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## Interview: “Future 2050 – the era of sustainability and smart machines”

Gast-AutorIn / Guest Author



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*Dr. Ulrich Eberl (c) Siemens  
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Dr. Ulrich Eberl is one of the most renowned German-speaking scientific journalists and futurologists. He holds a PhD in biophysics from the Technical University of Munich and was Head of Global Communication for research and future trends for 20 years at Siemens.

### How does one become futurologist Dr. Eberl?

Ideally by acquiring a substantial body of knowledge in socio-economic trends, and by following the latest technical developments all the while analysing their links. The future doesn't just fall from the sky, it is made – every minute, by all of us. I have done a PhD in the fringe areas of physics, chemistry, and gene technology. This provides you with a very broad scientific understanding. And I experienced the requirements of the business sector in large companies, at Daimler and Siemens, where I was Head of Communication in Research and Innovation for 20 years and in charge of the futurology magazine “Pictures of the Future” until 2015. In 2016, I set up my own company so as to be able to do global and independent research on future issues.

### From your point of view, what are the most important influencing factors and the long-term mega trends?

Technical innovations are definitely only one of the factors that determine our future – and perhaps not even the most important one. Social trends are at least as important, for example the values of a society, the role of women, or the ageing population, as well as economic developments in finance or global trade. The demographic shift is one of the most important mega trends: the number of people who are above 65 years old will triple worldwide to 1.5 billion by 2050. In Central Europe, every eighth person will then be above 80 – which will bring enormous repercussions for the healthcare and pension system, and also for smart homes and autonomous driving. It is also crucial for the future of humanity that we learn to operate as sustainably as possible, i.e. without burdening the environment excessively.

### You forecast the doubling of resource and energy consumption. What role do renewable energy carriers play in this context?

*Dr. Ulrich Eberl & Robot  
Nao (c) Eberl*

Our raw material consumption could double by 2050 if we carry on like now. According to models by environmental experts we would be burdening Earth as if we had three of it: in terms of air pollution, greenhouse gases, the destruction of ecosystems, and many other factors. There would be more plastic waste in the seas than fish. The solution for a liveable world can only be more recycling and working in closed loop systems and to continue expanding renewable forms of energy in the energy sector. Today we burn the amount of oil, coal, and gas per year that was formed in one million years. We therefore burn our

most precious legacy. This has to stop. But to this end we do not only need solar, water, and biomass power plants, but also new grid systems, a kind of energy internet, and smart storage technologies.

### Digitisation is a big topic, as is the rise of artificial intelligence. What impact can we expect?

Smart machines with artificial intelligence are catching up with humans in many areas. They can speak, listen, recognise images, understand texts, and even write texts themselves. For example, computers wrote about a billion texts last year without a human hand interfering, such as sports news, share prices, or the weather. Doctors, lawyers, and financial experts already use machines that read technical literature for them, analyse databases, and give recommendations for diagnoses, trials, or investments. Or just think of smart speakers such as Amazon Echo: you can ask them factual questions or manage the AC settings. The crucial thing is the ability of such systems to learn like our brain – in this area, more has happened in the past five years than in the 50 previous ones. Today's smartphones have the same capacity as the best supercomputers in the mid-1990s, and this is by far not the end of the line: by 2040, the computing power will increase by a factor of 1000x.

### The digitisation has also led to an increase in the amount of available data. Can the network of computer intelligence also turn into a threat?

The more the systems are linked, the more doors hackers or saboteurs have to intrude. It will therefore be one of the most important tasks of the future to ensure the safety and reliability of

smart machines. At the same time, we can see significant risks for privacy and data protection. This includes the surveillance of people on the basis of facial recognition and real-time surveillance as well as the automated compilation of personal profiles on the basis of social media. Here, more filters, encryptions, and authentication procedures should be used, and data should only be processed in clearly demarcated spaces and for clearly defined purposes. A strict set of rules has to be established with respect to what machines are and are not allowed to do on their own. For example, they can never take essential decisions, be it in hospitals, police operations, or the lending operations of banks. Here, humans have to retain the role of ultimate decision-maker.

### Many traditional jobs are also under threat by the new technologies. What are the jobs that will be badly hit in particular?

Smart machines will undoubtedly change all jobs: many routine tasks in offices will be done faster and more efficiently by machines in the future. That does not mean that all these jobs will perish. Tomorrow, too, there will be doctors and financial advisors, because social contact to patients and clients cannot be adequately taken over by machines – even if chatbots and avatars will be improving their communication skills. In short, humans will need creativity, social competence, and the mastery of complex activities. Job training schemes will have to adjust to this situation as well.

### Are there any areas with new opportunities?

We will encounter smart machines everywhere, and we will need them: smart cars and smart homes as help for the ageing population, smart grids for sustainable systems of energy, smart finance for the finance industry, the smart factory – often referred to as industry 4.0 – for a competitive industrial sector, and smart cities for liveable cities. This results in a multitude of new business opportunities, whoever recognizes these first, will benefit the most.

### The world is becoming more and more heterogeneous. On the one hand, we have autonomously driving cars, on the other hand people have to live in slums and are fleeing their home countries. One could draw a gloomy picture for the future, where only the wealthy (nations) benefit from new technologies. Do you share this opinion?

Yes and no. Of course, you can imagine dystopic visions of the future, a gloomy world full of waste and conflict, as we have seen it in the new film Blade Runner 2049. But what path humanity is taking depends on the decisions that we are taking today and in the future. I am trying to be optimistic, but without solidarity and cooperation among people it will not work. Technology can help if we use it the right way. For example, think of solar and wind power, which provides the most remote areas with electricity. Or smartphones: even in poor regions, they open up new possibilities and access to the entire cosmos of knowledge that the internet holds; and also facilitates payments without cash or banks.

### What advice would you give us?

We are the future. Every person has particular abilities that we can build on. Be curious, and have fun learning throughout your life – and do not be afraid of a machine revolution! Even the smartest computers or robots will remain blinkered specialists in the foreseeable future, i.e. they will be able to perform certain tasks very well, but they will not develop any general form of intelligence, let alone emotional or social intelligence. We humans will be needed in tomorrow's world as well: as managing it, and thinking about and for it, planning, taking decisions. Resolving problems and conflicts creatively, ensuring quality and safety, and as the decisive partner for our customers and suppliers.

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#### More Information:

Among the books Dr. Ulrich Eberl has published are “**Zukunft 2050 – wie wir schon heute die Zukunft erfinden**“ (“Future 2050 – how we are inventing the future today”) (Beltz & Gelberg, Weinheim) and “**Smarte Maschinen – wie Künstliche Intelligenz unser Leben verändert**“ (“Smart machines – how artificial intelligence changes our lives”) (Hanser Verlag, München), which is based on several months' worth of research across the USA, Japan, and Europe. In it, he illustrates clearly and succinctly the developments in an area that hits the core of our self-image: our intelligence. [www.zukunft2050.wordpress.com](http://www.zukunft2050.wordpress.com).

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