TQ

ROBOTICS

FUTURE **MARKETS.** DISCOVERED **TODAY.**

EVERYBODY'S HERO

FROM A TOUGH GUY TO A SOFTIE

HELPERS IN ANY SITUATION

NEW PLAYERS ARE GAINING GROUND

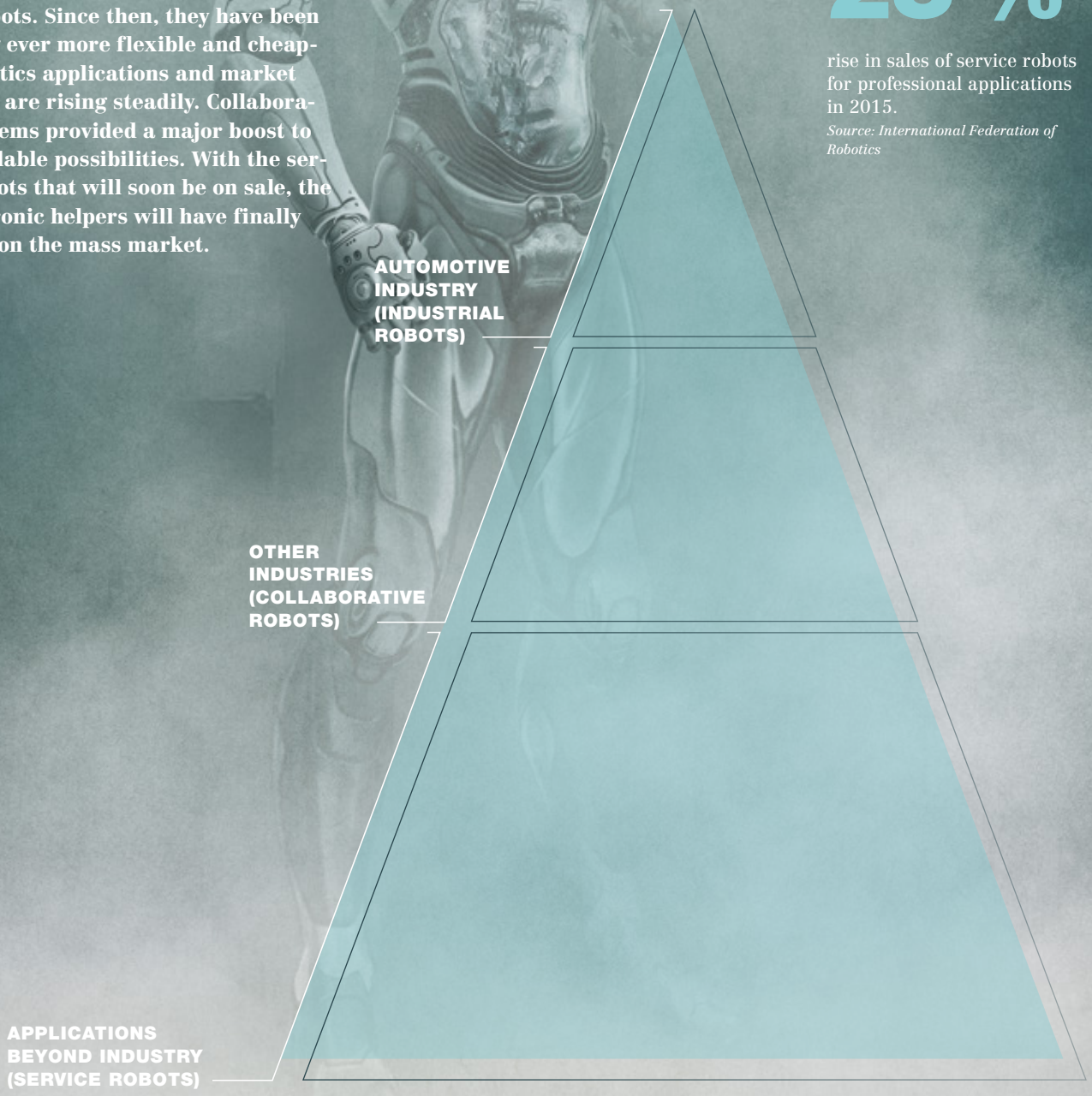
ONTO THE MASS MARKET

It started around 50 years ago with just a narrow range of applications for the first robots. Since then, they have been growing ever more flexible and cheaper. Robotics applications and market volumes are rising steadily. Collaborative systems provided a major boost to the available possibilities. With the service robots that will soon be on sale, the mechatronic helpers will have finally arrived on the mass market.

25 %

rise in sales of service robots for professional applications in 2015.

Source: International Federation of Robotics



BOOMING MARKET OFFERING NEW OPPORTUNITIES

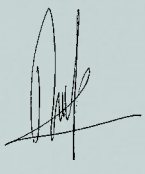
ALONGSIDE INDUSTRIAL ROBOTS, SERVICE ROBOTS ARE CONQUERING THE MARKET.

The robot market is in a period of change. As personal assistants, autonomous vehicles, surgical assistants or flying drones, robots are now also invading areas beyond their original industrial applications. According to the market research organisation Tractica, in 2016 for the first time more money was earned from non-industrial robots than robots working in factories.

That does not mean, however, that fewer industrial robots are being used. The International Federation of Robotics (IFR) forecasts global growth of at least 13 per cent a year on average through to 2019. By then, more than 1.4 million new industrial robots in total will have been installed in factories around the globe. Market analyst MarketsandMarkets forecasts that the industrial robot market will be worth 79.58 billion US dollars by 2022. According to IFR, the strongest driver of growth in the robotics sector is China, which is forecast to account for 40 per cent of global industrial robot sales alone by 2019.

Alongside industrial robots, service robots are conquering the market. According to IFR, their sales for professional applications such as in medicine, agriculture and logistics totalled 4.6 billion dollars in 2015. Further dynamic growth in demand is forecast for the period from 2016 to 2019. The cumulative value will rise to 23 billion dollars. In addition to the established market for professional service robots, the consumer segment – from vacuum cleaners to technical entertainment artistes – is now also growing steadily. According to IFR, sales of such personal-use service robots increased by 16 per cent in 2015, reaching a cumulative value of 22 billion dollars. An interesting question in relation to this comparatively new market segment is how the start-up scene will develop – given that it offers unique opportunities for innovative new businesses to conquer a market on which no major robot manufacturers are yet established.

Tractica predicts that the robotics industry in general – including autonomous vehicles and aircraft – is going to see a real boom, with global robot sales rising from 34.1 billion dollars in 2016 to 226.2 billion dollars by 2021 – representing an impressive 46 per cent average annual growth rate.



Slobodan Puljarevic
President, EBV Elektronik

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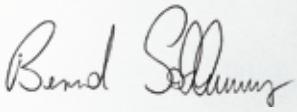
DEAR READER,

R2D2, Data, HAL 9000 – without the popular robot characters of our youth, the world of movies would have been much less exciting. For a long time they were indeed pure fiction. The first real robots installed in the 1970s were pretty inflexible machines which, for the safety of their environment, and above all of the people in it, were only allowed to operate behind guarding barriers. But now robots are about to move beyond those guards. Thanks to the enormous advances made in electronics, and especially in the field of high-performance microprocessors and in sensor technology, robots are getting continually better at sensing their surroundings. New software algorithms are increasingly imbuing robots with intelligence, and with the ability to learn autonomously. So now robots are able to work together with humans with no barriers between them, perform tasks independently in unknown surroundings, and even recognise the emotions of a human counterpart.

The new issue of The Quintessence demonstrates how far robotics has already progressed, and predicts how robots are going to be changing our lives in the near future. Robots are delivering parcels, working hand-in-hand with humans on assembly lines, assisting cruise ship tourists, and even performing surgical procedures entirely autonomously. So fears that robots will change the world of work dramatically are certainly not unjustified. Yet they might also imbue the world of work with a renewed humanity. The question of how far the relationship between humans and robots can go is one that Lars Lundström investigates in his internationally successful TV series “Real Humans”. He tells in our magazine how he got the idea for his show, and how he thinks humans and machines will interact in future.

All in all, the latest issue of The Quintessence provides an interesting and entertaining insight into another fascinating area of application for state-of-the-art electronics. The robots of our childhood will soon be real heros in our everyday lives! I very much hope you enjoy reading this issue. As always, I look forward to receiving your feedback at **bernd.schlemmer@ebv.com.**

Yours,



Bernd Schlemmer
Vice President Communications, EBV Elektronik

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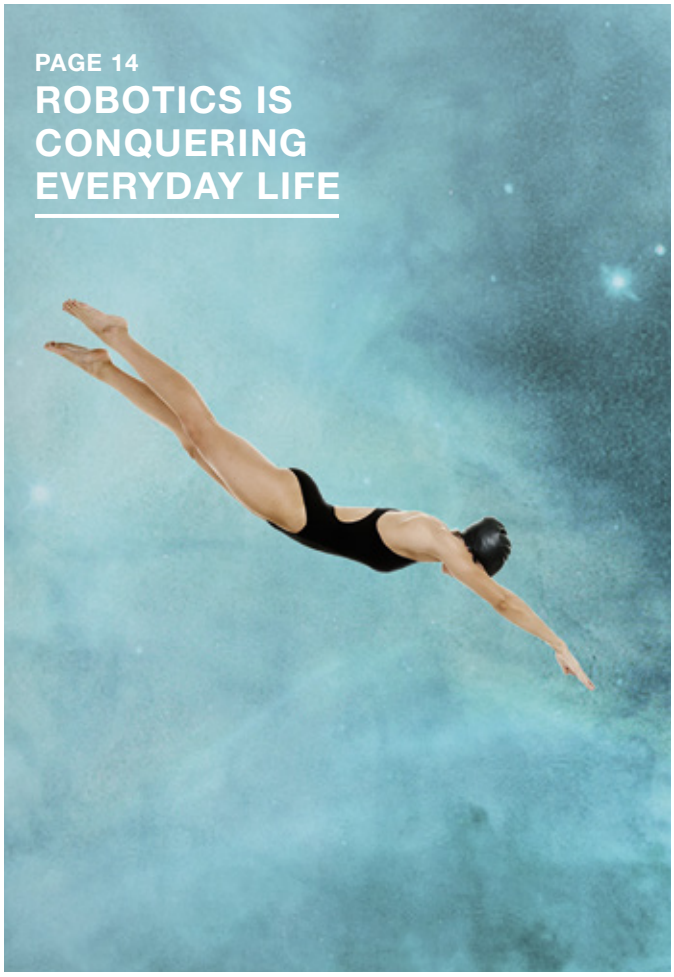
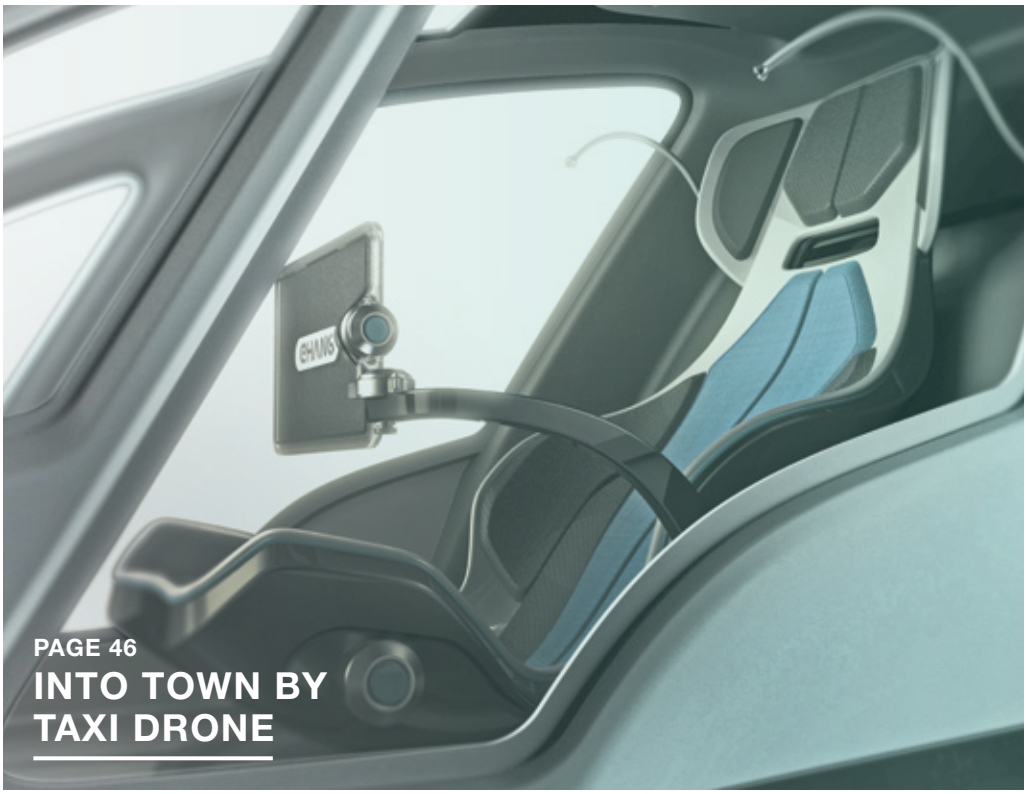


OVERVIEW

ROBOTS WILL AUTONOMOUSLY LEARN TO IMPROVE THEIR CAPABILITIES.

TECHNOLOGY



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