

# Cyber and beyond

*Insurance and risk in a digitally interconnected world*

In association with  
 **Swiss Re**

IBM Institute for Business Value

## Executive Report

Insurance

### How IBM can help

Maturing markets, tight capital, increasing risk and technologically sophisticated customers are just some of the pressures the insurance industry faces today. As a result, insurers will have to work faster, more efficiently and, above all, smarter. Those that do will thrive; those that don't will fail. Insurers need to be more nimble, innovative and connected with their customers. The IBM Global Insurance team has reinvented itself to provide solutions to help clients meet the demands of today's insurance business. From enhanced customer service to greater efficiency in the back office and improved risk management, there's a smarter solution for you. For more information about IBM Insurance solutions, visit [ibm.com/insurance](http://ibm.com/insurance).

---

## A new wave of risks

*When everyone and everything becomes interconnected, new types of risks emerge, and old ones are swept out of focus. “Cyber risk” is the next big thing that keeps business leaders up at night. What can companies do to combat these risks, and how can insurers help them? Based on two surveys of 800 insurers and 1,000 other companies, our latest insurance study shows that, to successfully navigate the risks of the digitally interconnected environment, insurers and their clients need to prepare their organizations well, build the right solutions and collaborate extensively.*

---

## Executive Summary

For better or worse, digital technologies are radically changing almost every aspect of our lives. As the world becomes “smaller” — increasingly interconnected, instrumented and intelligent — virtually every interaction is affected, including the way people talk to each other and how they communicate to the organizations with which they do business. Organizations interact differently with their industries, partners, suppliers and customers. Business models are affected, and entire industries are transforming.

At the core of digital disruption is the ability to connect everyone to everyone and everything to everything, exchanging data and information in vast quantities and at tremendous speeds. This data exchange has enormous advantages, but comes at a price: data can be lost, stolen or tampered with, and the entry points of digital interconnectedness can be used and misused by third parties to wreak havoc on any person or organization that uses digital technologies for transactions.

The Insurance Services Office, an advisory and rating organization for the property and casualty industry, lists “cybersecurity” as the top emerging business issue today, ahead of the Internet of Things (IoT), drones and social media.<sup>1</sup> All of these are facets of digital interconnectedness.

How can and do companies assess and prepare for the risks of digital interconnectedness? How do technology, employee skills and other factors influence these risks? To gain insight into these questions, we surveyed 800 insurers and 1,000 executives from other industries globally on their actions and expectations about the risks of digital interconnectedness.

We found that outperforming organizations manage risks of digital interconnectedness, using traditional insurance and other measures. They embrace interconnectedness to create enhanced security solutions around prevention and mitigation, and they collaborate extensively within and outside their own industries, adapting their business models and giving rise to new modes of value creation.



**60 percent** expect the relative risks of digital interconnectedness to increase over the next ten years



**Almost 48 percent** of companies believe the risks posed by digital interconnectedness are higher than other risks that threaten them



**Almost 32 percent** have been affected by a digital interconnectedness incident that caused economic damage in the past three years

### How we conducted our research

During December 2015 and January 2016, the IBM Institute for Business Value and Swiss Re Sigma conducted two global surveys: the first of 802 insurance executives (referred to as “insurers”), generally heads of underwriting, strategy or directly cyberinsurance-related functions, and 1,004 executives from 15 other industries (referred to as “companies”), with covered functions being chief risk officer (CRO), chief information security officer (CISO) chief technology officer (CTO), or similar.

As part of our analysis, we wanted to identify the traits that distinguish the most successful enterprises. So we asked all our respondents to rank their organizations’ positions in the industries in which they operate on two dimensions: revenue growth and organizational efficiency.

We classified enterprises ranking 4 or 5 in both categories as outperformers (10 percent of insurers and 7 percent of companies), those ranking 1 or 2 in one or both of the categories as underperformers (9 percent of insurers, 10 percent of companies) and the rest as average performers (81 percent insurers, 83 percent companies).

---

## Brave new interconnected world

Digital interconnection has become an inescapable — and likely irrevocable — fact of our lives. Worldwide, in 2015, more mobile devices existed than people.<sup>2</sup> Communication among consumers, businesses and government organizations has become almost exclusively digital. The Internet of Things is rapidly growing: smart homes that communicate with their owners and external providers are on the rise; cars are equipped with sensors and are starting to drive on their own; smart watches, step trackers and other wearable devices record and analyze data and then transmit results to the cloud. Citizen-to-government initiatives have governments communicating digitally with their citizens, and for many large companies, electronic transactions are a condition of doing business with suppliers and partners.<sup>3</sup>

But digital interconnectedness comes with associated risks. It allows access to an organization's systems, mostly by hackers, but sometimes by accident or human error. This can potentially lead to loss of intellectual property, business interruption, reputational or physical damage or to outside access to the data — which can be the company's data or other data stored or processed there. The data can be corrupted or deleted, both maliciously or accidentally, it can be stolen or misused and it can be exposed in a breach of privacy.

These risks, often described as “cyberrisks” (although in this study we will be calling them “risks of digital interconnectedness”), are on the rise. In our survey, almost 32 percent of the surveyed companies reported having been affected by an incident due to risks of digital interconnectedness that caused economic damage in the past three years (see Figure 1). This risk does not lie in the future; it is a reality today.

**Figure 1**

*Almost a third of companies suffered damage from cyberincidents*

Has your company been affected by an incident due to risks of digital interconnectedness within the past 3 years?



*Source: IBM Institute for Business Value analysis.*

Almost 48 percent of companies believe that risks of digital interconnectedness rank higher as a threat relative to other risks affecting them; looking forward, 60 percent expect the relative risks of digital interconnectedness to increase over the next ten years; almost three-quarters of our respondents believe that a major incident can substantially harm and seriously endanger their companies.

What will a future of vast digital interconnectedness look like? In previous IBM Institute for Business Value research we have outlined how value chains will virtualize and fragment, giving way to an everyone-to-everyone (E2E) economy where industries converge and ecosystems emerge.<sup>4</sup> None of this will be possible without ubiquitous digital interconnectedness.

---

## How companies prepare

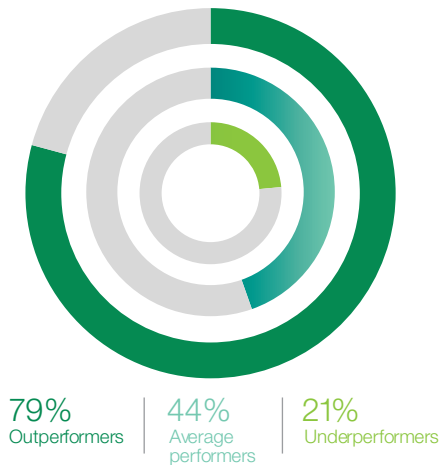
How do outperforming companies prepare for this interconnectedness, its risks, and its growth in the future? From the analysis of our corporate survey, we identified three areas in which leaders act:

- *Invest and manage.* Outperformers have above-average investment in digital interconnectedness. Even though executives of these organizations have high recognition of risks, execution to mitigate risk incidents can be improved significantly.
- *Prepare the organization.* Technology and regulatory measures can support digital technologies, but human hands and brains need to remain at the helm. Outperformers know this and better equip their organizations and employees for the digital future.
- *Collaborate across ecosystems.* The value of interconnectedness can only be fully realized in a collaborative environment, just as the risks can best be managed in the same way. Ecosystems can deliver the needed support networks. Outperformers extensively collaborate, even though they still often underestimate risks.

Why are these areas important for insurance companies to know? Beside the fact that all organizations are participants in the interconnected economy (so these areas apply to insurers just as well), insurance providers need to know what their customers are doing, how they cope with the risks of digital interconnectedness and, ultimately, what expectations they have of their insurers and of insurance solutions.

**Figure 2**

*Outperforming organizations are heavily out-investing their competitors in digital interconnection technology*



Source: IBM Institute for Business Value analysis.

## Invest and manage

Across all industries, more than two-thirds of our survey respondents said they believe new uses for connected technologies will steadily and significantly increase. For example, the prototypes of self-driving cars have been around for a few years. But what if roads were digitally interconnected and smart? It is now possible, using solar-panel technology, to build roads with LED lights that create lines and signage without paint. These roads could heat themselves to prevent snow and ice accumulation, communicate with each other and, in essence, become central control stations.<sup>5</sup>

A smart home could become a networked, intelligent, self-optimizing “home-brain ecosystem”.<sup>6</sup> In medical practice, electronic circuits like “second skin” are aware of a user’s cognitive state and can stimulate tissues for rehabilitation.<sup>7</sup> Industry 4.0, also called the fourth industrial revolution, is an organizational principle for the industrial value chain, based on the Internet of Things and the cloud.<sup>8</sup>

As outperforming organizations recognize the potential of interconnected technologies, they are investing in them to a significantly higher degree than their competitors (see Figure 2).

At the same time, their leadership is highly aware of the risks that digital interconnectedness presents. Eighty-one percent of outperformers consider their C-suites highly engaged in the risk discussion, compared to 53 percent of average companies and 31 percent of underperformers.

Still, this awareness does not translate to well-developed risk prevention and mitigation measures. While 42 percent of all respondents do regular, documented risk assessments, only 14 percent report they actually have an institutionalized risk management program. Even among outperformers, this number rises to only 29 percent. (See Figure 3).



**Figure 3**

*Even outperformers have not institutionalized risk management practices for risks of digital interconnectedness*

To what extent are you prepared for risks of digital interconnectedness incidents?



Source: IBM Institute for Business Value analysis.

A more disturbing finding is that companies that have suffered an economically damaging cyber-incident do not report significantly higher preparedness for future incidents. Of the “damaged” companies, 59 percent report falling into the top two preparedness categories from Figure 3, compared to 54 percent for both those without damage and without incident. All of this indicates insurance companies have much work to do — and great opportunity. This will range from helping companies understand where the hidden risks are with digital interconnectedness, to helping them design solutions.

## Prepare for the interconnected future

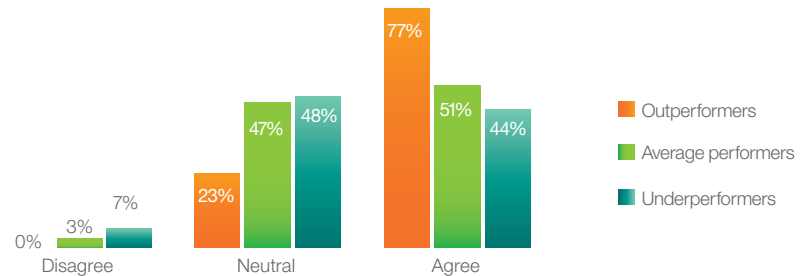
Technologies, governmental and regulatory measures, and social advances have the potential to either decrease or increase the risks of digital interconnectedness. For technology, survey respondents seem uncertain about what measures could have a positive or negative impact. For example, while 38 percent of respondents indicated that proprietary systems could decrease risks, 34 percent preferred the opposite route, systems with open-source code. Sixty-four percent said the use of cognitive computing systems will also increase risks.

Ultimately, companies prefer to rely on the human element for decision making and to mitigate risks of digital interconnectedness. As Figure 4 shows, less than 3 percent of respondents said they think decisions should be made by machines; a majority wants ultimate decision making to remain firmly in human hands, more so for outperformers.

**Figure 4**

*Machines are ultimately not trusted to make decisions*

The ultimate decisions should always be made by humans, not machines



Source: IBM Institute for Business Value analysis.

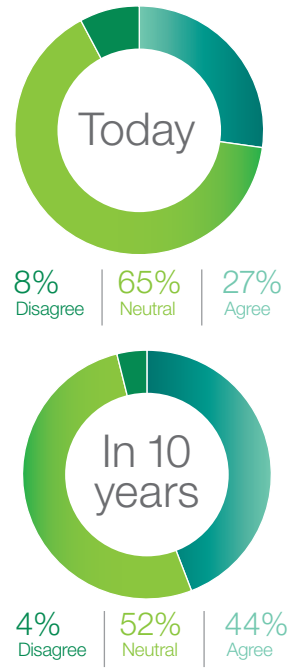
Could governmental oversight or regulation improve future risks? Not in the view of our survey respondents. Sixty-four percent of respondents said the influence of government action generally increases the risks of digital interconnectedness. Raising security standards is only seen by 36 percent as effectively mitigating risks in the long term.

That leaves the human dimension. As mentioned earlier, organizations want to rely on humans for the ultimate decision making, but that means that the workforce has to be “digitally savvy” — skilled in dealing with the interconnected world. Currently, that is not the case, and, as Figure 5 shows, organizations doubt their workforces will be ready even in ten years. Other studies show companies are spending only 20 percent of their training budget on digital skills.<sup>9</sup>

This is where outperforming companies see a competitive advantage: 71 percent of outperformers see their workforces as digitally ready today, which is thrice the global average. That number rises to 84 percent in ten years. Outperforming companies view the risks of digital interconnectedness top-down with engagement from management, and bottom-up by hiring skilled employees and educating those that lack sufficient digital skills.

**Figure 5**  
*Companies are struggling to prepare their workforces for the digital future*

Our company's workforce has adequate digital skills to cope with the interconnected world and associated risks



Source: IBM Institute for Business Value analysis.

---

## Collaborate across ecosystems

A highly interconnected world is characterized by ubiquitous collaboration and the creation of ecosystems. In ecosystems, several companies from different industries work together to create and allocate business value.<sup>10</sup> This fits changing customer needs, as the younger generation, specifically, is looking to buy packages or bundles of services, instead of owning traditional products with separate add-ons.<sup>11</sup> In car-sharing ecosystems, for example, insurance is included in the ecosystem as one necessary component, albeit invisible to the end customer.

Outperforming companies have recognized that ecosystems are critical for future success. Eighty-four percent of outperformers in our survey state they are currently part of an ecosystem, more than twice that of average performers (40 percent).

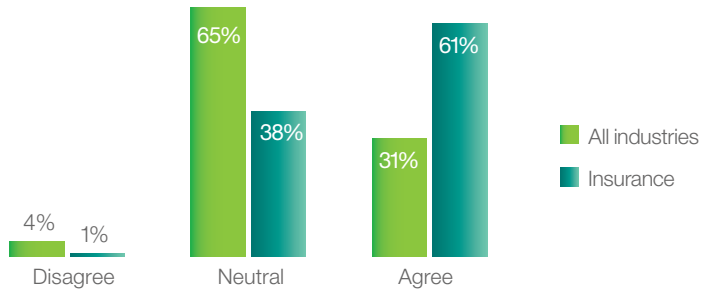
In addition to being active in ecosystems, 81 percent of outperforming companies report that they collaborate extensively to mitigate risks of digital interconnectedness, compared to 48 percent of average performers. This collaborative effort includes customers, regulators, suppliers and insurers. Going forward, a majority expects this collaboration to significantly increase — 78 percent of outperformers and 54 percent of average performers.

While active collaboration helps, the interconnectedness in ecosystems still carries risks, and the awareness of these risks seems to be underdeveloped among most companies. As Figure 6 shows, only 31 percent of companies said they believe that broader ecosystems with more participants will increase risks of digital interconnectedness. Contrast this with the opinion of our set of insurance respondents, in which 60 percent believe risks of digital interconnectedness will increase due to ecosystem broadening.

**Figure 6**

*Insurers believe that most commercial companies underestimate the risks of ecosystems*

Broader ecosystems with more participants will increase risks of digital interconnectedness

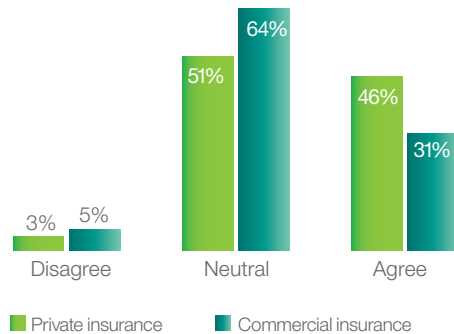


*Source: IBM Institute for Business Value analysis.*

It is difficult to predict how ecosystem risks and collaborative mitigation will balance out, but the skew in risk awareness provides an excellent opportunity for insurers to provide protection and other services.

**Figure 7***Most insurers believe in an expanding cyber insurance market*

Insurance for risks of digital interconnectedness will expand

*Source: IBM Institute for Business Value analysis.*

## The insurance of digital interconnectedness

### The cyber opportunity

Fewer than half the insurance carriers in our survey — 46 percent — write covers for risks of digital interconnectedness, typically called “cyber insurance,” for either commercial or private customers. In two-thirds of the cases, this is offered as a separate coverage, whereas in the rest of the cases, cyber insurance is part of, or added to, an existing coverage. For example, Swedish insurer Folksam covers identity theft as part of its homeowners’ insurance. In case of an identity theft, the company helps customers with support that includes around-the-clock service to prevent, detect and limit the damage.<sup>12</sup>

Most of our respondents said they believe the markets for both private and commercial coverage will be expanding over the next ten years (see Figure 7). This is further supported by the fact that 71 percent of outperforming insurers already write such coverages today. Still, many insurers — 28 percent of our total sample — are reluctant to enter the cyber insurance market.

When asked whether they believe cyber insurance should be mandatory for some industries, 80 percent of insurance companies (along with 76 percent of non-insurers) answered in the affirmative. The most commonly named industries for this mandatory protection are, unsurprisingly, banking (67 percent), insurance itself (53 percent), accountants, auditors and consultants (53 percent) and airlines (47 percent). Only 40 percent of insurers actually believe mandatory insurance will be implemented, which might explain part of the reluctance by some carriers to enter the market.

Our (non-insurance) company survey confirms a market exists for insuring risks of interconnectedness. Forty-four percent of companies report they have such insurance today, and over the next ten years, 34 percent more expect to either expand their cover or buy it for the first time. Further, as Figure 8 shows, there are quite a few coverages that companies would like to buy, but which either are not available (such as loss of intellectual property) or for which companies are unaware of insurance being available. Insurers operating on the risks of digital interconnectedness insurance market will have to do a better job offering coverages that are in demand, as well as make companies aware of their availability (See sidebar: “Case study: Zurich Digital Resolve,” page 14).

**Figure 8**

*Some coverages that companies would want are missing from the market*

Which risks of digital interconnectedness would you like to insure your company against where there are currently no insurance solutions available?



*Source: IBM Institute for Business Value analysis.*

### Case study: Zurich Digital Resolve

Starting in the United States, Zurich Insurance Group, a global all-lines insurer, has been offering cyber insurance coverage as part of other offerings for almost 15 years. Recognizing the opportunities and risks of digital interconnectedness early, Zurich demonstrated a responsibility to support its clients through sharing its expertise and shouldering the then-obscure burden of risk.

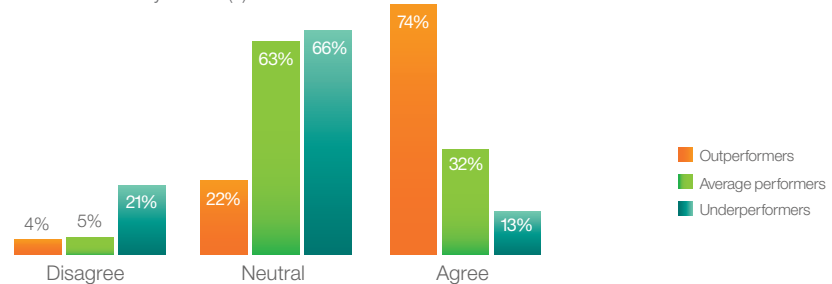
Catering to customers' individual needs, Zurich's coverages are modular and custom-tailored. As the key common denominator, Zurich recognized that customers generally are trying to understand how to manage a cyber incident.<sup>13</sup> "Zurich Digital Resolve", a post-breach response service, comprised of experts in all matters related to cyber breaches, allows clients to get quick help in crisis situations. As Mark Bannon, Senior Underwriter for Cyber Insurance at Zurich says, "the service helps remove the headache of a data breach from the boardroom, allowing the affected companies to concentrate on running their business operations."

Zurich Digital Resolve is highly successful – 100 percent of cases where it was involved, the incident could be resolved without leading to a major claims case.<sup>14</sup>

**Figure 9**

*There is high market demand for mitigation and prevention services*

If my insurer(s) provided services beyond cyberinsurance coverage to mitigate or prevent risks of digital interconnectedness incidents, my company would consider buying these services from my insurer(s)



*Source: IBM Institute for Business Value analysis.*

### The next generation of insurance

Is there anything beyond pure coverage that insurers could do to help companies with risks of digital interconnectedness? In a previous IBM Institute for Business Value study, it was found that leading insurers are starting to provide higher level services instead of mere products – "insurance as a service", such as flexible and proactive coverage at the point of risk, and risk prevention or mitigation.<sup>15</sup> Our current survey reflects this for risks of digital interconnectedness. Considerable demand exists for mitigation or prevention services (see Figure 9). Forty-seven percent of outperforming insurers are offering these kinds of services, and another 20 percent are considering them. Additionally, 51 percent of outperforming insurance carriers partner with third-party providers to offer similar services, with an additional 23 percent considering additional value-adding services. In practice, the models being developed throughout the industry combine



financial relief with on-time and concrete help. The services will vary by customer groups. (See sidebar: “Case study: Swiss Re Corporate Solutions”)

### **Beyond insurance**

Of course, insurers are also considering the opportunities of digital interconnectedness beyond insurance, not only the risks. Outperformers are highly confident that digitization and digital interconnection will help make insurance more flexible and allow for insurance products “on demand.” This means the ability to offer flexible solutions that measure risk factors in real time, both for insurance in general, and for risks of digital interconnectedness in particular. Seventy-three percent of outperforming insurers (compared to 42 percent of average insurers) see their companies offering these flexible solutions.

Other digital interconnectedness opportunities for insurers include partnering and economic ecosystems. More than two-thirds of outperformers are planning to partner extensively with providers outside the insurance industry over the next ten years (compared to 40 percent of average insurers). For ecosystems, 71 percent of outperformers are planning to take the lead — the coordinative or orchestration role — in one or more ecosystems, almost twice the rate of average insurers (38 percent). The orchestration role, which generally includes being the “customer face” of the ecosystem, allows access to crucial customer data, without which development of added services becomes difficult. (See sidebar: “Discovery’s ecosystem approach”).

When ecosystems become the norm, the traditional stand-alone model of the insurance industry will be significantly affected. Fifty-four percent of all insurance respondents believe business models will need to change with the widespread adoption of ecosystems, and 53 percent said the industry will consolidate. As Figure 10 shows, not all insurers are prepared to go this route. Insurers need to examine their own strategies carefully: are they ready for a digitally interconnected world and its consequences?

### **Case study: Swiss Re Corporate Solutions**

Swiss Re Corporate Solutions, as commercial insurance subsidiary of global reinsurer Swiss Re, has partnered with IBM and other third-party providers to provide a wide range of services that go beyond pure risk transfer, from preventive measures to remediation:

- **Prevention:** IT security training for the organization and IT penetration testing
- **Detection:** Data breach response team and forensics analyses
- **Remediation:** Legal advice and support, crisis management and credit monitoring.

Services include fast, coordinated response by a dedicated organization on call 24/7 to help an affected organization anywhere in the world. Additionally, pre-incident analysis is offered to help an organization to better gauge its exposure before an incident occurs, with the long-term benefit that they become a more highly rated candidate for insurance companies.

Swiss Re estimates that corporations that take advantage of these types of services can reduce the cost of a data breach for clients by up to 35 percent.<sup>16</sup>

### Case study: Discovery's ecosystem approach

To stay ahead in a highly competitive market, South Africa-based life and health insurer Discovery created the Vitality program, a broad healthcare and engagement ecosystem.

Vitality takes advantage of digital interconnectedness in several ways:

- Behavioral clinical and actuarial data set to understand better the incentives driving customer behavior
- Dynamic pricing and valuation, based on a point and status system
- Technology for collection and aggregation of a multitude of health and lifestyle data.

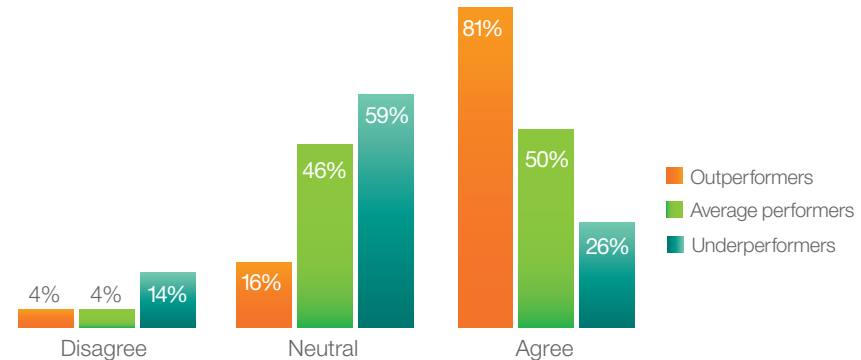
The ecosystem includes suppliers of wellness, health and lifestyle-related services and products. It also uses technology by setting up electronic patient records and health management and branches into motor insurance, combined with telematics data.

The program has been a huge success; Discovery's new business premium income CAGR was more than 18 percent over the past five years.<sup>17</sup>

**Figure 10**

*Outperformers are prepared for change*

My company is prepared to change our business model to accommodate ecosystems



Source: IBM Institute for Business Value analysis.

### Recommendations

1. Prepare your organization for a future of digital interconnectedness

- Familiarize yourself with the technological basics and organizational capabilities.* Every good strategy starts with a strengths, weaknesses, opportunities and threats (SWOT) analysis. Understanding the risks of technologies and the (current) limitations of your organizations is the first step, followed by researching mitigating technologies. For example, the use of electronic ledgers, such as blockchain, can decrease risks of digital insurance transactions.

- 
- b. Invest appropriately.* Leading organizations heavily invest in digital interconnectedness. Choose the innovative technologies that not only best fit your insurance portfolio, but also allow you to respond flexibly and react quickly, keeping in front of the changing reality of digital interconnectedness.
- c. Engage your organization.* Investing in technology is only half of the investment effort. Your organization also needs to be engaged both top-down and bottom-up. An innovative, interconnected, risk-aware – but opportunity-embracing – culture starts from the top and is only complete if all employees are digitally savvy and aligned with the enterprise goals. Providing education and building or sourcing digital skills are important.

## *2. Build insurance solutions with, and for, digital interconnectedness*

- a. Start “controlled.”* This risk class is still relatively new and constantly evolving, with different challenges than “classical” risks. Entry-level solutions for misappropriation of data or identity might be a good starting point, as could a limited line size of more comprehensive solutions for less exposed industries. More complex solutions can be added as experience and knowledge grow about the risk and its possible accumulation.
- b. Use well-established technologies for insurance solutions about interconnection and risk.* Technologies, such as telematics and the Internet of Things, have huge potential to help understand and measure risk factors in real time and unprecedented detail, allowing for both more accurate risk pricing and added customer value by providing “built-in” early warning systems. Cognitive computing can provide additional expert knowledge to help clients understand their vulnerabilities to interconnected risks.

c. *Create new solutions beyond classical insurance.* As an insurer, you can be your clients' primary advisor on risks and how to prevent them. The technologies previously mentioned provide ideal starting and selling points. Services can include consulting to improve a client's level of security, training staff to increase digital skills, as well as crisis management and forensic services post-event.

3. *Collaborate to take full advantage*

a. *Help clients understand risk of digital interconnectedness.* Beyond the services your company is selling, consider educating clients — actual and potential — about the risks of digital interconnectedness. This will not only generate a future customer base, it should also prevent simple mistakes and negligence, making the world safer overall and the insurance industry's job easier.

b. *Partner externally in multiple directions.* Open collaboration mitigates risks of digital interconnectedness. Be the facilitator for customers, suppliers, regulators and other insurers to enable sharing best practices, common pitfalls and potential industry-wide or regulatory mitigation measures. Additionally, partnering with tech companies can alert you early to the next potentially useful technology, including its downside risks, and help you design the next generation of insurance solutions.

c. *Use the E2E economy.* Collaborating extensively should allow your organization to become proficient in understanding new ecosystems as they emerge. Identify and assess new sources of value; look for opportunities to become the epicenter of an emerging new ecosystem. A well-orchestrated ecosystem in which the risks are recognized early can be a great source of value for all participants. It is also important to securing the future of an insurance industry beyond all disruptive influences.

---

## Are you ready to take on insurance and risk in a digitally interconnected world?

- How are you using digital interconnectedness today beyond maintaining a Twitter account and a Facebook page? What is your digital strategy as it relates to interconnectedness?
- Which technologies have you been considering investing and expanding into? Why or why not?
- What are you doing to make your organization “fit” for the digital world and for digital interconnectedness?
- How do you plan to help your customers cope with the risks of the digitally interconnected world? What solutions or offerings are already in place? Which are planned?
- How do you collaborate internally, within the C-suite or with business units? How do you collaborate externally, with regulators, vendors, customers or others? Who do you partner with?
- How can you better use existing ecosystems to learn from other industries?

### About the authors

Christian Bieck is the global insurance leader for the IBM Institute for Business Value. He is an economist by training, and he worked in various roles in the insurance industry in Europe before joining IBM as a process consultant and researcher. Christian is a frequent speaker on thought leadership and innovation at insurance events and workshops. He has authored various papers on insurance trends and implications, both for the IBM Institute for Business Value and international insurance industry publications. Christian can be reached at [christian.bieck@de.ibm.com](mailto:christian.bieck@de.ibm.com).

---

### For more information

To learn more about this IBM Institute for Business Value study, please contact us at [iibv@us.ibm.com](mailto:iibv@us.ibm.com). Follow @IBMIBV on Twitter, and for a full catalog of our research or to subscribe to our monthly newsletter, visit: [ibm.com/iibv](http://ibm.com/iibv).

Access IBM Institute for Business Value executive reports on your mobile device by downloading the free “IBM IBV” apps for phone or tablet from your app store.

### The right partner for a changing world

At IBM, we collaborate with our clients, bringing together business insight, advanced research and technology to give them a distinct advantage in today’s rapidly changing environment.

### IBM Institute for Business Value

The IBM Institute for Business Value, part of IBM Global Business Services, develops fact-based strategic insights for senior business executives around critical public and private sector issues.

---

**Contributors**

Darren Lee Pain, Jonathan Anchen, Philippe Aerni, Eric Durand, Benjamin Eggerschwiler, Anupama Shukla, Jim Phillips and April Harris.

Dr. Maya Bundt is the Head of Cyber and Digital Strategy at Swiss Re Reinsurance. In this role she is responsible to further develop and implement the reinsurance cyber risk strategy and to drive digital innovation and initiatives. Maya has been with Swiss Re for 13 years in different strategy and IT related roles. Maya holds a Ph.D. in Environmental Science from the ETH Zurich. She can be reached at [Maya\\_Bundt@swissre.com](mailto:Maya_Bundt@swissre.com).

Patricia Hamilton is Vice President/Partner in IBM's Insurance Practice. Pat has more than 25 years of both business and information technology experience in P&C, group and life insurance. This experience has been across all components of strategic planning at an enterprise level with a focus on driving value through business transformation. She can be reached at [patricia.hamilton@us.ibm.com](mailto:patricia.hamilton@us.ibm.com).

Dr. Kurt Karl is a Managing Director and Head of Swiss Re's Economic Research and Consulting and the editor of Sigma, Swiss Re's insurance industry research publication. In addition, he supports Swiss Re's strategic planning and provides internal consulting on products and economic risks. Before becoming the overall head of ER&C, Dr. Karl was the head of the North American unit of ER&C for 11 years. Dr. Karl has a Ph.D. from Princeton University and can be reached at [kurt\\_karl@swissre.com](mailto:kurt_karl@swissre.com).

Michael Schmitt is a Senior Underwriter in the Cyber & Technology Division of Swiss Re Corporate Solutions. Michael is responsible for creating and managing a London-placed portfolio of technology errors and omissions and cyber liability insurance for large, complex corporations. Michael has been in the insurance industry for over 17 years, both as an underwriter and a broker. He can be reached at [Michael\\_Schmitt@swissre.com](mailto:Michael_Schmitt@swissre.com).

Pawel A. Stefanski leads the IBM Financial Services business in the Middle East and Africa. He is a graduate of Warsaw University and has worked at the intersection of financial services and advanced information technology for over 25 years. Before relocating to Dubai, Pawel has co-led IBM's collaboration with insurers on several major cyber insurance programs. He can be reached at [pawel.stefanski@ae.ibm.com](mailto:pawel.stefanski@ae.ibm.com).

## Notes and sources

- 1 McMahon, Lucian. "Cybersecurity Tops Our Annual ISO Emerging Issues Bracket". April 2016. <http://www.verisk.com/between-the-lines/april-2016/cybersecurity-tops-our-annual-iso-emerging-issues-bracket.html>
- 2 "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2015-2020". Feb 2016. <http://www.cisco.com/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html>
- 3 Definition of "e-government". Wikipedia <https://en.wikipedia.org/wiki/E-government>. Accessed on May 20, 2016.
- 4 Bieck, Christian, Anthony Marshall and Sandip Patel. "Digital reinvention: Trust, transparency and technology in the insurance world of tomorrow." IBM Institute for Business Value. January 2014. [http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=XB&infotype=PM&apname=GB\\_SE\\_GB\\_TI\\_US&htmlfid=GBE03589USEN&attachment=GBE03589USEN.PDF](http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=XB&infotype=PM&apname=GB_SE_GB_TI_US&htmlfid=GBE03589USEN&attachment=GBE03589USEN.PDF)
- 5 "Welcome to Solar Roadways". <http://www.solarroadways.com/>. Accessed on May 20, 2016
- 6 Berman, Saul, Anthony Marshall and Nadia Leonelli. Digital reinvention: preparing for a very different tomorrow". IBM Institute for Business Value. Dec 2013. <http://www-935.ibm.com/services/us/gbs/thoughtleadership/digitalreinvention>
- 7 "Stick-On Tattoos Go Electric". National Science Foundation. Aug 2011. [http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=121343](http://www.nsf.gov/news/news_summ.jsp?cntn_id=121343)
- 8 Definition of "Industry 4.0". Wikipedia [https://en.wikipedia.org/wiki/Industry\\_4.0](https://en.wikipedia.org/wiki/Industry_4.0). Accessed on May 20, 2016.
- 9 Turchin, Lianna. "Over 90% of Companies Lack Digital Skills – And What You Can Do About It". <https://www.onlinemarketinginstitute.org/blog/2016/01/over-90-of-companies-lack-digital-skills-and-what-you-can-do-about-it>. Jan 2016.
- 10 Davidson, Steven, Martin Harmer and Anthony Marshall. "The new age of ecosystems: Redefining partnering in an ecosystem environment". IBM Institute for Business Value. July 2014. <http://www-935.ibm.com/services/us/gbs/thoughtleadership/ecosystempartnering/>
- 11 Mincer, Jillian. "The allure of 'no ownership' for Millennials is moving beyond housing and cars". Business Insider. May 2015. <http://www.businessinsider.com/the-allure-of-no-ownership-for-millennials-is-moving-beyond-housing-and-cars-2015-5?lR=T>
- 12 Interview with Daniel Eriksson, Head of Products, SVP Folksam, Stockholm, Feb 3rd 2016.
- 13 "Companies still unprepared for mounting cyber risks". Zurich Insurance Group. Mar 2016. <https://www.zurich.com/en/knowledge/articles/2016/03/companies-still-unprepared-for-mounting-cyber-risks>
- 14 Interview with Mark Bannon, Senior Underwriter, Technology and S&P, Zurich Insurance plc, London. April 27th 2016.
- 15 Bieck, Christian and Andrea Cornelius. "Winning strategies for insurers: How industry leaders are excelling outside the comfort zone". IBM Institute for Business Value. June 2014. [http://ibm.biz/winning\\_insurance\\_strategies](http://ibm.biz/winning_insurance_strategies)
- 16 "Data Breach Response Guide". Experian. <https://www.experian.com/assets/data-breach/brochures/response-guide.pdf>
- 17 "Creating Shared Value: Integrated Annual Report 2015". Discovery. Oct 2015. [https://www.discovery.co.za/discovery\\_coza/web/investor\\_relations/results\\_and\\_reports/annual\\_reports/2015/index.html](https://www.discovery.co.za/discovery_coza/web/investor_relations/results_and_reports/annual_reports/2015/index.html)

© Copyright IBM Corporation 2016

Route 100  
Somers, NY 10589  
Produced in the United States of America  
November 2016

IBM, the IBM logo and ibm.com are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

The information in this document is provided "as is" without any warranty, express or implied, including without any warranties of merchantability, fitness for a particular purpose and any warranty or condition of non-infringement. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

This report is intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. IBM shall not be responsible for any loss whatsoever sustained by any organization or person who relies on this publication.

The data used in this report may be derived from third-party sources and IBM does not independently verify, validate or audit such data. The results from the use of such data are provided on an "as is" basis and IBM makes no representations or warranties, express or implied.



Please Recycle

GBE03755USEN-01

**IBM**<sup>®</sup>