

## Foreword

By: Dr. Birgit Graf, Head of the Group “Personal and Domestic Robots” and Dr. Kai Pfeiffer, Head of the Group “Industrial and Commercial Service Robots” at Fraunhofer IPA



Dear Reader,

Already for the third and obviously not the last time, we are writing the preface of “World Robotics Service Robots” under the influence of the pandemic (not to forget other global challenges, of course). While some things in our private and professional lives have more or less returned to normal, in other areas the effects of the pandemic are still manifold. Some of these effects have an immense influence on the perception and market development of service robots.

The labor shortage is visible in many fields, e.g., in restaurants, at airports, or in the crafts. Service robots have the potential to provide support and relief here and we already see some solutions like smart transport robots bringing dishes to the guests or a startup offering a painting robot. Of course, big players also invest in robotics. With about 300 suppliers in the field of logistics (out of approx. 1,100 in total worldwide), this is still the strongest market. Assistance at home has also become an even more important topic and strengthened the sold units of vacuum cleaners and lawn mowers.

In general, the situation we all had to deal with strongly supported the acceptance of technology and digitalization. This sometimes created a hype for new robotic solutions and now we start seeing some consolidation of this development. An example is the development and growing market for disinfection robots. Some sort of renaissance can be observed for four-legged robotic devices, which, however, are often still used remotely. Bipedal robots are under development again. A new development can be seen in agriculture. The question of sustainability and the ban on glyphosate raise the need for new technological solutions like agriculture robots that can, for example, mechanically remove weeds. Long story short: The service robotics market is growing and opening up completely new opportunities for many companies. This dynamic is reflected by more than USD 17bn of venture capital that was invested in (not only service) robotics in 2021, almost three times as much as in the year before.

These developments are described in detail in the book at hand. As it is the case with every edition of the “World Robotics Service Robots”, the 2022 edition presents numbers and market data from the previous year. As was the case in prior years, large growth markets are contrasted by small, highly specialized niche markets, with many startups joining the fray and other companies unable to establish themselves on the market.

In close cooperation, Fraunhofer IPA and IFR are observing more than 1,000 companies worldwide offering service robotics solutions (amongst them are about 12% startups). Both, the professional and the consumer service robotics domain benefit from recent technical innovations: Fundamental developments in the fields of digitization, cloud technologies, 5G and artificial intelligence, specifically in machine learning, are leading to a technology push in service robotics. The free Robot Operating System ROS continues to be extremely popular and enables a quick start to the development of service robot applications even with few own resources. New virtual market places enable ease of deployment and use, more standardization, and thus not less than the “democratization of robotics”, as could be observed on the important trade fairs like Hannover Messe, Automate in Detroit or automatica in Munich.

On the other side, we see a strong market pull, specifically for professional service robots. New business models at the same time significantly lower the financial barriers to decide for the use of a service robot in volatile markets. A prominent example is “Robot-as-a-service” which means that the user only pays for the tasks the service robot fulfilled successfully.

“World Robotics Service Robots” has established itself as the widely acknowledged reference publication in statistics, forecasts, market analysis, and profitability of robot investments. Robot suppliers, media, government bodies, financial analysts and technology scouts are among its readers. It specifically provides profiles of the numerous service robot manufacturers worldwide. The many hyperlinks pointing to online resources invite you to further investigate your topic of interest by looking into selected publications and company websites.

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In case you have any suggestions or further inquiries related to service robotics, please do not hesitate to contact us!

Best wishes,

Dr. Birgit Graf, Dr. Kai Pfeiffer