

## Foreword

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Dear Reader,

The service robotics market is in a strong state of flux both for manufacturing and everyday environments. In several domains – be it in the field of logistics and particularly e-commerce, in agriculture, or medical applications and here specifically in rehabilitation – service robots have been on the rise. The systems have also been receiving continued mainstream media coverage therefore bringing this new robotics area to a wider public audience. The growing interest in service robotics is partly due to the variety and number of new start-ups (aged less than six years) which account for some 25% of all robot companies. Furthermore, large companies are increasingly investing into robotics, often through the acquisition of the many originating start-ups.

Robotics in personal and domestic applications has experienced strong global growth with relatively few mass-market products: floor-cleaning robots, robo-mowers and robots for edutainment, increasingly referred to as multimedia robots. In addition, assistive robots for handicapped or elderly people were very successful. Future product visions point to domestic robots of higher sophistication, capability and value, such as assistive robots for supporting the elderly, for helping out with household chores and for entertainment.

Both the professional and the domestic service robotics field benefit from recent innovations: Fundamental developments in the fields of digitization and artificial intelligence, specifically in machine learning, will lead to a technology push in service robotics in the next years. On the other side, we see a strong market pull. Challenges such as personalized production, lack of skilled workers, demographic changes or sustainability require new solutions that help companies improving their competitiveness and innovative strength. Service robotics technologies can play a key role here. However, some closures of prominent companies within the last months showed that success is not automatic.

20 years ago, in the year 2000, service robots were assessed statistically for the first time through a joint publication by the International Federation of Robotics (IFR) and the United Nations Economic Commission for Europe (UN ECE, Geneva). Prior to this effort, a suitable classification scheme for the heterogeneous domain of service robots and a data collection scheme have been worked out and improved ever since, jointly with ISO-standardization efforts in robotics.

Today, the IFR World Robotics section on service robotics 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.

This spring, the former and long-term editor of the IFR World Robotics section on service robotics Martin Haegele moved on to a new professional challenge and we were happy to take over the responsibility for the yearbook's content. Both of us have been working in the field of service robotics for around 20 years and can therefore contribute with our profound and long-term knowledge and experience in domestic as well as professional service robots. We are confident that the World Robotics 2019 yearbook will once again offer an exhaustive overview on market data, application fields, and innovations. The yearbook again provides a detailed overview of the subject, specifically comprehensive profiles of the numerous service robot manufacturers worldwide. The yearbook again comes with many hyperlinks pointing to online resources and we invite the reader to investigate his topic of interest by looking into selected publications and company websites.

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

Best wishes,

Dr. Birgit Graf, Dr. Kai Pfeiffer