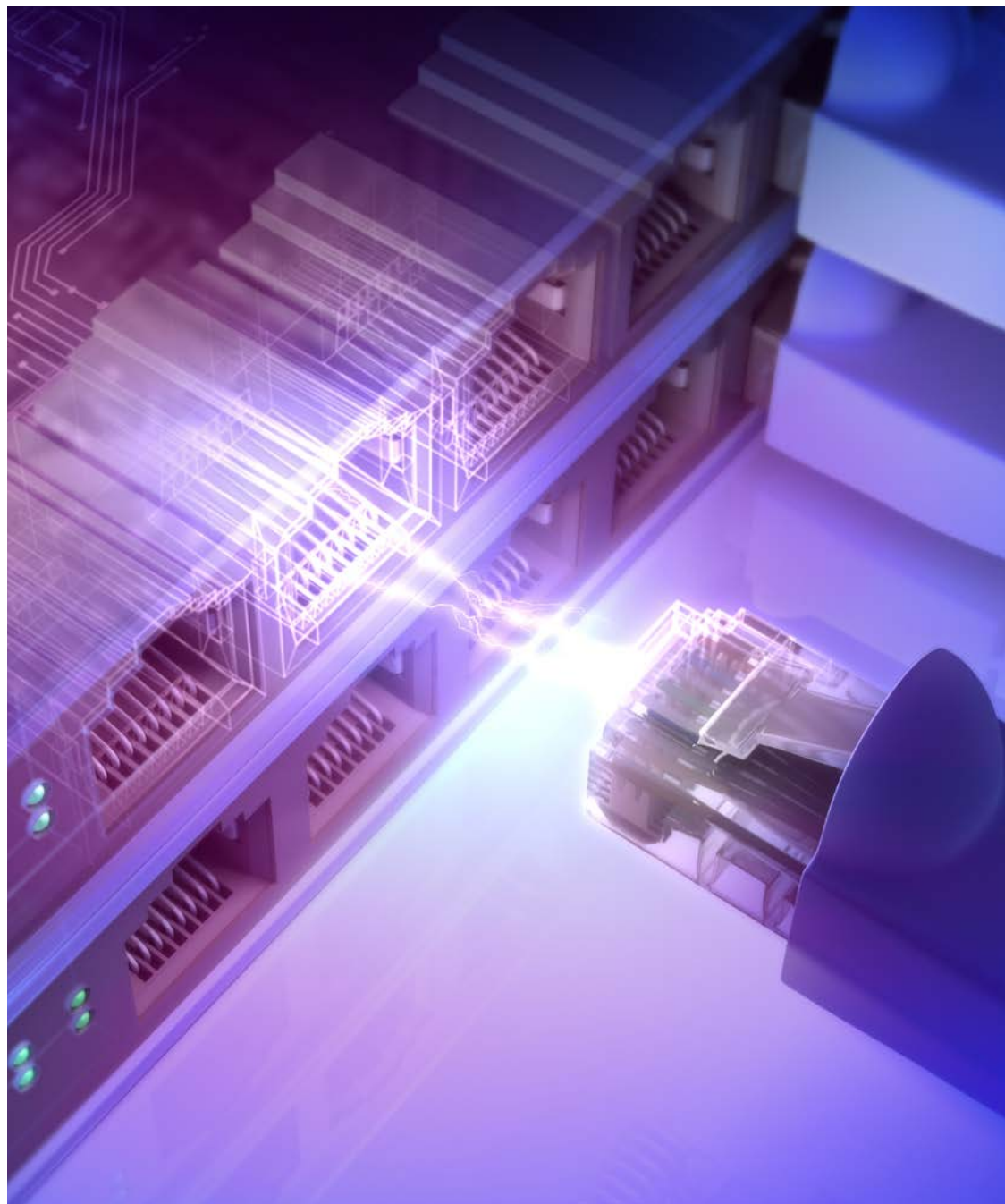


Insurers need to plug into the Internet of Things – or risk falling behind

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Insurers need to plug into the Internet of Things – or risk falling behind

The Internet of Things (IoT) has been discussed as a promising concept and potential game changer ever since its introduction in 1999 and, for quite some time now, there have been more “things” connected to the Internet than humans.¹ However, it is only now that decision makers are taking real actions about IoT (Text box 1) – and rightly so, since the technical requirements and enablers are now finally in place.

Text box 1

How we define IoT

We define IoT as sensors and actuators connected by networks to computing systems.² These systems can monitor or manage the health and actions of connected objects and machines. Connected sensors can also monitor the natural world, people, and animals.

IoT is changing the way in which consumers and companies exchange information and provides the basis for (IoT-enabled) connected ecosystems. Often these interactions do not require human intervention and decision making. Since actions and functions can be monitored continuously, data can be conveyed in real time, and responses can happen almost immediately, IoT makes it possible to improve existing business models, develop completely new business models, and reduce costs in several industries.

The number of connected devices is increasing exponentially, and three critical enablers above all are kickstarting IoT right now: the number of sensors shipped in manufacturing increased from 4.2 billion in 2012 to 23.6 billion in 2014; there has been a thousandfold increase in computing power/mm² over the last ten years; and mobile data rates have increased by a factor of 100 since 2002 (Exhibit 1).

As a consequence, there is a whole new world of business models emerging with a wide range of players being part of this new era. Not only for well-known IT players and newly emerging start-ups, but also and importantly for insurance companies, car manufacturers, and industrial conglomerates, IoT can be expected to drastically change the shape of customer interaction. Change this broad and on such a large scale could threaten whole business models and at the same time open up completely new opportunities. Incumbents could use IoT to enhance their B2C and B2B business models. The first pilots of this have already been conducted and turned out to be rather successful. Wind turbine maintenance is one space where IoT has been implemented, and it is already improving the repair speed and reliability of turbines. Furthermore, in agriculture, first movers, such as US-based company Trimble, are starting to employ IoT-based solutions to boost the efficiency of their operations as well.

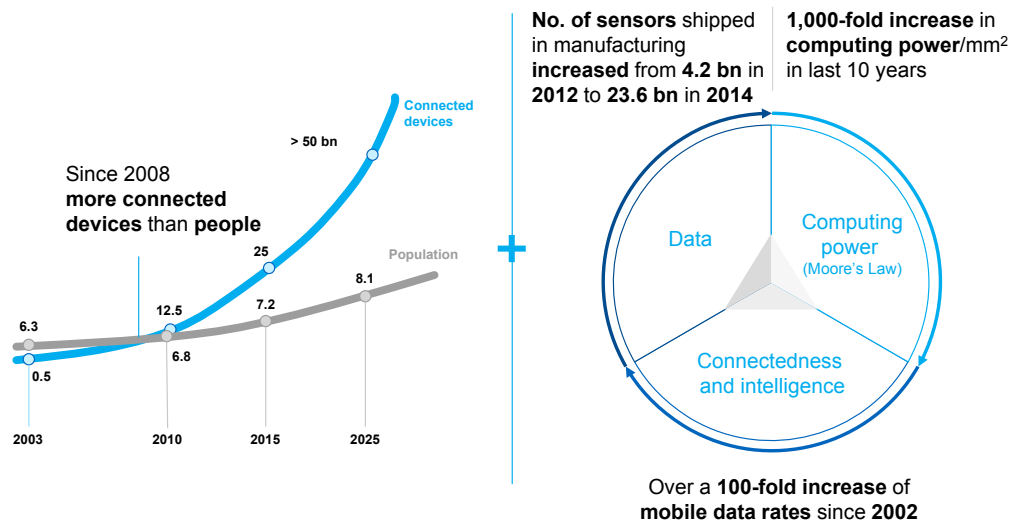
¹ In 1999, the Auto-ID Center at the Massachusetts Institute of Technology (MIT) started to design and propagate a cross-company RFID infrastructure and introduced the term “Internet of Things.” In the same year, Neil Gershenfeld from the MIT Media Lab wrote in his popular book “When Things Start to Think,” that “in retrospect it looks like the rapid growth of the World Wide Web may have been just the trigger charge that is now setting off the real explosion, as things start to use the Net.”

² “The Internet of Things,” McKinsey Quarterly 2010, Number 2, Michael Chui, Markus Löffler, and Roger Roberts

Exhibit 1

IoT as a concept has been discussed for over a decade, but recent tech innovations are enabling real action

An increasing number of connected devices ... and 3 critical enablers are "kickstarting" IoT



SOURCE: Statistisches Bundesamt; Deutsche Bundesbank; Prognos; Digital Society Study; Thomas Nipperdey; McKinsey

The overall annual economic impact of IoT – as estimated by the McKinsey Global Institute – has the potential of reaching USD 4 to 11 trillion by 2025. The first signs of this big shift can already be seen in several industries. In retail, for example, brick-and-mortar stores making use of beacons that link physical goods to computing systems collectively saw an increase in sales from USD 4.1 billion in 2015 to an expected USD 44.4 billion in 2016.

It is also believed that IoT will be a game changer in the insurance industry.³ Yet, although it is widely believed that the impact will be major, it is still not entirely clear – due to IoT's complexity, which is not simply a new business or contract model – what exactly the impact will be and whether the enormous opportunities for capturing new business will outweigh the threats to existing revenues. This may explain why the insurance industry – a sector that is traditionally slow to adopt new digital approaches but has still managed to prevail – may feel instinctively tempted to maintain this pace rather than take bolder, more urgent action on IoT.

Nevertheless, accelerating their approach to IoT is exactly what insurers should consider given the speed and scope of the shift that has already taken place and can be expected to continue. An example of the fast pace of change is the connected-car ecosystem, arguably the most mature of the emerging and insurance-relevant new ecosystems (Text box 2).

³ The Internet of Things and the future of manufacturing, McKinsey on Business Technology, Number 30, June 2013, Markus Löffler and Andreas Tschiesner

Text box 2

The fast and disruptive rise of the connected-car ecosystem⁴

When it comes to connected cars, what was once considered to be the stuff of science fiction is now reality. Many cars are equipped with sophisticated sensors that can monitor not only miles driven, location, and routes used but also a person's driving behavior as well as vehicle data such as oil temperature, brake wear, and tire pressure. This technology is enabling a host of new applications that are meeting customer demand for convenience, safety, and security features; advanced vehicle maintenance; and better fleet management.

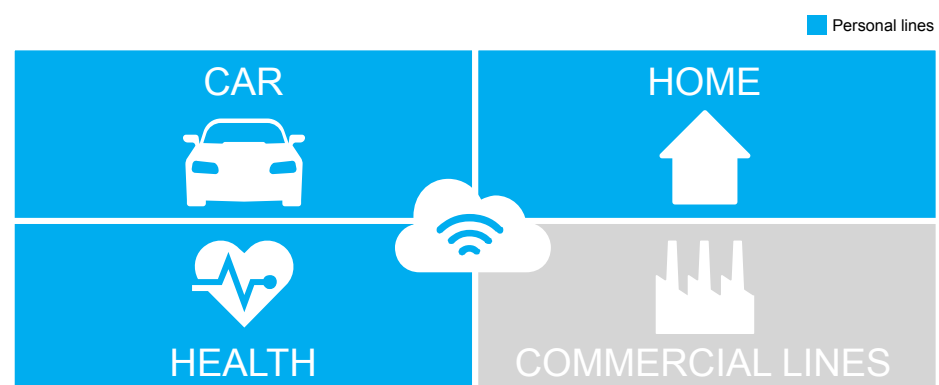
As the number of applications grows, a strong ecosystem is forming around the connected car, involving a range of participants – among them automakers, insurance companies, telecommunications firms, sensor and chip manufacturers, and digital-platform giants like Uber, as well as academic institutions and standards-making bodies. The rise of this ecosystem is changing the competitive landscape for all participants, especially for companies in the insurance industry.

Where and how IoT will impact insurers

For insurers, we see at present four main playing fields of IoT: connected car, connected health, and connected home in personal lines and IoT in commercial lines (Exhibit 2).

Exhibit 2

For insurers, we have identified 4 relevant playing fields – so-called ecosystems – where they can build a value proposition



SOURCE: MGI; McKinsey

Although each of these ecosystems is already served by a number of players from selected industries, the different playing fields are at varying maturity levels (e.g., with regard to market dynamics and regulations) and still evolving. Due to this, insurers are well advised to make an honest assessment of their capabilities and readiness before starting to plug into IoT (Text box 3).

⁴ For more details, see McKinsey's recently published article on connected car: "Shifting gears: Insurers adjust for connected-car ecosystems"

Text box 3

Challenging questions for insurers considering an IoT move

Before beginning the process of exploiting the opportunities in the emerging IoT ecosystems, insurers should answer a number of pivotal questions related to their IoT readiness and capabilities:

- **Can insurance companies derive the necessary insights that make it possible to price risk adequately?** Only players that manage to accumulate sufficiently large amounts of sensor data will be in a position to derive the type of insights that will help them remain relevant players in a new environment. For example, so far, most of the systems that assess driving behavior are of limited value because they have neither sufficient geographic coverage nor a link to data on actual claims frequency or severity. The challenge then is to convert this data set into insights and business traction leveraging new analytics approaches.

- **What does it take to become a relevant player in this market?** Due to the critical role of scale, insurers need to address the question of whether they can provide coverage across countries and are able to establish a competitive analytics platform to become a valuable partner for other players in the ecosystem (e.g., to manage telematics data and selected services for OEMs, telcos, or digital players). These other players provide additional data, and only players that are able to connect their own data with insights from others in the ecosystem will get the full benefit from the IoT world. Furthermore, insurers have to find the right approach to leverage the economies of scale of these players in other areas that are not core to insurers.

In the home and health ecosystems, where most insurers are still much less experienced than in the connected car ecosystem, the environment is even more in flux – primarily due to three realities. First, health sensors are often not very reliable data sources as most people are not consistent in collecting the data/using the devices. Second, by comparison to the car ecosystem, the quality and amount of collected data in health and home is still limited and partial. Third, there are multiple platforms in place – in home, for example, with many different systems for heating and for burglary among others –, which need to be integrated first before meaningful insights can be derived.

- **What is the individual insurer's starting point/readiness level for embarking on IoT?** Understanding where they stand is important, and asking themselves the following questions will help insurers make informed decisions regarding next steps:

- Do I have a plan for how to collect data in the connected home and connected health ecosystem, and do I have the analytics capabilities to derive insights?
- Have I developed a perspective on whether and how my IoT-based policy offering can be relevant to clients?
- Do I have a plan for monitoring the evolution of devices and their integration?

Despite significant differences between these ecosystems, the fundamental shifts that each requires are common. In particular, we see three major disruptions that IoT can be expected to cause for insurers across all four playing fields. Importantly, the following forecasts should be interpreted as a projection of current trends and assumptions of probable scenarios across these trends based on our current understanding – and are thus not deterministic in nature.

Challenging changes in insured risks

Perhaps the most fundamental effect of IoT on the insurance industry is that the insured risks themselves are significantly changing. First, this is because uncertainty will be strongly reduced due to the fact that, for example, connected cars have fewer accidents and breakdowns, predictive maintenance reduces business interruptions, and wearables help ensure a healthier lifestyle. Second, this trend is further aggravated by significant changes in risk distributions and actuarial models (e.g., due to an increasing number of long-tail risks). This leads to a demutualization and a focus on predicting and managing individual risks rather than communities. As a consequence, premiums can be expected to come noticeably under pressure, decreasing what have traditionally been rather stable revenue streams.

The emergence of “coopetition”

In the wake of new digital technologies such as IoT and Big Data, the core pillars of the traditional insurance business are going to be eroded – primarily for two reasons:

- Players outside of the insurance industry are building up very competitive (if not superior) risk-related data/analytics capabilities.
- Digital players from outside of the industry frequently become gatekeepers to insurance customers, as the relationship with these customers is transported in the digital sphere, where the digital players dominate and benefit from multiple touch points with these customers.

To stay in touch with their customers and – ultimately – in business, insurers need to be “coopetive,” forming partnerships with digital players and joining and/or setting up connected ecosystems in insurance-relevant playing fields.

New opportunities for traditional insurers

IoT provides traditional insurers with big opportunities to evolve and expand their business models. It facilitates the evolution of the existing insurance business models by

- Creating opportunities for better and more frequent customer interactions (e.g., through wearables)
- Advancing risk assessment (e.g., by considering safety measures like connected-home solutions)
- Enhancing pricing and risk accumulation control
- Broadening the insurance offering (e.g., cyber risks)

- Driving efficiency through sensor-based automation (e.g., trigger-based claims payments, apps).

In addition, IoT facilitates the expansion of insurers into adjacent and completely new areas of business – primarily by

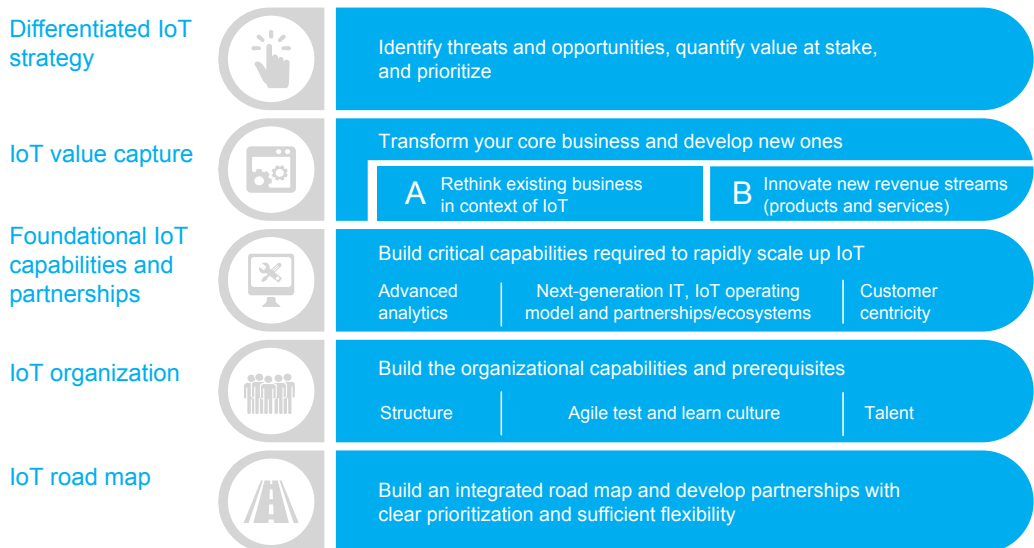
- Offering innovative hybrid solutions in insurance/services offerings (also together with partners from other industries, e.g., predictive maintenance, smart parking, preventive care)
- Enhancing risk engineering (e.g., industry-specific risk-advisory leveraging of insights based on sensor data)
- Offering proprietary data and analytics solutions to third parties (e.g., data market-places).

What insurers need to do now

To successfully plug into IoT – i.e., to exploit the opportunities at hand and to counterbalance the (foreseeable) IoT disruptions –, insurers need to take various actions along five key dimensions (Exhibit 3; Text box 4).

Exhibit 3

McKinsey's "Global IoT in Insurance" framework is built on 5 fundamental assets



SOURCE: McKinsey

1. Develop a differentiated IoT strategy. Each insurer needs to identify its individual threats and opportunities, quantify the overall value at stake, and prioritize the playing fields in which it wants to operate – IoT in personal lines (connected car, connected health, and connected

home) or in commercial lines. After that, a detailed strategy for the relevant playing field needs to be drafted taking into consideration the insurer's current market positioning, its capabilities at hand, and its potential to form partnerships.

2. Capture IoT value (in the core and adjacent business). To this end, each insurer needs to find answers for itself on how to transform and defend its core business in IoT and then identify any new business opportunities – ideas for new products and, in particular, new services – that might be made possible by IoT. In a final step, the ideas for potential IoT businesses need to be prioritized, and go-to-market strategies for the most promising models have to be developed. Winning in IoT will be a platform play, and insurance companies need to decide how they will shape and participate in the emerging cross-industry platforms.

3. Build foundational IoT capabilities and develop partnerships. In doing so, insurers should first develop a partnering strategy and clearly define strategic control points (e.g., data ownership). Then, they can identify and evaluate potential partners, establish a strong partnership network, and create ecosystems built on this foundation. Having achieved these, insurers are then advised to develop a “joint business building” attitude with their partners not only to ensure a long-term IoT pipeline but also for setting up the right technology stack for being IoT-ready and deciding on whether to invest in open or proprietary technologies.

4. Set up and refine the organizational structure for IoT. This encompasses combining existing skills with new capabilities in cross-functional teams, establishing clear responsibilities and acquiring the necessary talent, as well as implementing the underlying working methods (e.g., an agile test-and-learn culture).

Text box 4

McKinsey insights into how insurers can successfully adapt to connected-car ecosystems

A recent McKinsey study of global insurance companies suggests that some insurers are already unlocking new sources of profit from the connected-car ecosystem. As a result, they are finding new ways to deliver innovative products and services and enhance customers' experiences, and they are forging a path for long-term growth. To provide insurers with an interest in the connected-car ecosystem with pragmatic recommendations as to how they should adapt their technology infrastructures, architectures, and strategies, here is a short overview of what actions some insurers have taken with regard to the action plan's five key dimensions:

IoT strategy. One insurer identified emerging threats and opportunities before adapting their strategies accordingly. This led to the conclusion that, ultimately, the new technology would lead to reduced claims and therefore – over time – to a premium reduction, while new attackers like Samsung enter the market.⁵ This insurer also acknowledged the network effects that are taking hold in their industry and decided to invest in new technologies and IT management strategies – on their own and in partnership with other ecosystem participants.

⁵ <http://www.forbes.com/sites/ellenhuet/2015/07/01/new-laws-push-uber-and-lyft-to-bump-up-insurance-coverage-but-a-collision-gap-remains/#3d79e74b107c>

IoT value capture. Another insurer looked for ways to adjust its traditional product offerings and found that there was a host of new applications for capturing additional value, such as meeting customer demand for convenience, safety, and security features (e.g., through providing innovative services); advanced vehicle maintenance; and better fleet management.

IoT capabilities and partnerships. Recognizing the threefold necessity of a strong IT foundation, capabilities in providing services, and a profound partnership strategy, one insurer made substantial, enabling technology investments. They incorporated mobile sensors and analytics into their products and services, enlarged the customer data pool, digitized customer interfaces, and built up internal digital know-how and capabilities. Furthermore, they partnered with OEMs, IT service providers, and other players along the connected-car value chain.

Organizational structure for IoT. Knowing well how much depends on having the organizational foundation in place, another IoT-oriented insurer established cross-functional teams, where actuaries, data scientists, business developers, IT experts, and architects sit in the same room, building new solutions through constructive and iterative discussions rather than in lengthy confrontational alignment processes.

IoT road map. Realizing that early movers who are flexible enough to adjust to different developments have the best chances of coming out as winners in the race for the connected-car ecosystem, an insurer drew a comprehensive connected car-road map, which factored in complexity and uncertainty by developing different scenarios.

5. Outline an IoT road map, start building partnerships, and pilot new offerings. Acting in this key dimension ideally starts with drawing up an integrated road map with clear prioritization and sufficient flexibility. In a second step, insurers should then build first partnerships by leveraging a wide variety of IoT players, e.g., large players such as IT vendors and smaller players such as start-ups, before they pilot IoT offerings in the new test-and-learn culture. They would also be well served to continuously monitor the progress achieved in leveraging the defined and targeted PMO structure.

With this suggested action plan at hand, it is important to recognize the complexity of and uncertainty around IoT, where a lot of developments are still in flux. This level of variability means that success in IoT will not be the result of a single strategy but of a targeted and insurer-specific approach.



In five to ten years, the traditional (and still current) business models of the insurance industry can be expected to have greatly changed. Players' models will either have become IoT focused or will decline. The former will constitute a paradigm shift demanding for a revision of the whole business model and involving complexities on several dimensions. The growing imperative for partnerships, services, and technological complexity is unprecedented as are the vast IT requirements.

There is also a strong demand for innovative working methods and organizational flexibility. This will lead to a massive redistribution of market share and surplus not only within the insurance industry but also across the respective ecosystems.

To optimally prepare for the IoT challenges ahead and secure the best opportunities for capturing benefits from this, (traditional) insurers are strongly recommended to immediately start anticipating and estimating the expected range of IoT's impact on their business – and to plan the transformation accordingly. For those who have the foresight, courage, and will to shape the future of the insurance industry in a world of IoT, there are great opportunities for growth and value creation.

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