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Emerging Tech: Hyperscalers Will Disrupt the Autonomous Things Ecosystem Faster Than You Thought

By Bill Ray, Jonathan Davenport, Published 4 October 2022

Hyperscalers are spreading throughout the autonomous-technology value chain, with most advancements around AI platform software. Product leaders developing smart robotics, drones and autonomous vehicle solutions need to be ready for the upcoming disruption and identify relevant value integrations.

Overview

Key Findings

Products such as AWS IoT RoboRunner, Google's Edge TPU and Microsoft's Project Bonsai demonstrate how hyperscalers are increasingly interested in providing management services (including robot middleware frameworks).

Hyperscale investment in robot systems has been accelerating over the last three years and shows no sign of abating.

Hyperscale companies are spreading throughout the robot value chain, with several companies having end-to-end portfolios for deploying and managing robot fleets.

Recommendations

To leverage the investment from hyperscale companies into robot technologies, product leaders looking to stay ahead of the impact of emerging technologies and trends on products and services should take these steps:

Avoid disruption from hyperscalers by working with them, integrating points of value into the hyperscaler offerings to increase the value of both.

Prepare for long-term involvement from hyperscaler companies by anticipating investment in the remaining parts of the robot value chain.

Identify products that may face competition from hyperscalers, and create a brand strategy that includes mitigating that competitive threat in the long term.

Strategic Planning Assumptions

By 2026, 75% of smart robots deployed into enterprises will be linked (directly or indirectly) with robot management services run by one of the hyperscalers, up from less than 2% in 2021.

By 2027, 50% of all smart robot simulations and AI model training will be run by hyperscalers, up from less than 5% in 2021.

Analysis

Hyperscale Companies Pushing Into Autonomous Robots

Hyperscale cloud service providers, such as Google, Microsoft and Amazon, recognize that robot hardware will become increasingly commoditized, which will shift the focus to the software that manages, controls and optimizes the value of fleets of robots, often from different robot vendors. Because of this, over the last five years, these companies have significantly increased their investment into the robot value chain. This has included acquisitions, partnerships and organic growth through the development of new products and platforms. The three hyperscalers in Figure 1 below clearly see autonomous smart robots, as well as the management of

smart robot fleets, as an important market and thus will continue to invest in products that provide support for smart robot fleets.

Figure 1 shows how investment and partnerships have accelerated in the last few years. The point here is not to show the products themselves but rather the rate at which the hyperscalers have built, acquired or partnered to gain presence in the smart robot value chain.

Figure 1: Hyperscale Products & Services In Robotics

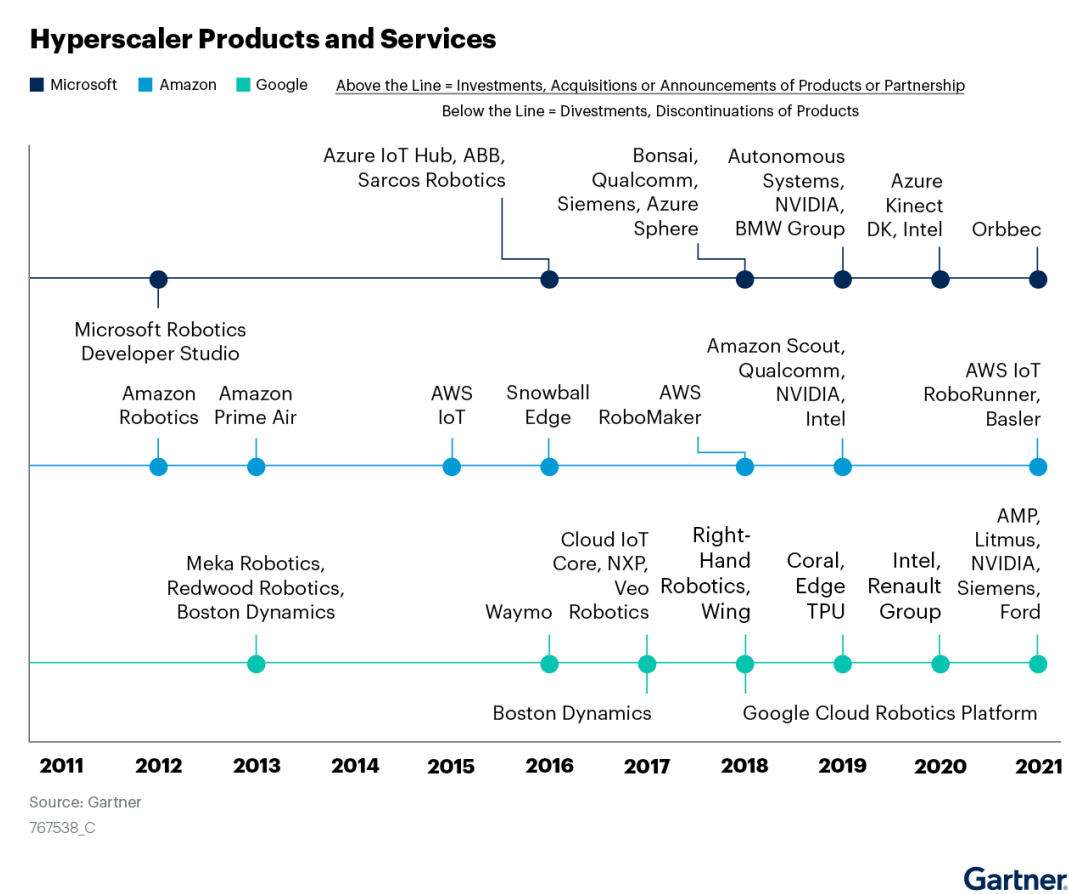


Figure 2: How Hyperscale Companies Are Filling The Robot Value Chain

How Hyperscale Companies Are Filling the Robot Value Chain

		Microsoft	Amazon	Google	OEMs
Offerings: Software & Devices for Robotics	Cloud Platform	<ul style="list-style-type: none"> Azure IoT Hub 	<ul style="list-style-type: none"> AWS IoT AWS IoT RoboRunner 	<ul style="list-style-type: none"> Cloud IoT Core 	<ul style="list-style-type: none"> ✓ Only some OEMs introduced their own cloud IoT platform, notably ABB Ability, Fanuc Field System, Denso Factory-IoT Platform and KUKA Connect.
	Software for Robotics	<ul style="list-style-type: none"> Bonsai XL + ROS 	<ul style="list-style-type: none"> AWS RoboMaker 	—	<ul style="list-style-type: none"> ✓ OEMs provide software to develop, test and control their own robots, using proprietary programming languages. OEM are also opening to the adoption of ROS for specific use cases.
	Core Tech	<ul style="list-style-type: none"> Azure Sphere Azure Kinetic ZK 	<ul style="list-style-type: none"> AWS Snow Family 	<ul style="list-style-type: none"> Coral Edge TPU 	<ul style="list-style-type: none"> ✓ OEMs provide retrofitting and refurbishments of their old robots, which can be enhanced with compatible options, such as vision hardware or sensors and connectivity capabilities.
Involvement in Robotics Hardware	Product and Process Manufacturing	<ul style="list-style-type: none"> One minor investment in 2016 	—	<ul style="list-style-type: none"> Investing, via GV 	<ul style="list-style-type: none"> ✓
	QA/Inspection	—	—	<ul style="list-style-type: none"> Investing, via GV 	<ul style="list-style-type: none"> ✓
	Maintenance and Servicing	—	—	—	<ul style="list-style-type: none"> ✓
	Logistics and Warehousing	—	—	<ul style="list-style-type: none"> Wing Investing, via GV 	<ul style="list-style-type: none"> ✓

Source: Gartner
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Conclusion

Its clear that as smart robots multiply and we see growing adoption of multiple robots across the same or adjacent facilities, their management will become increasingly complicated. This is an area of rapid innovation in smart robotics and autonomous things, and it' s no surprise that hyperscale companies are positioning themselves to provide that service. However, questions remain about how the customers of those cloud services will be able to differentiate their offerings when so much functionality is provided by the cloud itself. A system

integrator may decide to wrap the cloud offering in a standard interface and use it to control off-the-shelf robots. This will increase the competition and reduce opportunities for middleware and AI platforms, areas which are currently buoyant with startup activities and considered very promising within the robot industry.

Manufacturers of robots and robotic systems will want to minimize integration costs by providing interfaces for the biggest cloud platforms, so companies that try to avoid using those platforms will find it increasingly expensive to maintain interoperability. Tech providers looking to enter this market will have to consider carefully how they can add value to the underlying offerings to justify their existence in the face of hyperscale competition.

Evidence

Technology Description

A smart robot is an AI-powered, often mobile, physical machine designed to autonomously execute a targeted mission. A targeted smart robot mission has a predictable outcome which the robot achieves autonomously, acting within a range of defined parameters.

Robot categories: Personal robots, medical robots, intralogistics robots (operating inside facilities), asset inspection robots, educational robots, agricultural robots and more.

Example providers include:

- **Intralogistics robot (including autonomous mobile robot providers):** Berkshire Grey, BionicHIVE, Geek+, Grenzebach, GreyOrange, inVia Robotics, Locus Robotics, Rayputa Robotics, Seegrid, Vecna Robotics and Zebra (Fetch)

- **Asset inspection robot providers:** Boston Dynamics (Spot), DroneDeploy and Percepto
- **Commercial security robot providers:** Enova Robotics and SMP Robotics
- **Educational robot providers:** Van Robotics (ABii)
- **Exoskeleton providers:** German Bionic and Sarcos Robotics
- **Robotic AI platform providers:** Cognite, IBM, InOrbit and Levatas
- **Workplace robot providers:** Ava Robotics

This document presents insights on the robot value chain gleaned from a Gartner CBR project conducted from November 2021 through January 2022, combined with market research and vendor interviews.

*** Attention: research are originally in English and I have translated it into Chinese by Google Translate as instructed by Peter. In case of any discrepancy between the English version and the Chinese version, the English version shall prevail.*