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## Preface

You are looking at a very special book. It is not a new edition of my first book on Industrie 4.0. It not only expands upon the information on the phenomenon known both domestically as well as in several other countries as the fourth industrial revolution; it also examines an abundance of questions having less to do with technology than with the consequences of technological development for humans, society and, yes, even nature. In a certain sense, it is also a political book about the industry of the future. And it ventures a glance back at the history of the industrial revolution(s), because knowing where we have come from is the best way for us to understand where we might be heading.

It is also a special book because it is certainly unique in having an official Chinese organization such as Xinhuanet contribute Chap. 7, which illuminates the Industrie 4.0 initiative from a Chinese perspective, compares it to the program “Made in China 2025” and illustrates not only the current development status but also China’s strategic goals in pursuing that program. I would like to especially thank the CEO of Xinhuanet in Beijing, Tian Shubin, for his contribution. As is the case with the other authors’ chapters, you will find a great variety of opinions, perspectives and assessments with regard to the industry of the future which do not necessarily represent the opinion of the editor. However, taken together, they paint an insightful picture.

The title of this book, “The Internet of Things – Industrie 4.0 Unleashed” may seem rather flagrant, as if to say: Everything is turning Industrie 4.0 and everything will be fine!” Yet that would be a complete misunderstanding. True, the title is purposefully ambiguous, but the notion that the book has been generated as a marketing ploy is off the mark. On the contrary, it is precisely the boastful marketing slogans and comparable marketing events that are the object of critical observation. In the opinion of this editor, less pageantry would be better for everyone involved.

The first book on Industrie 4.0 which I edited was released in the German language in 2013, and in Chinese in 2014. This book, too, has been published in German and Chinese, and subsequently in English. Thus, the topic has truly been “unleashed” in every sense of the word, including breaking national boundaries.

The fourth industrial revolution, to which Industrie 4.0 refers, is seen around the world as the next step of industrialization. There are several similar initiatives in a number of countries, with an animated exchange of information between some, and even close cooperation between others. To be able to assess this global development and investigate its interconnections is one of the motives behind this book and its title.

Globalization, too, will play a new role in this technological transformation. When products all around the world are connected via the internet, when product data is generated, collected and processed on a global scale, new channels are created along which industry and business can communicate with one another. What is more, new services are evolving which can redefine the global role of individual suppliers. This change also means that companies can emerge internationally with ideas for new products and services that may pose a threat to established, long-standing local heroes once those new ideas start competing with the existing offerings.

Figuratively, Industrie 4.0 is “unleashed” because there are only very few sectors and areas of industry—if any—that are not affected. Digitalization has no borders, now encompassing all of industry. Much of what we are used to will be turned inside out, or, to be more precise, turned data-side out. We must understand this great change and accept the related challenges. This, too, is a focus of the book.

The topic has also been “unleashed” because industry now serves as one of the central players on the internet stage. Specifically, industrial products and associated services are becoming part of the global network, which extends even beyond the scope of long-since globalized trade and, by the way, will also drastically change it.

If you believe that Industrie 4.0 only concerns industry, you are seeing borders that do not exist; not only because almost everything that we use in daily life has been industrially developed and produced, but also because the digitalization of products and production has effects on areas of society and life which seem to have nothing at all to do with industry: health care and insurance, city administration and traffic, supply and demand—to name just a random few.

If, however, industrial development has such effects on virtually everything, then it seems logical that the environment, climate and the use of natural resources will also show effects. So, should we really view this topic as purely technical? Wouldn't it make more sense to influence at an early stage what shape it will take and what concrete effects should ideally result and not to wait around, only to set up borders in retrospect? So far, it has not proven practical to merely react to technical and technological innovations instead of taking part in their design. With the Internet of Things and Industrie 4.0, this would be downright dangerous: Development has picked up such a pace that even now it seems irresponsible just how late and how slowly we are getting into the discussion about its consequences.

Thus, it is completely justified to include the word “unleashed” in the title of this book. And its readers? Exactly who will read this book? To whom is it

directed? Are its readers also “unleashed,” uninhibited by borders (which, naturally, from the perspective of the editor and publisher, would be the best-case scenario, albeit a rarely achieved one)? Of course not.

Primarily, this book is intended for those playing the most active roles—for the people in charge of industry itself: management, product managers, leaders in research and development and technical directors. They all should become familiar with this topic inside and out, as they will need to deal with it in the coming years and perhaps decades; they should have a book on hand in which they can find serious proposals and answers to all important questions in this realm. At the very least, however, they should find in it the questions that will be raised and that they must inevitably ask themselves.

This book is also written for those who are involved with Industrie 4.0 out of political, professional, social or other reasons. They should be able to find a neutral place where no attempt is made to sell them anything else except for the offer to seriously focus on the topic.

In the realm of research and development as well as in education at public, private or business institutions, this book addresses readers on both sides: educators and researchers as well as learners and those involved in research projects. A good deal of written material already exists, but unfortunately still too little to be useful as learning material, regarding both factual and technical resources.

The various languages leave no doubt that this book also has an international readership in mind. Because the topic is being discussed around the world, there is a need for clarification of content on all continents. In China, interest is especially great for several reasons, which will be discussed in detail. This is not only evident in the impressive print run volume of the Chinese edition; it is also reflected in an examination of the initiatives in Germany and China, from two perspectives: the German and the Chinese point of view.

In the USA and other countries, interest levels are also high. Even though various approaches have been chosen, there is a great deal of consensus in the basic assessment regarding what will change and what needs to change in industry. This book will also contribute to that international debate.

While writing my own chapter and incorporating the contributions of authors from very different areas, I attached great importance to making the book easily accessible for all target groups mentioned: Even those readers who are not professionals in the area, who are neither engineers nor computer scientists nor production managers dealing with the digitalization of industry on a daily basis should understand what is on the experts' minds.

Quite simply, this book intends to meet relatively high expectations. Not only have the many authors helped this editor in aiming for those expectations with their contributions, without which several subareas could not have been covered. There are also a few important people whose assistance considerably contributed to the book's completion. As it turns out, in addition to freelance work as a technology analyst, technical author, speaker and consultant, producing the manuscript for such a tome is actually no easy task. My sister Jutta Sendler and my friends

Hartmut Streppel and Reiner Schönrock stood by my side consistently, reading, commenting and correcting. Their support was especially important to me regarding the question of whether the text was truly readable and comprehensible. I wish to express my heartfelt thanks for their efforts. I would also like to thank Anton Sebastian Huber who, although still working full-time as the CEO of Siemens Division Digital Factory until the end of May 2016, repeatedly helped me to connect the theoretical side with the necessary and possible elements of the practical side; not to mention that he also contributed a chapter of his own this time, too (Chap. 14).

What is the point of this book? To explain interconnections and clarify significant questions of industrial development, but also to spark interest and curiosity: Because Industrie 4.0 is far from being the purely technical topic it is thought to be in many circles. And it sheds light on many opportunities for industrial society which cannot be valued highly enough or followed intensively enough.

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Ulrich Sendler

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