

Mit physischer KI die Fabrik von morgen gestalten

Horst J. Kayser

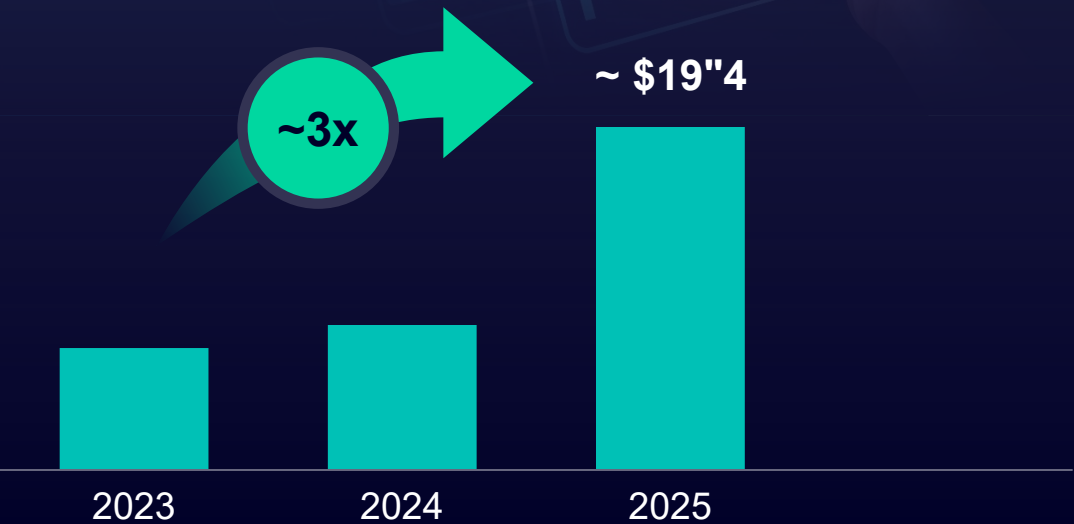
CEO Factory Automation, Siemens AG

SIEMENS

Physical AI combines robotics with the power of artificial intelligence

Investments in robotics are surging to record highs

Global capital inflow into robotics nearly 3x from 2023 to 2025



Source: Crunchbase, Pitchbook, UBS, Reuter, Morgen Stanley

Country Ranking On Skills and Digital Infrastructure Readiness

SCORING FROM 1 (VERY LOW) TO 10 (VERY HIGH)

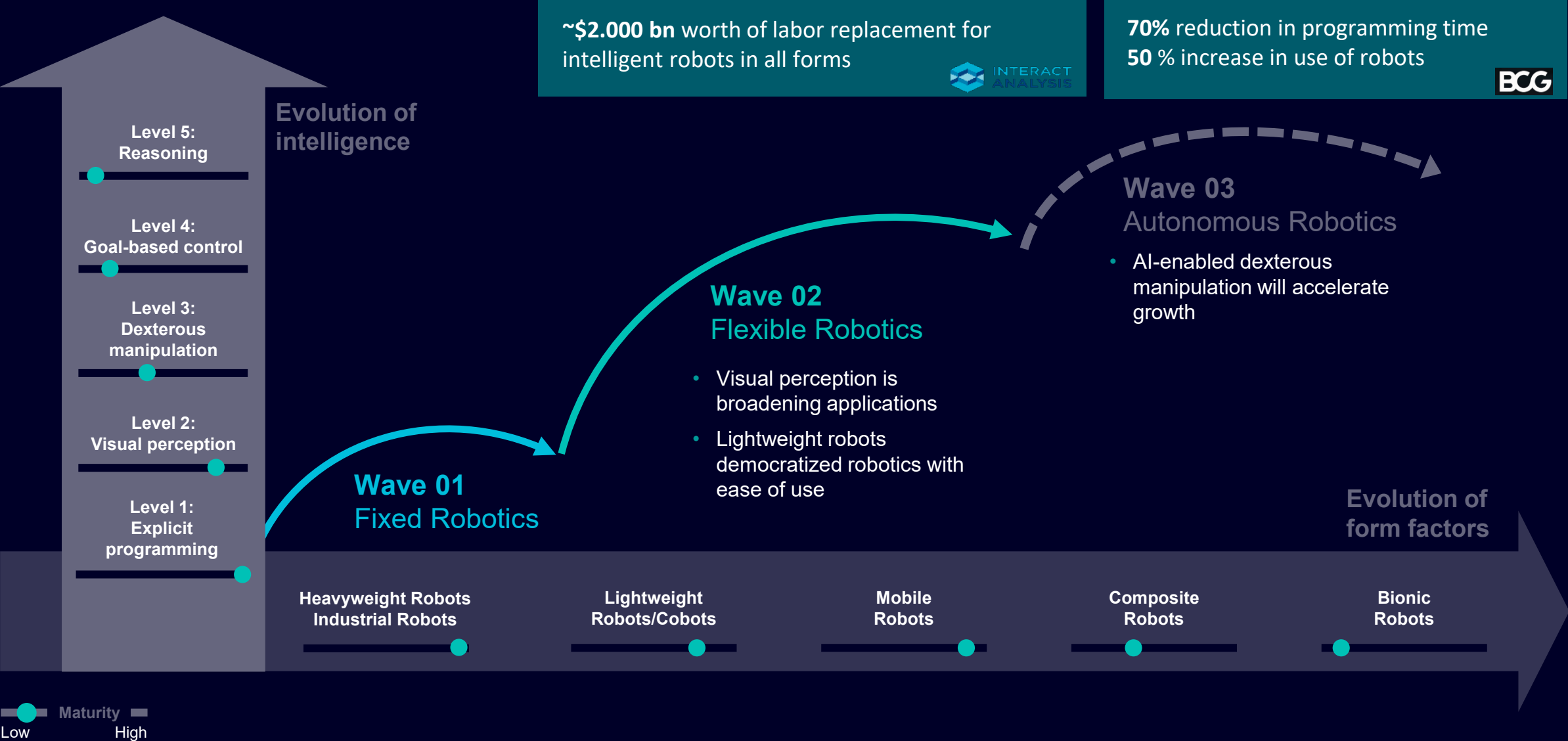
Ranking		Total	Skills	Digital infrastructure
1	US	8.4	9.0	7.9
2	Germany	8.2	9.0	7.4
3	Japan	7.6	8.0	7.1
4	South Korea	7.6	8.0	7.1
5	UK	7.5	9.0	6.0
6	Canada	7.2	8.0	6.4
7	France	7.1	7.0	7.1
8	China	6.6	7.0	6.1
9	Italy	6.3	6.0	6.6
10	Poland	5.9	7.0	4.9
11	Spain	5.8	5.0	6.6
12	Hungary	5.4	6.0	4.9
13	Brazil	5.0	6.0	4.0
14	UAE	5.0	6.0	4.0
15	India	5.0	7.0	3.0
16	Mexico	4.6	6.0	3.3
17	Türkiye	4.1	5.0	3.1
18	KSA	4.0	4.0	4.0
19	Morocco	3.1	4.0	2.3

Sources: UNESCO; OECD; national educational statistics; Portulans Institute; IFR; BCG Institute analysis.

Note: Composite index scoring from 1 to 10 based on the unweighted average scoring of two criteria: skills (based on mean years of schooling and yearly number of STEM graduates) and digital infrastructure (based on network readiness index measuring countries' digital maturity across technology, people and governance, and industrial robotic density deployment).

Source: BCG

Robotics market expanding along two dimensions: intelligence & form factors



Industry requires flexibility and adaptability



Engineering Agent Eigen Engine

Siemens - C:\Users\Z00571XC\OneDrive - Siemens AG\Documents\Automation\SA11SPS1.S7TIA_V20\SA11SPS1.S7TIA_V20

File Edit View Insert Online Options Tools Window Help

Save project

Totally Integrated Automation PORTAL

Project tree

Devices Plant objects

SA11SPS1.S7TIA_V20

Add new device

Devices & networks

SA11SPS1 [CPU 1517F-3 PN/DP]

Device configuration

Online & diagnostics

Safety Administration

Software units

Add new software unit

Program blocks

Add new block

Cyclic interrupt 100ms [O...

Diagnostic error interrupt ...

IO access error [OB122]

Main [OB1]

Programming error [OB121]

Rack or station failure [OB...

000XCP000

000XCR000_Call [FC25]

000XGS000_Call [FC1...

000XMQ000_Call [FC2...

000XP0000_Call [FC28]

000XPE000_Call [FC23]

000XSE000_Call [FC29]

000XSI000_Call [FC14]

000XTT001_Call [FC27]

000XTT003_Call [FC5]

000XTT008_Call [FC8]

Cycle_begin_Call [FC1]

Cycle_end_Call [FC19]

F_Data_From_Safety [F...

F_Data_To_Safety [FC8...

IAF_FMATRIX_TRANSF...

DB_000XCP000

000XCP000_Failsafe

001EK_111

999 Functionblocks

System blocks

Technology objects

Details view

000XCR000_Call

Name Data type Offset Default value Comment

<Add new>

Output

Block title: Aufruf CRC-Prüfung

Comment

Network 1: Aufruf IFG_CRC_CHECK

Comment

EN

%DB1.DBX163.6 "FGDB_001EK_111".D.control

VoltageIsOn

enableIn

false

readWeekly

2

weekday

9

hour

258

"Local~m050g5s sa11sp1"

HwIoSystem

ProfinetSystem

100

ID

%DB59 "FGDB_000XCR000"

%FB149 "IFG_CRC_CHECK"

readActive

Active

%DB59.DBX10.0 "FGDB_000XCR000".read

%DB59.DBX10.1 "FGDB_000XCR000".fault

%DB59.DBX10.2 "FGDB_000XCR000".faultExt

fault

faultExt

ENO

Properties Info Diagnostics

General Cross-references Compile Syntax

Show all messages

Path Description

Portal view

Over... Mai... Rack... Cyclic... Diag... 000...

Project SA11SPS1.S7TIA_V20 opened.

Siemens Eigen Engineering Agent

SA11SPS1.S7TIA_V20.a...

AG

Instructions

Testing

Tasks

Libraries

Add-Ins

- Siemens PN/PN Couplers (2 units)
- RFID readers (Siemens RF68xR, 12 units)
- Ident systems (MV4xx, 2 units)
- Markator marking devices (2 units)

PLC Program Structure

Category	Count	Description
Failsafe Blocks	~50	Safety functions (ESTOP, Robot safety, Gate, Lenze)
Standard Functions	~100	Basic software, General functions, System blocks
Subsystems	~150	Robots, TCP communication, MQTT, RFID, Valves
Station Calls	~400	Individual station control blocks
Data Blocks	~200	Instance DBs, System DBs, User data

Key Programming Languages: FBD, F_FBD, SCL, GRAPH, STL

Network Features

- PROFINET IO (real-time communication)
- PROFIsafe (safety communication)
- OPC UA
- MQTT/TCP/IP communication
- IoT Publisher functionality

This appears to be a large-scale automated manufacturing/assembly system with multiple robots, conveyor systems, safety functions, and comprehensive monitoring/control infrastructure.

Would you like me to dive deeper into any specific aspect (hardware details, specific PLC blocks, network configuration, etc.)?

Let's start by generating an SCL function block for a body-in-white station controller. I need it to handle a full welding cycle — clamping the workpiece, verifying clamp position, running the weld sequence, unclamping, and signaling that the station is ready for transfer.

0% till completion

This content is AI-generated.

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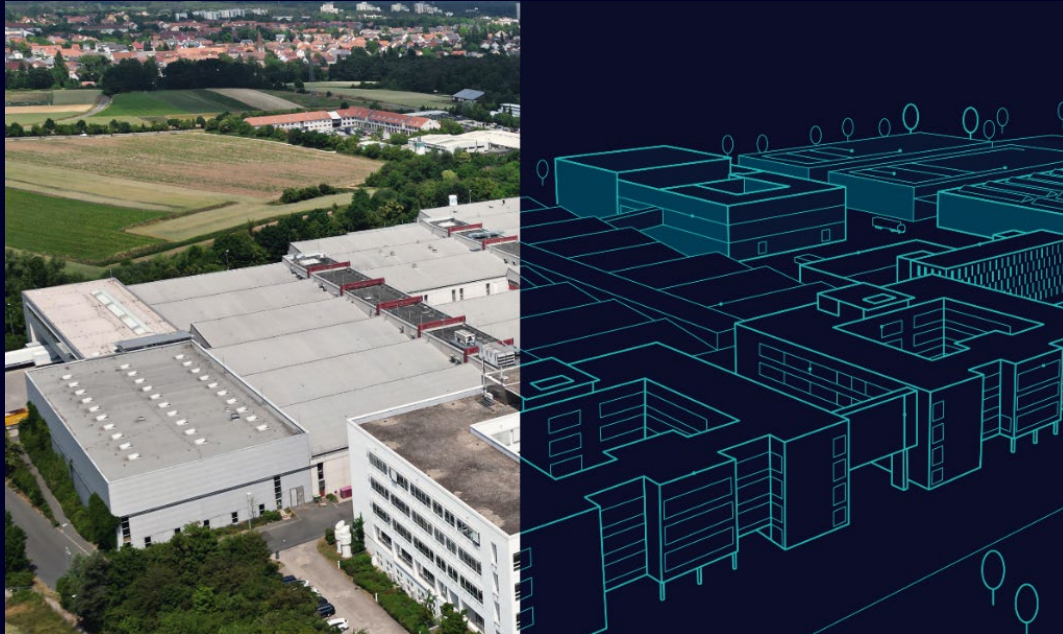


“You’re not going to lose your job to an AI, but you’re going to lose your job to somebody who uses AI.”

Jensen Huang, CEO NVIDIA

Source: <https://www.cnn.com/2025/05/28/nvidia-ceo-jensen-huang-youll-lose-your-job-to-somebody-who-uses-ai.html>

The future of industry is being built now!



Siemens Elektronik Werk Erlangen

