The IoT as a growth driver

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The Internet of Things makes it possible: intelligent, everyday products will simplify our life. New growth opportunities are emerging for the consumer goods sector.

Tools, game consoles, kitchen appliances—many of the devices we use for work or pleasure already communicate with each other via the Internet. But the Internet of Things (IoT) has only just begun. According to a McKinsey market analysis, around €23 billion will be generated in Germany in 2020 with the intelligent networking of machines and devices. In 2015, annual IoT sales in Germany were still under €10 billion, meaning the potential will more than double within five years. The most important fields of application are the digitalization of production (Industry 4.0) with a potential of just under €9 billion and networked vehicles at around €4 billion.

But even the networked home promises growth. The United States is a prime example. Here, the number of smart homes increased from 17 million in 2015 to an estimated 29 million in 2017. The merging of the virtual and the real world should make life easier for people, save time and money, and ensure more security.

More and more everyday objects which to date have relied on manual control are expected to become "smart" in the future. Estimates from McKinsey expect that by 2020 consumers in Western Europe will spend more than €12 billion annually on smart devices and applications and thus on the Consumer IoT.

The Consumer Electronics Show in Las Vegas held at the start of the year once again showcased numerous IoT innovations ranging from the intelligent hairbrush that draws conclusions on the condition of the hair from brush noises, right up to the athletic shirt that measures the heart rate, records routes jogged with the built-in GPS, and transmits the data to the associated app. Just a gadget? Mere niche products? Maybe. But one thing is already clear: in the years to come, networking is going to gain more momentum with drastic consequences for the entire consumer industry.

Why the consumer IoT is attractive for manufacturers

The Internet of Things has the potential to fundamentally change business models and value chains in companies. Over the long term, it is no longer going to be just about intelligent fridges or fitness armbands; practically every product can be connected in an economical way with the Internet. Why not, for instance, equip a school backpack with an IoT sensor that measures location (via GPS) and movement (via an acceleration sensor)? This

way, parents can track in real time where their child is and where he/she is going. The sensor would also signal falls and other accidents. Technically speaking, this kind of product has been feasible for a long time; the costs for such a sensor are around €10.

Consumer goods companies have no reason to fear the changes on the horizon. On the contrary, the Internet of Things offers them immense opportunities (exhibit):

Deepen customer understanding

Manufacturers of consumer goods usually have little direct contact with customers, apart from user involvement in product development (embedded customer) and product tests. After the sale, if at all, manufacturers often learn only through customer service how their product stands up in daily life.

What are the most common complaints or questions from customers? Which feature is used most? The situation is different with smart products. Here, manufacturers are moving closer to the users, are maintaining contact throughout the entire product life cycle, and are

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Exhibit

There are three ways consumer goods companies can profit from smart products.
Example: networked school backpack

Deepen customer understanding	Generate additional sales	Boost customer loyalty
How? • How often is the backpack set down and picked up? • What movement patterns can be identified (running, walking, sitting)? **When?** • Is it worn only on school days or also during the holidays? • How is it used during the day? • How long does it take to get to school?	**Features available at an additional charge** • Alarm feature when child veers off the path to school—one-time charge for use **Subscription model** • Automatic opening of the front door can be booked separately and monthly after the sale	**Engaging** • Maintain regular contact with customers via app **Exploring** • Determine and analyze customer preferences **Retaining** • Offer new product features via software updates

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collecting application data on an ongoing basis. How long is the school backpack worn each day? How often is it put down and picked up? The needs of users can be understood and met much better on the basis of the information gathered. But in return, manufacturers have to invest considerably more in the rapport with the end customers. And, ultimately, their greater proximity to the consumers will also fundamentally change their relation to retail trade.

Generate additional sales
Smart products create more value because manufacturers can generate recurring sales beyond the one-time selling price. One feature for the intelligent school backpack, which is available at an additional charge, is an alarm feature. If the child unexpectedly starts moving more than one kilometer away from the kindergarten or school, the parents are informed immediately. There is a €5 charge every time the alarm goes off. Other features can be added monthly, such as having the sensor automatically open the front door when the child comes home.

Boost customer loyalty
Successful manufacturers manage to establish an emotional bond between the customer and the product. This boosts customer loyalty and the recommendation rate. Networked products provide many ways to retain customers: updates allow features to be renewed regularly or expanded by additional

ones making the entire customer journey a special experience.

So, the advantages for manufacturers and consumers are immense. Only companies that understand what the market wants and what it doesn't want will enjoy long-term success with the consumer IoT.

The hurdles
Right now, many customers are still skeptical about the Internet of Things. There are a number of reasons why the consumer IoT has some catching up to do compared to other segments. The main reason is that many of the products offered to date offer no real added value for the majority of consumers. Even though manufacturers are tripping over themselves to network everything under the sun, they are launching some questionable products like the sock gadget that recognizes if you fall asleep in front of the TV and stops the show by way of a signal. Products that solve more pressing customer problems are more likely to be a success.

Many consumers are also hesitant to buy smart devices because they are worried that in doing so they will limit their choices. Today every device has its own specific applications, which don't run on other devices. A fitness tracker only works with the smartphone app of the manufacturer, and the smart light bulb usually cannot be connected with the intelligent socket of another manufacturer.

Here, a consistent separation of hardware and software would significantly improve market conditions. However, this would presuppose industry-wide partnerships and a consistent implementation of technical standards.

A third reason for the ongoing skepticism is that many important questions on data privacy and data security remain unanswered in the eyes of the customers. What is going to happen with my data? Where is it going to be stored? Who does the data belong to? Who has access to it? What is the company doing to prevent access from unauthorized third parties? And it is not just the personal privacy of customers that is at risk. Security breaches can also lead to smart devices being seized and used for digital attacks.

What companies should do now

While the consumer IoT promises attractive growth potential, many traditional consumer goods and brand name manufacturers lack the know-how and necessary capabilities to develop a convincing IoT product and to market it quickly. Four success factors have emerged in practice:

Establish a network of partners

Implementing IoT products is demanding and in terms of technology sometimes very complex. Without a closed system of partners, the task is hardly manageable (see sidebar, "Without partners nothing happens"). The partners can be technology or even content partners who deliver corresponding data and contents. Digital pioneers like Facebook, Amazon, or Google have built up entire ecosystems around their platforms with a pool of hundreds of thousands of specialized developers. For its Android ecosystem, Google benefits from 5.9 million mobile developers who target Android, many more than the 25,000 developers Google has in total internally across all their platforms and products, not just Android. Even in traditional industries these kinds of ecosystems are being established. One example for this is the map service, HERE, which a consortium consisting of three German automobile manufacturers bought as a joint asset en route to autonomous driving.

Invest in internal abilities

As important as partners are, manufacturers of consumer goods will not be able to avoid setting up their own software and big data capabilities—and far beyond the existing levels at that. They should resolutely follow their goal of transforming themselves into a technology company. In the process, digital capabilities should be set up not just in individual divisions. The whole organization has to understand what the Internet of Things is capable of today and which work methods and capabilities are necessary to use it effectively.

Start focused and learn as you go

Digital networking should not necessarily be used for the most lucrative product in the portfolio, but, rather, for a niche product, that is ideally geared to technology buffs but also to a fault-tolerant target group. Nevertheless, the goal has to be to thrill the customers with a really revolutionary product. By building on the first customers' experiences, more and more products can be equipped with IoT applications.

Develop innovations dynamically

Cooperation is the key characteristic of a dynamic operating model. Cross-functional teams which involve external partners, suppliers, and, above all, customers develop products and services which meet the

Sidebar: "Without partners nothing happens"

The Internet of Things is creating an optimistic environment. McKinsey spoke with Moritz Diekmann, Managing Director of Telefónica Germany NEXT, which was founded in 2016. The subsidiary of the German Telefónica Group built the platform Geeny, which assists consumer goods companies in developing IoT solutions and making them market-ready.

McKinsey: Mr. Diekmann, what exactly do you offer with Geeny?

Diekmann: We help companies make their products and services smarter. In doing so, we rely on an extensive ecosystem of partners which includes system integrators, design agencies, domain experts, hardware specialists, start-ups, connectivity experts, and business strategists. We also rely on our technical platform. Geeny functions as a software as a service from the cloud and offers all the necessary building blocks to implement consumer IoT solutions quickly and to introduce them to the market.

One example is value-added services with which end uses can be built. While we take care of the complicated technical components of digital solutions, manufacturers concentrate on what they do best which is marketing ideal offers in established or new sales channels.

McKinsey: Smart devices are not without controversy. What role does the debate on data protection play?

Diekmann: Data protectionists see it as problematic that more and more highly sensitive data is "traveling" on servers around the world and that the generators don't have access to it. A loss of control really worries people. Other people put their personal information unreservedly on the web. The companies have to do a balancing act between collecting data and protecting data. The Geeny platform meets the needs of consumers to make their own decisions about their data and the application possibilities. Do I want to share the data from my fitness armband with my friends or doctor? Should other family members also be able to use my armband with their own account? We offer solutions that give customers control over the use of their data under the most stringent data protection requirements.

McKinsey: Right now, we can only estimate just how big the actual potential of networked devices will be. What is your take on the future of the consumer IoT?

Diekmann: I expect that there will be a huge number of networked devices in just a few years. "Smart" consumer goods companies will tap new segments. Think, for instance, of intelligent skis where sensor technology installed in the bindings constantly measures and analyzes behavior. Networked devices also give companies new insight into the behavior and needs of customers which, of course, can also be used to further develop "analog" products. In addition, new cross-selling and upselling possibilities arise. A pet food manufacturer can, for instance, offer a health tracker for dogs. The related app analyzes the animal's movement, gives tips on healthy nutrition, and recommends products. And last but not least, "smart" companies will experience a tremendous image boost.

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In these events, which originate from the IT sector, employees sit down together in a room to advance new ideas in time-limited sessions or to tweak unclear product ideas by building prototypes. Part of dynamic product development involves having the courage to take risks. Employees need to know that it is ok for ideas to fail, that it is important to try out new things and when successful to consistently push on. And by the way, this applies not only to development, but also to all divisions. In short, when it comes to the production of traditional brand name items, more Silicon Valley is needed in the future.

market demands as quickly as the digital world requires. In the process, innovative approaches like hackathons should be used.

The Internet of Things will bring lasting changes to the consumer goods industry in the years to come. Manufacturers who focus on the topic will have advantages over competitors even over those who are entering the market from other segments. ◆

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