

World *Robotics*

S e r v i c e R o b o t s

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Statistics, Market Analysis and Case Studies

The cover features a light blue world map background. On the left, a vertical grey bar contains the text 'one market' in white, with 'one' and 'market' stacked vertically. The main title 'World Robotics' is centered, with 'World' in a large, light grey sans-serif font and 'Robotics' in a large, black, cursive script font. Below this, 'Service Robots' is written in a smaller, light grey sans-serif font, underlined. At the bottom of the title section, the year '2023' is displayed in a light grey sans-serif font.

World Robotics

Service Robots

2023

World Robotics 2023 – Service Robots

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The service robot statistics is carried out by the IFR Statistical Department.

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We express our most sincere gratitude to all partners!

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Executive Summary World Robotics 2023 - Service Robots

The service robot industry is more diverse and less tangible than the industrial robot industry. IFR Statistical Department is currently aware of 975 service robot producers worldwide. This excludes prototyping services and system integrators. Many companies are still in the funding or prototyping stage and intend to offer a marketable product in the future.

In 2022, worldwide sales of professional service robot grew by 48%. Almost 158,000 sold units were registered by IFR Statistical Department. The size of the RaaS fleet grew by 50% to more than 21,000 units.

Mobile robot solutions are already established in **transportation and logistics** (AP5) with 44% more units sold in 2022. More than every other professional service robot sold in 2022 was built for the transportation of goods or cargo. Traditional sales remain the main channel of monetarization, but RaaS business models enjoy growing popularity: The RaaS fleet grew by 67% in 2022. **Hospitality** robots (AP8) enjoy growing popularity. Sales were up 125% in 2022 and the RaaS fleet size is growing rapidly. Sales of **medical** robots (AP6) were down 4%. Robotics is an important part of digitalization in **agriculture** (AP1) with sales being up 18% in 2022. There is a lot of research and development to use robots for the **cultivation (AP11)** of plants and crops and the number of marketable products is growing. Demand for **professional cleaning** robots (AP2) grew by 8%. In the application group of **search and rescue and security** robots (AP7) sales were up 18%. It is mainly security that can be conducted autonomously, while other search and rescue rather relies on remote-controlled robotic devices with limited autonomy. There are several robotic devices for **inspection and maintenance** (AP3) available, but the portfolio of robots that conduct inspection and maintenance tasks autonomously is still limited. Service robots for **construction or demolition** (AP4) tasks constitute a niche market. Hardly any sales were reported to IFR Statistical Department.

There is still an abundance of specific product opportunities to be taken up by companies, therefore creating an attractive commercial market worldwide. Today's service robotics market is composed of many niche products for professional services and a few high-volume applications both for professional and domestic use. Pioneers in the field of service robotics stress the significant opportunities for new companies entering this growth market with innovative products beyond the occasional robotics hype. Service robots for professional use are extremely diverse since they are usually designed to perform a specific task. Cost-benefit considerations from an end-user's viewpoint are the main factor with respect to investment in such systems in addition to contributing to qualified and safe jobs. Although service robots are as diverse as their applications, three design categories can be distinguished: Modification of industrial robot components (e.g. automated warehousing and medical robots), use of advanced robot technology for the upgrading of high-end systems of existing product lines with automation functions. (e.g. cleaning, inspection), and new robotic designs "from scratch" (e.g. window cleaners, security robots).

The service robot industry is developing at a high pace with a lot of merger and acquisition activity. Many companies identify themselves as "deep tech", meaning that they are willing to accept technological challenges during their product development phase to create technological advancement. Chapter 4 of World Robotics 2023 Service Robots offers an industry structure analysis of almost 1,000 service robot suppliers currently known to the IFR. This includes a full list of all companies and the applications they provide. **Customers of World Robotics Premium are able to download this list in Excel format.**

Although the service robotics industry is a young and growing industry, 91% of the suppliers are considered incumbents. This includes mature service robot suppliers as well as companies from other industries that added service robots to their portfolio. The 2010s saw a wave of new service robot manufacturers. Since then, the number of newly established companies steeply declined. IFR's market observation suggests two reasons for the decreasing share: Some market segments have already achieved a level of maturity that sees companies growing, for instance AMRs for warehouse logistics. Sales of AMRs have been growing strongly for many years now and companies grew and became incumbents. Further, founding activities shifted away from the development of robot hardware. Many service applications are based on collaborative industrial robots, purchased from an industrial robot producer. The service robot supplier is therefore not considered a robot producer as the robot is purchased from a third party. These companies act like a system integrator, combining different components and developing software to create a solution.

The United States is home of most service robot suppliers. 218 companies are located there. China has 106 companies and in Germany 85 companies produce service robots. Japan has 72 service robot suppliers and France has 53.