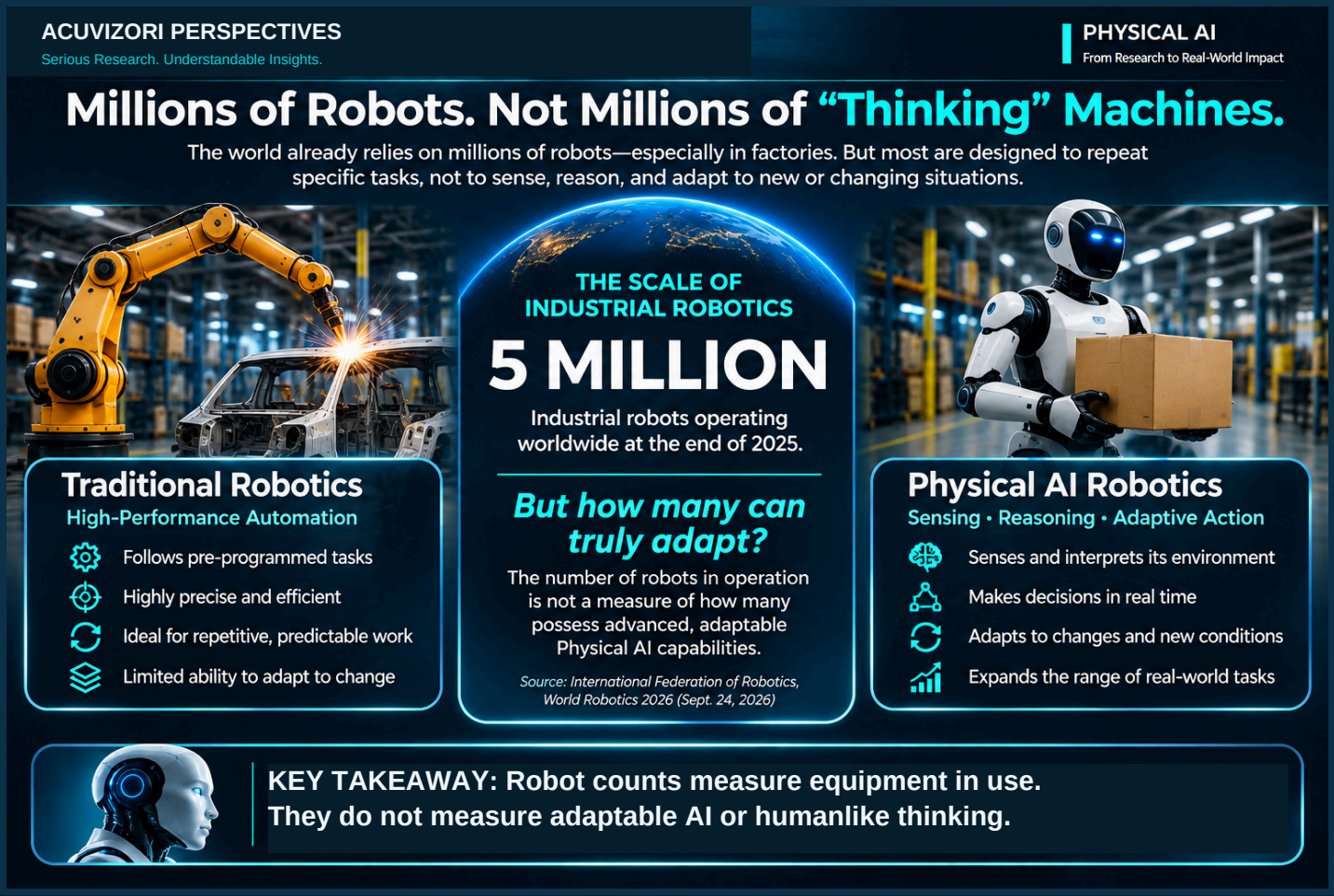
SEE → THINK → DO → ADJUST

Imagine a warehouse robot encountering an unexpected obstacle. Sensors detect a change; software selects an action; controls execute it; feedback informs the next response. Not every system learns continuously.

GO DEEPER | How the robot responds >

EXPLORE FURTHER | Explore the RT-2 research →

Millions of Robots. Not Millions of “Thinking” Machines.

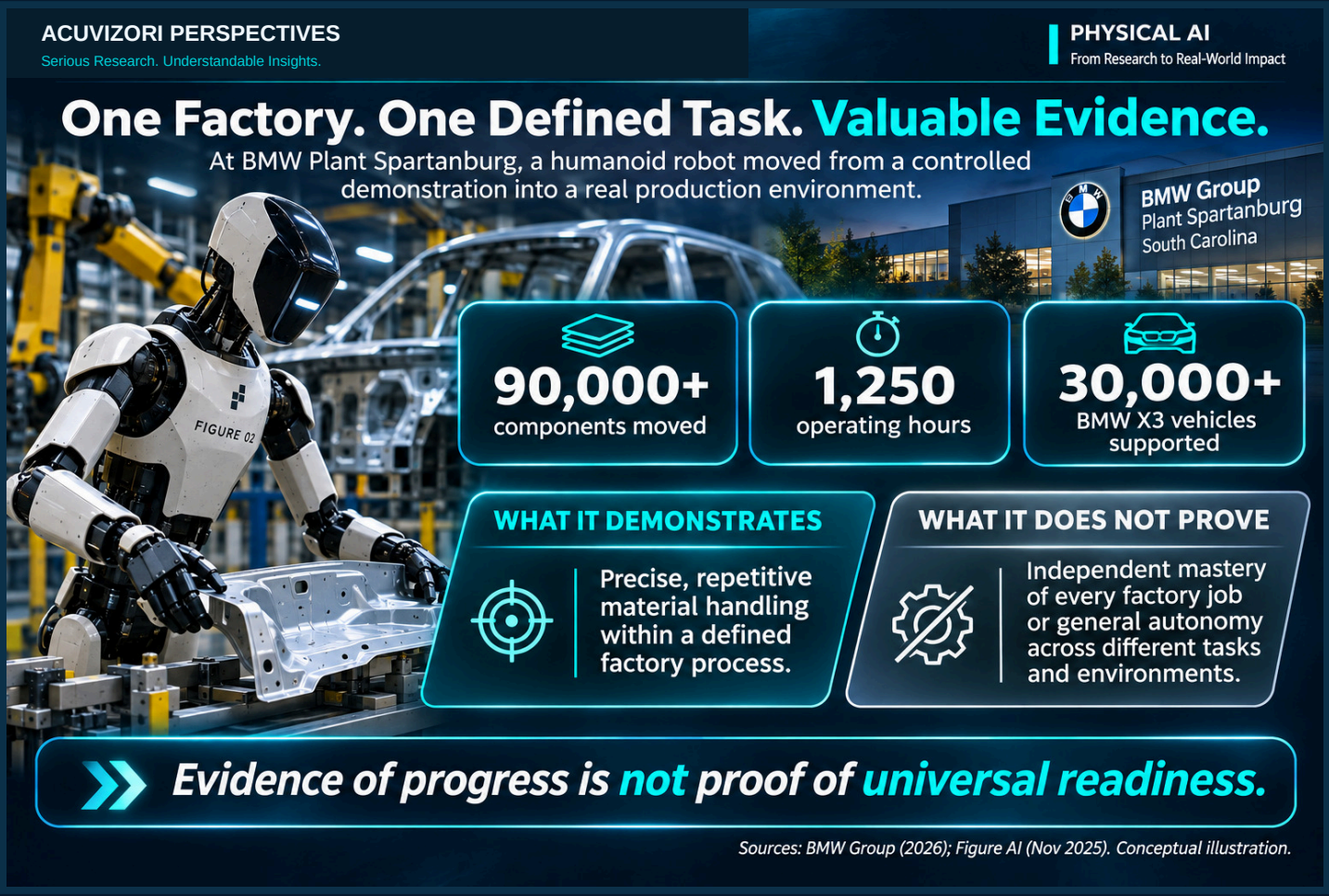


Millions of operating robots are not millions of autonomous thinkers.

Industrial robotics is already widespread. The international stock reached about five million units at the end of 2025. That figure does not tell us how many machines have adaptable Physical AI capabilities.

EXPLORE FURTHER | International Federation of Robotics →

One Factory. One Defined Task. Valuable Evidence.



A documented production pilot is evidence—not universal readiness.

In the 2025 Figure 02 trial, BMW and Figure reported more than 90,000 sheet-metal components handled over roughly 1,250 operating hours. This was a defined factory task, not general-purpose autonomy. The linked explanation also covers Figure's June 2026 follow-up demonstration.

GO DEEPER | What the BMW example teaches us >

EXPLORE FURTHER | Explore the BMW/Figure case study →

Where Else Might We Encounter It?



Its potential reaches far beyond the factory.

Robotics and AI are being explored or used in logistics, healthcare, agriculture, public safety and infrastructure. Read each example carefully: mature operations, limited pilots and future possibilities are not the same.

GO DEEPER | Where else is it useful? >

EXPLORE FURTHER | Explore robotics applications →

From Our Desks to Our Hands—and Into the World



Past technology shifts offer perspective, not certainty.

Personal computers brought powerful information tools to everyday work. Spreadsheets changed analysis; smartphones transformed access and services. Physical AI may extend computation into physical action.

GO DEEPER | What this could mean for work >

EXPLORE FURTHER | Explore computing history →

Don’t Just Watch the Future Happen. Help Shape It.



You do not have to build a robot to play a role.

Technicians, educators, healthcare workers, safety experts, managers and entrepreneurs can help identify needs, develop skills, test applications and evaluate consequences. Start with trusted education and career resources.

GO DEEPER | Skills, work and participation >

EXPLORE FURTHER | Explore careers and training →

What We Know, What's Uncertain, What to Watch



Evidence and forecasts deserve separate treatment.

Watch for repeatable performance, multi-site scaling, safety standards, worker training and measured outcomes. A promising pilot is not the same as dependable widespread adoption.

GO DEEPER | What remains difficult? >

EXPLORE FURTHER | Explore industry evidence →

Your Curiosity Doesn’t Have to End Here.



The most important chapters are still being written.

Continue exploring the research, real-world applications and skills that can help people participate. The future impact of Physical AI depends on choices made by businesses, governments and communities.

EXPLORE OPPORTUNITIES | Possible roles and what they involve >

Where Might You Find an Opportunity?

New technology needs people with many kinds of experience.



Keep equipment working

Install, test, maintain and repair robotic systems.



Make it work in the workplace

Plan workflows, test applications and support daily operations.



Help people work safely

Assess risks, develop procedures and review problems.



Help others learn

Explain new tools, teach procedures and support staff.



Find useful applications

Identify needs, evaluate solutions and develop services.

Bring your questions, experience and perspective.

EXPLORE THE ROLES AND WHAT THEY INVOLVE >

Explore Further

Choose a question to open a fuller explanation on our website. Each explanation links back to the relevant part of this report. Internet access is required.

Why is Physical AI developing now?

See how better sensing, AI models and workplace testing are coming together.

READ THE EXPLANATION →

How does Physical AI work?

Follow a warehouse robot as it notices an obstacle, stops and checks its path again.

READ THE EXPLANATION →

What did the BMW trial demonstrate?

Understand the loading task, the reported results and the questions the trial leaves open.

READ THE EXPLANATION →

Where might we encounter it?

Explore uses in logistics, farming and research, with clear distinctions between products and demonstrations.

READ THE EXPLANATION →

How might it change work?

Consider changing tasks, human responsibilities and the skills people may need.

READ THE EXPLANATION →

What remains difficult?

Explore reliability, safety, human oversight and the evidence needed to judge progress.

READ THE EXPLANATION →

Where might you find an opportunity?

Explore technical, operational, safety, training and business roles, and what they may involve.

READ THE EXPLANATION →

Follow the evidence

Sources checked 2 November 2026. Company accounts describe their own results; they are not independent audits. AI-generated illustrations explain concepts and do not depict the actual trial, people or facilities.

[1] Google DeepMind: Gemini Robotics
OPEN ORIGINAL SOURCE

[2] NIST: Physical AI and Data Generation for Robotics
OPEN ORIGINAL SOURCE

[3] Computer History Museum: AI and Robotics Timeline
OPEN ORIGINAL SOURCE

[4] IFR: Five Million Robots now Operate in Factories Globally
OPEN ORIGINAL SOURCE

[5] BMW Group: Humanoid Robots in Production
OPEN ORIGINAL SOURCE

[6] Amazon: Proteus in the Workplace
OPEN ORIGINAL SOURCE

[7] Blue River Technology: See & Spray
OPEN ORIGINAL SOURCE

[8] NIOSH: Robotics in the Workplace
OPEN ORIGINAL SOURCE

[9] BLS: Mechatronics Technologists and Technicians
OPEN ORIGINAL SOURCE

[10] Figure: Production at BMW - task, targets and hardware lessons
OPEN ORIGINAL SOURCE

[11] Figure: F.03 Arrives at BMW (30 June 2026)
OPEN ORIGINAL SOURCE

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READ THE TEXT EDITION >