

GLOSSARY OF TECHNICAL TERMS

This glossary contains definitions of certain technical terms used in this document in connection with us and our business. These may not correspond to standard industry definitions and may not be comparable to similar terms adopted by other companies.

“3C”	computer, communication and consumer electronics
“4C core technology architecture”	the four key technological modules underlying our core technology platform, namely core components, control technologies, fleet management system and application software
“absolute encoder”	a sensor that provides absolute position information for precise motion and positioning control
“AGI”	artificial general intelligence, the representation of generalized human cognitive abilities in artificial intelligence so that, when faced with any unfamiliar task that a human being is capable of, it could find a solution to perform such task
“AGV”	automated guided vehicles, which are vehicles that follow a predefined path (i.e., guidepath) indicated by markers or external guidance commands to transport materials within a facility
“AI”	artificial intelligence, simulation of human intelligence processes by machines, especially computer systems
“algorithm”	a procedure or set of rules used in calculation and problem-solving by computer systems
“AMR”	autonomous mobile robots, which are robots designed to navigate environments without human intervention using advanced sensors and algorithms
“API”	application programming interface, a type of software interface offering a service to other pieces of software
“architecture”	the structure under which an information system’s hardware, software, data and communication capabilities are put together
“autonomous decision-making”	the ability to make decisions leveraging algorithms and mathematical models, without human intervention
“BMS”	battery management system, any electronic system that manages a rechargeable battery (cell or battery pack) by facilitating the safe usage and a long life of the battery in practical scenarios while monitoring and estimating its various states (such as state of health and state of charge), calculating secondary data, reporting that data, controlling its environment, authenticating or balancing it
“BOM”	bill of materials, an extensive list of raw materials, components, and instructions required to construct, manufacture, or repair a product or service
“CAGR”	compound annual growth rate

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“CANOpen”	a communication protocol stack and device profile specification for embedded systems used in automation
“CE”	Conformité Européenne, a regulatory standard that verifies certain products are safe for sale and use in the European Economic Area
“centralized fleet orchestration”	the centralized coordination, scheduling and management of multiple robots within a system
“CMOS”	Complementary metal-oxide-semiconductor, a type of metal-oxide-semiconductor field-effect transistor (MOSFET) fabrication process that uses complementary and symmetrical pairs of p-type and n-type MOSFETs for logic functions
“CNC”	computer numerical control, a manufacturing technology that uses computerized systems to automate the control of machine tools, enabling precise, repeatable, and efficient production of complex parts
“control system” or “robotic control system”	a system that manages, commands and regulates the behavior of a robot to achieve desired outcomes, which includes an embedded controller within the robot itself and cloud-based software
“controller”	a device or system that integrates intelligent algorithms, while managing various sensors and actuators to enable autonomous operation of the robot
“CPU”	central processing unit, the central unit in a computer containing the logic circuitry that performs the instructions of a computer program
“DC”	direct current
“depth camera”	cameras that capture 3D information by measuring the distance between the camera and surrounding objects, enabling spatial awareness for robots
“digital twin”	a digital model of an intended or actual real-world physical product, system, or process (a physical twin) that serves as a digital counterpart of it for purposes such as simulation, integration, testing, monitoring, and maintenance
“DoF”	degree of freedom, the number of degrees of freedom is the number of values in the final calculation of a statistic that are free to vary
“electronics”	collective term for major categories of electronic products: computer, communication, consumer electronics and others

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“end customers”	businesses that actually deploy our solutions. Unless stated otherwise in this document, end customers are calculated on a consolidated basis, i.e., end customers that are affiliated – such as subsidiaries, or companies under common control – will be treated as a single end-customer; for the avoidance of doubt, the number of “end customers” presented in this Document does not include the number of channel partner
“end-effector”	a type of devices attached to the end of a robot arm that directly interact with the environment to perform a specific task, such as a gripper, welder, or spray gun
“end-to-end integration”	the integration of the full process from perception and decision-making to execution within a unified system
“ERP”	enterprise resource planning, a software system that integrates core business processes, including manufacturing, supply chain, finance and human resources
“ESD standards”	electrostatic discharge standards developed by the ESD Association and adopted by the American National Standards Institute
“ESG”	environmental, social and governance
“EtherCAT”	Ethernet for Control Automation Technology, a real-time Industrial Ethernet fieldbus system, which was introduced in 2003 and has been an international standard since 2007
“EV”	electric vehicle
“fleet management system”	a software system used to coordinate and optimize the operation of a fleet of AMRs. It handles dynamic task assignment, path planning, traffic control, battery management, and status monitoring to ensure safe and efficient robot operations in logistics or manufacturing environments
“FPGA”	field-programmable gate array, a type of configurable integrated circuit that can be repeatedly programmed after manufacturing
“IMU”	inertial measurement unit, an electronic device that measures and reports a body’s specific force, angular rate, and sometimes the orientation
“integrated perception – planning – control edge-computing platform”	a computing platform that integrates perception, planning and control functions at the edge level
“intelligent robot”	a robot that exhibits intelligent behavior by using technologies such as AI, machine learning and computer vision to simulate human cognition and physical coordination
“intralogistics”	the movement, storage, and management of materials and goods within a company’s facility, such as a warehouse, distribution center, or manufacturing plant

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“IoT”	internet of things, the concept of connecting physical devices to a large, interconnected network
“ISO”	the International Organization for Standardization, a worldwide federation of national standards bodies
“LCD”	liquid-crystal display, a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizers to display information
“LiDAR”	Light Detection and Ranging, a remote sensing method that uses laser light to measure distances to objects and create detailed 3D representations of the environment
“MAPF”	multi-agent path-finding, an instance of multi-agent planning and consists in the computation of collision-free paths for a group of agents from their location to an assigned target. It is an optimization problem, since the aim is to find those paths that optimize a given objective function, usually defined as the number of time steps until all agents reach their goal cells
“MES”	manufacturing execution system
“module”	in the context of describing our products and technology infrastructure, a module refers to a part of a system or hardware that can operate to support specific functionality, and a module is usually comprised of multiple function
“multi-modal sensing”	the use and integration of multiple sensing modalities, such as vision and LiDAR, to perceive and interpret surrounding environments
“order intake”	total value of new contracts or orders secured within a specific period (including taxes)
“QR code”	quick response code, a type of matrix barcode or two-dimensional barcode
“R&D”	research and development
“reinforcement learning”	a machine learning technique that trains software to make decisions to achieve the most optimal results. It mimics the trial-and-error learning process that humans use to achieve their goals
“robot”	a programmable, actuated mechanism capable of movement with a certain degree of autonomy, designed to operate in specific environments to perform predefined tasks
“robot morphologies”	different structural forms and configurations of robots, including wheeled, tracked, quadruped or hybrid designs
“RTK”	real-time kinematic, a satellite navigation technique used to enhance the precision of position data derived from satellite-based positioning systems

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“servo driver”	a device that converts control signals into electrical outputs to drive motors and enable precise motion control
“SLAM”	simultaneous localization and mapping, a computational technique used by robots to build a map of an environment while simultaneously determining their location within it
“SMT”	surface-mount technology, a method in which the electrical components are mounted directly onto the surface of a printed circuit board
“spatiotemporal scheduling algorithm”	an algorithm that performs task scheduling and path planning by considering both spatial and temporal factors
“system integrator”	a professional or company that connects various automation technologies, such as robotics, controllers, and software, into a cohesive system, ensuring these components work together effectively to achieve the desired outcomes
“unified core technology platform”	an integrated technological framework combining multiple core hardware and software technologies to support various robotic products and applications
“VLA”	vision-language-action, an AI model that integrates visual perception, natural language understanding and action planning. It enables robots or agents to interpret human instructions (language), perceive the environment (vision), and perform appropriate physical actions
“WMS”	warehouse management system