

sigma

Data-driven insurance: ready for the next frontier?

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Executive summary

Digital technology will direct change across the insurance value chain.

The rapid spread of internet-enabled devices and universal connectivity has changed consumer behaviours and expectations across all industries, particularly among the younger generations. The digital age has also brought an explosion of heterogeneous data from different sources and platforms, which providers of risk protection solutions can use to broaden the reach and boundaries of insurability. As their value chain becomes more digitally connected, insurers will be able to better understand customer segments and partners and adapt in near real-time.

Insurers will become hyper-aware of customer needs and preferences...

In the short-term the digital insurance consumers will likely be young, educated and with higher levels of income. Over time, innovative digital cover options for all consumers will become increasingly available, making income and education less relevant factors in purchasing decisions. With advanced analytics capabilities, the insurer of the future will be very aware of customer needs and preferences, and provide personalised and real-time service, with flexible product offerings. Artificial intelligence (AI) will be used to interact and build understanding of the customer, and servicing will be through (personal) virtual assistance, 24/7.

...and to meet customer expectations, they will need to adapt to provide coverage across life-cycle stages.

Insurers will be able to move away from a product-focused sales approach to a one closely tied to the broader needs across the life time of a customer, with greater focus on the human experience. New generations of systems will deliver unprecedented levels of proximity and influence on customers, and insurers will go beyond mere channel management to optimising interaction across a diverse range of customer touchpoints. This will have implications for business models, how insurers interact with their customers, and the nature of the services they provide.

Digitalisation will also help create new underwriting and portfolio risk management techniques.

Over time, Big Data and sophisticated models will allow risk pricing at increasingly granular level. Emergence of new risks will create new underwriting and portfolio risk management techniques. Insurers will create early-warning systems to gather practical insights that prevent incidents to simplify and accelerate claims processing. Data-enabled processes will minimise friction and streamline the customer insurance journey, from request for coverage to claim. Digitalisation will thus help improve the customer experience and also the efficacy of back office processes.

At the same time, using data from multiple providers could drive new business models...

Further, digitalisation will enable development of new data-driven business models impacting the entire insurance value chain. Access to data and the capability to model risks will be key. True leverage will come from utilising other assets, such as key data supplier partners, entry points to ecosystems, and the know how to generate customer insights. Insurers will need to decide whether to be suppliers of coverage, or to collaborate with and/or own new areas of business operation.

...and value propositions in insurance.

Technology could foster just ongoing incremental industry change by broadening the scope and affordability of insurance. Alternatively, potential for more radical transformation in the provision of risk protection services to households and businesses is up for grabs if some typical hurdles to innovation can be overcome.

The battle for customer touchpoints

Digital customers expect different levels of service. What is second nature to digital natives presents a new world of opportunity for incumbent insurers still operating paper systems. Combining digital solutions with advanced analytics will deliver new insights, allowing insurers to provide deep, holistic engagement across customer lifetimes.

Digital interaction: it's life

Digital technology has already transformed many industries...

Digital interaction has become a norm of daily life. Across the world, of the approximately 4 billion people connected online, more than 90% use mobile devices and spend several hours in the virtual world each day.¹ New technologies and digital facilities are being developed for consumers, including, for example, location and other sensor-based services (for smart homes, cars and factories). Developments in cognitive systems and artificial intelligence (AI) are also creating innovation opportunities (see Figure 1), including for insurers.

Figure 1
New technologies impacting insurance

Impact on business

Impact on business	0 to 2 years	2 to 5 years	5 to 10 years	10+ years
Revolutionary		<ul style="list-style-type: none"> ● Full life-cycle API management 	<ul style="list-style-type: none"> ● Digital business technology platforms ● IoT platforms ● Digital experience platforms 	<ul style="list-style-type: none"> ● Intelligent process automation
High		<ul style="list-style-type: none"> ● Next generation personal health records (PHR) 	<ul style="list-style-type: none"> ● Conversational platforms ● Behavioural analytics ● Electronic health Record data extraction ● Genomics and epigenetics 	<ul style="list-style-type: none"> ● Digitally-engineered underwriting ● Autonomous vehicles
Medium	<ul style="list-style-type: none"> ● Insurance wallets ● Reward and loyalty platforms 	<ul style="list-style-type: none"> ● Digital advisors ● Advanced analytics solutions 	<ul style="list-style-type: none"> ● Administration/management SaaS 	

- P&C related technologies
- L&H related technologies
- Sensing & analytics related technologies
- Customer interaction related technologies
- Productivity related technologies
- Customer loyalty/wallet related technologies

Source: Swiss Re Institute, adapted from Gartner's *Hype Cycle for Digital and P&C Insurance*, 2019

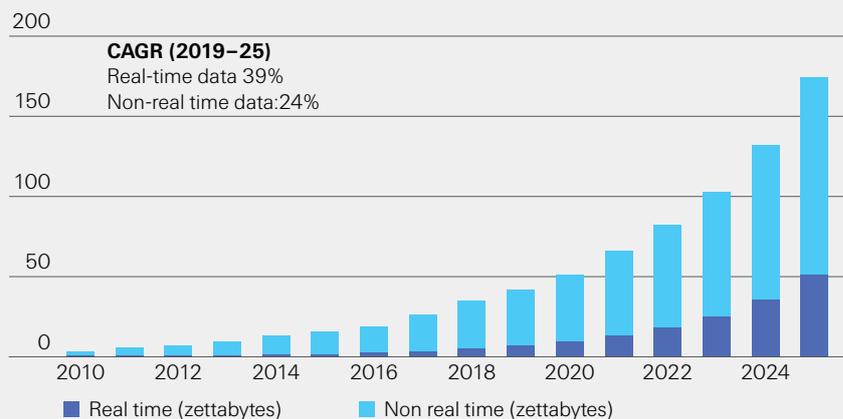
¹ *Connected Commerce: Connectivity is Enabling Lifestyle Evolution*, Nielsen, 19 November 2018.

...and will change how insurers acquire and service customers.

New technologies are impacting engagement and insight generation

The rapid spread of internet-enabled wearable devices and ubiquitous connectivity are enabling new ways of communication and information sharing. This has led to exponential growth in the volume of digital data being generated automatically, cheaply and non-intrusively. International Data Corp estimates that there will be 41.6 billion IoT devices around the world by 2025, each generating data (see Figure 2).² New tools to analyse the data and extract useful insights are also proliferating, and will change the way insurers interact with consumers.

Figure 2
Forecast growth of digital data



Source: IDC, Swiss Re Institute

The task facing insurers is to upgrade the online experience for their customers.

Consumer preferences and buying behaviours are also changing rapidly, and many industries have adopted more customer-centric business models. Insurers will have to work hard to keep customers loyal. A recent survey found that while insurers remain the most trusted source for new risk coverage solutions, consumers are switching carriers more often than they used to, and are more open to new entrants, including from InsurTech and Big Tech.³

² *The Growth in Connected IoT Devices Is Expected to Generate 79.4ZB of Data in 2025*, International Data Corporation, 18 June 2019.

³ *Insurers: How to Lead in the New Era of Connectivity*, Bain and Company, 26 September 2019.

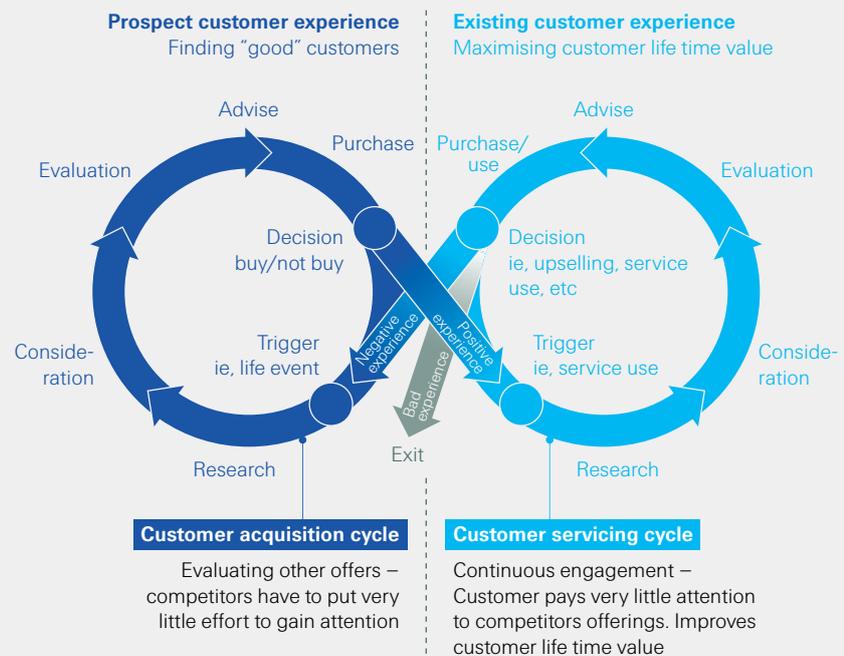
The battle for customer touchpoints

Insights from data analytics can boost customer retention...

Digital insights into life events, new insurance opportunities

Figure 3 shows the cycles of customer acquisition, and also what is involved in customer retention. Digitalisation can support these cycles by capturing insights from the end-to-end consumer experience.

Figure 3
Customer acquisition and loyalty lifecycle

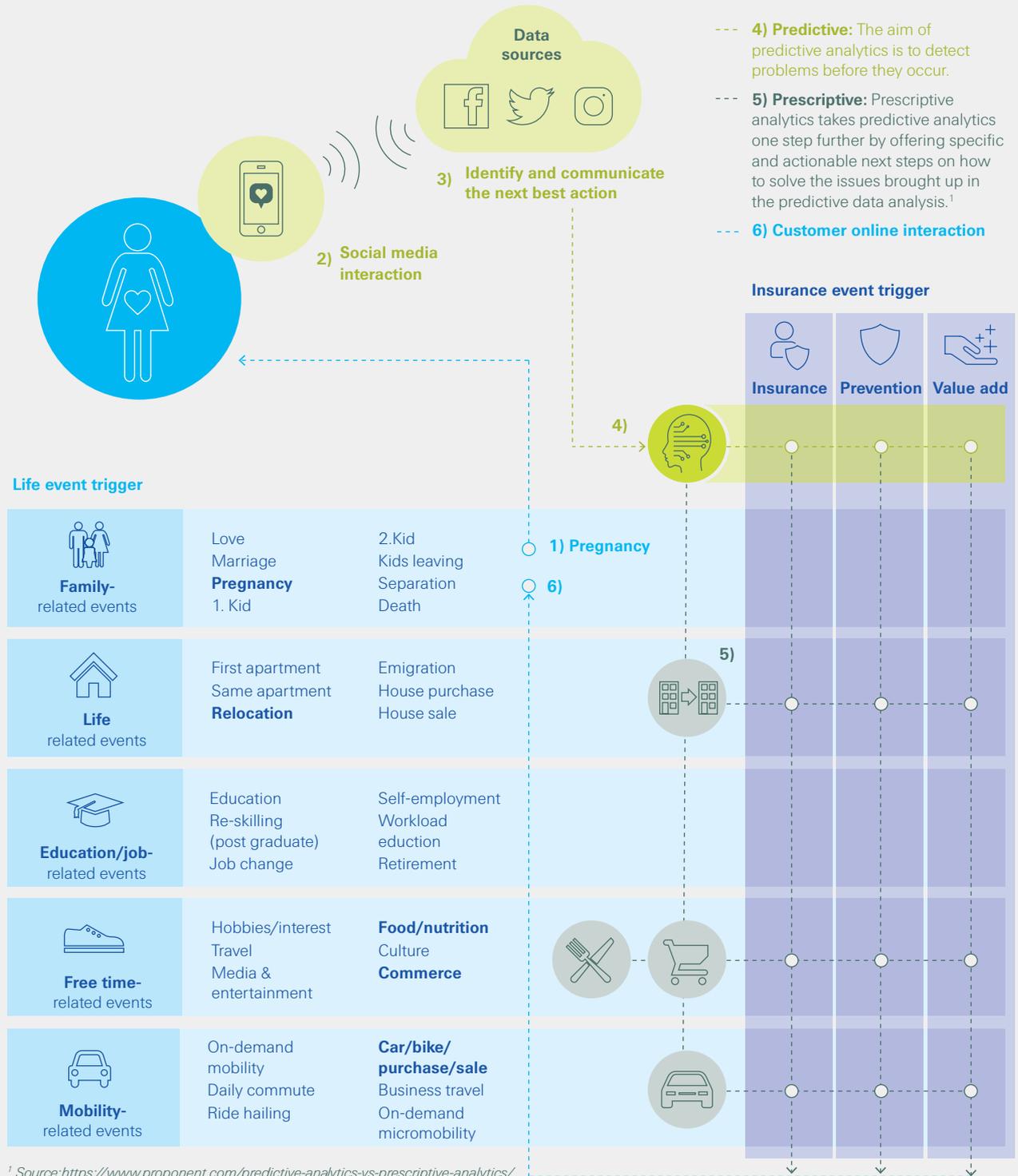


Source: Swiss Re Institute

... by triggering actions that enable new sales or servicing opportunities.

Sources of digital data can also provide information on what has changed in a customer's life (eg, family, location or job change, see Figure 4). This helps insurers better understand life events, knowledge they can use to develop personalised marketing strategies and guidance on next best actions (both predictive and prescriptive) for individual customers. This can entail cross-selling of other risk mitigation and value-added services, in addition to traditional insurance cover.

Figure 4
Access to life events enabled by digital interactions



¹ Source: <https://www.proponent.com/predictive-analytics-vs-prescriptive-analytics/>

Source: Swiss Re Institute

The battle for customer touchpoints

New actors, not insurers, own many touchpoints.

However, these digital signals are not embedded in the environments that insurers naturally access, not least because insurance is a low-touch business. For example, it has been estimated that buyers of insurance in the US average just 2.7 information interactions with their provider per year.⁴ Data on consumer actions is more readily available from other agencies. For instance, data on mobility behaviour is owned by mobility companies, not insurers. And operators of smart-home digital platforms know more about insurers' customers properties than insurers do. The more urban the area of operation, the greater the likelihood that insights are generated by non-insurers. What insurers need to do is embed themselves as providers of risk protection within the broader ecosystems of digital touch points with consumers.

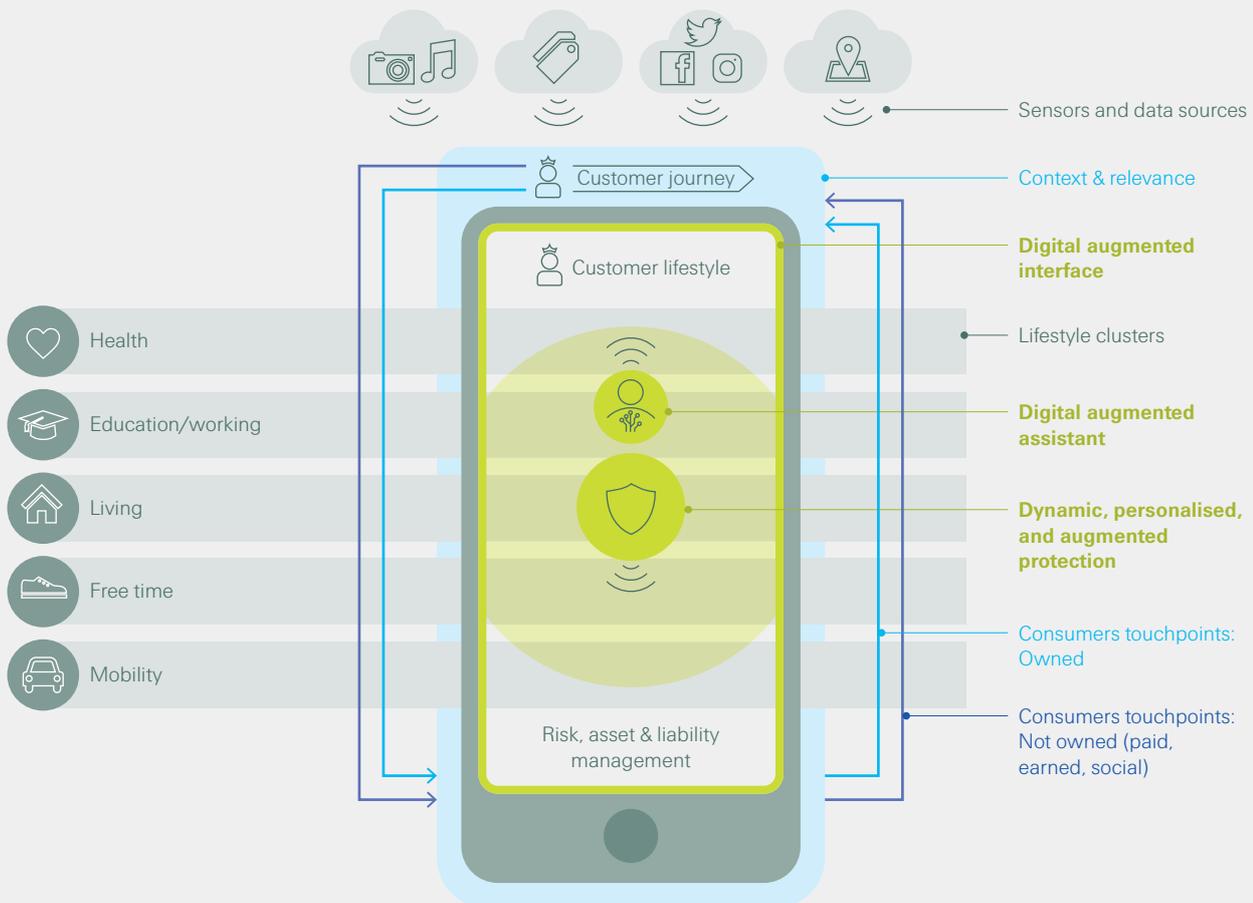
Insurers need to access both owned and not-owned touchpoints.

Optimising interaction across multiple touchpoints

To achieve this, insurers need to optimise their interaction with customers across multiple providers and lifestyle areas like health, education, mobility and leisure. In a single journey, customers switch touchpoints to fulfil various information needs. Insurers need to access insights across the different types of touchpoints, both owned and not owned (paid, earned and social, see arrows in Figure 5). Top-performing insurers will operate across touchpoints as a unified customer-facing brand, with consistent messaging and experience to provoke recall.

Figure 5

Dynamic and personalised protection enabled by digital-touchpoint insights and digitally-augmented assistants



Source: Swiss Re Institute

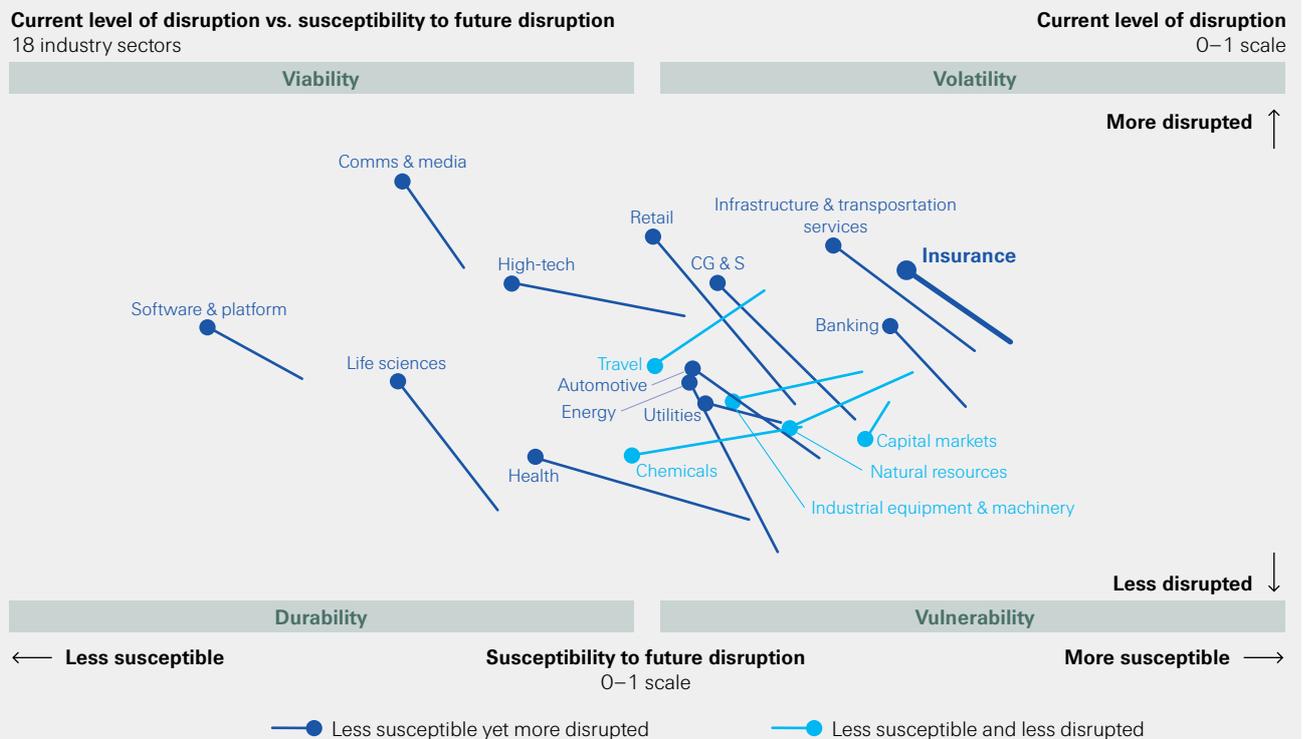
⁴ *Customers Know What They Want. Are Insurers Listening?* Bain and Company, 10 October 2018.

- **Owned touchpoints:** The insurer invests and controls these consumer touchpoints. They include agents, websites, apps. The goal is long-term relationship building; the benefits are cost efficiency and control.
- **Paid touchpoints:** The insurer pays for the digital touchpoint to reach the customer, such as through paid searches and sponsorships. Paid touchpoints can include various channels like bancassurance and agents.
- **Earned touchpoints:** Here the customer becomes the touchpoint. This is when satisfied customers become social media influencers, and spread awareness.
- **Social touchpoints:** An insurer interacts via third party channels but uses its own profile, such as on Facebook or Twitter. Social media is forecast to be the fastest-growing digital advertising channel globally over the next five years.⁵

The changing nature of insurance touchpoints

With the growth of multiple touchpoints, industry susceptibility to disruption is rising (see Figure 6). We expect insurer interactions will – necessarily – increasingly begin to cross conventional boundaries. Big Tech and digital ecosystems (eg, Grab, GoJek, ecommerce marketplaces) are changing the touchpoints in the insurance context. For example, in the UK four of the leading insurance providers are retailers selling “white-label” insurance.⁶ Some insurers will orchestrate digital and physical ecosystems by combining, in one offer, services that are normally delivered by different providers.

Figure 6
Speed of disruption across sectors: insurance to be more disrupted and volatile



Source: V. Savic and B. Moussavi, *Good things come to those who don't wait*, Accenture, 2019, Swiss Re Institute

⁵ *Social Will Be The Fastest-Growing Digital Advertising Channel Globally*, Forrester, 15 August 2019.

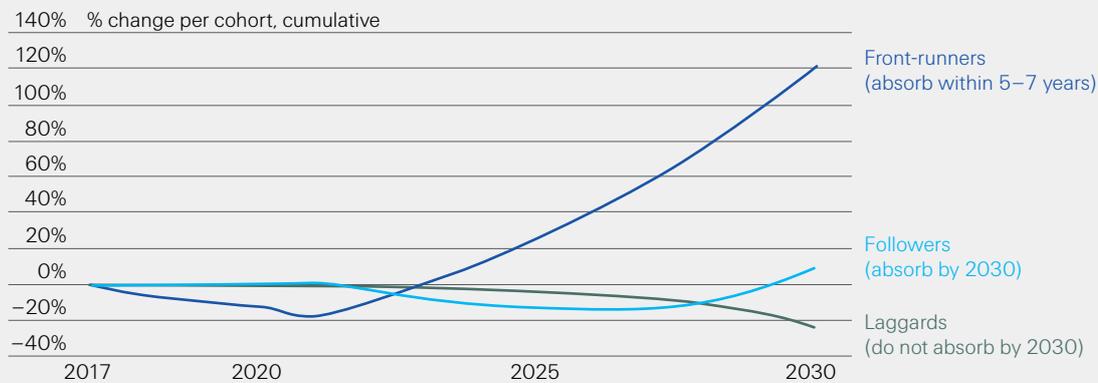
⁶ Bain and Company, 10 October 2018, op. cit.

The battle for customer touchpoints

Front-runners are set to outperform.

An early-mover strategy into new technology could prove expensive in the medium term, but deliver strong returns over the longer run. A BCG MIT survey found that 65% of executives across industries do not yet see value from AI investments made in recent years.⁷ Activities like collecting and curating data, building a knowledge base that is specific to the company, training systems, getting employees to augment them and developing strong governance, takes years. These are rarely out-of-the-box solutions that can be rapidly implemented. Figure 7 demonstrates one future pay-back scenario: companies that invest early will burn cash for a few years, but then begin to rapidly see benefits of accumulated learning and investments. Those players adopting the “fast follower” strategy that has worked with other technologies, could find themselves long-term laggards.⁸

Figure 7
Relative changes in cash flow by AI adoption cohort



Source: Jacques Bughin et al., *Notes from the AI frontier: Modeling the impact of AI on the world economy*, McKinsey Global Institute, 2018, and Swiss Re Institute

⁷ MIT Sloan Management Review and Boston Consulting Group surveyed ~2,500 executives. See *Winning With AI: Pioneers Combine Strategy, Organizational Behavior, and Technology*, MIT Sloan Management Review, October 2019.

⁸ V. Mahidhar, T. H. Davenport, *Why Companies That Wait to Adopt AI May Never Catch Up*, Harvard Business Review, 6 December 2018.

The digital consumer – today and the future

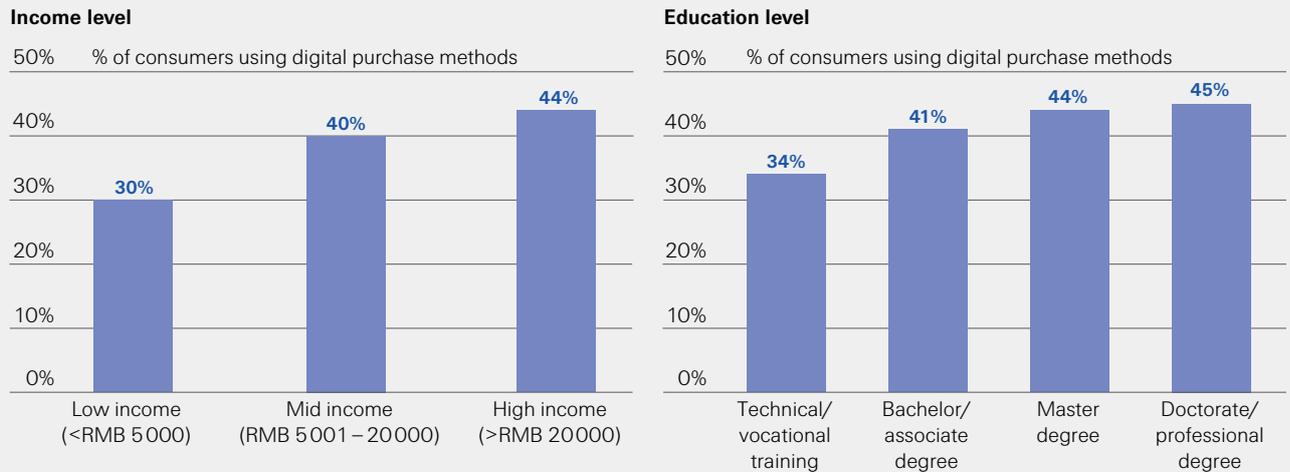
Millennials are the typical digital insurance consumers of today.

Based on a sample from three key markets where digital insurance is making headway– the US, Sweden and China – today’s digital consumers are typically between 20 and 36 years old, affluent and educated.^{9,10,11,12,13} The digital generation (Generation Y (born between the early 1980s and late 1990s) and subsequent ones) expect rapid access to information, and clarity around the value proposition. Proactive servicing is key to maintaining loyalty and to maximise customer lifetime value among these clients.

Most have above-average incomes and education levels.

Higher-income consumers can afford insurance. There is room for growth in lower-income segments, but value propositions need to be adapted. In the sample markets, younger consumers with higher incomes and education tend to make more online purchases than those with low- and mid-level incomes, at least in China and the US. In China, 44% of consumers with incomes in excess of RMB 20 000 use online tools to buy health insurance (including medical expenditure and critical illness). Only 30% of low-income consumers (< RMB 5 000) do so (see Figure 8). Along similar lines, 45% of consumers with doctorate degrees buy health insurance digitally compared with 34% with technical/vocational training.¹⁴ The same can be seen in the US. For example, the median income of consumers buying insurance from Haven Life is USD 80 000, and more than 80% have (at least) a college degree.¹⁵

Figure 8
Digital purchases of health insurance products across income and education levels in China, 2018



Source: Swiss Re Institute

- ⁹ At Avanza, a Swedish digital life insurer; most customers were between 20 to 30 years old. See *Annual Report 2016 – Sweden’s most satisfied savings customers 7 years in a row*, Avanza, 2016.
- ¹⁰ In China, the majority who signed up for Alipay’s digital critical illness product were born post- 1990. See *Online Insurance in China*, General Reinsurance AG, 2017.
- ¹¹ The majority of Haven Life customers are millennials (21 to 36). See *Happy Birthday to us*, Haven Life, 16 May 2018.
- ¹² 81% of customers at US insurer Lemonade are between 24 to 44. See S. Wininger, “Lemonade’s First Quarter in Market”, *lemonade.com*, 18 January 2017.
- ¹³ The majority at ZhongAn, a digital P&C insurer in China, are aged 18 to 39. *What can insurers learn from insurtech giant Zhong An*, Accenture, 15 January 2019.
- ¹⁴ *Chinese non-life personal lines: consumer perspectives*, Swiss Re Institute, 2019.
- ¹⁵ Haven Life, 16 May 2018, op. cit.

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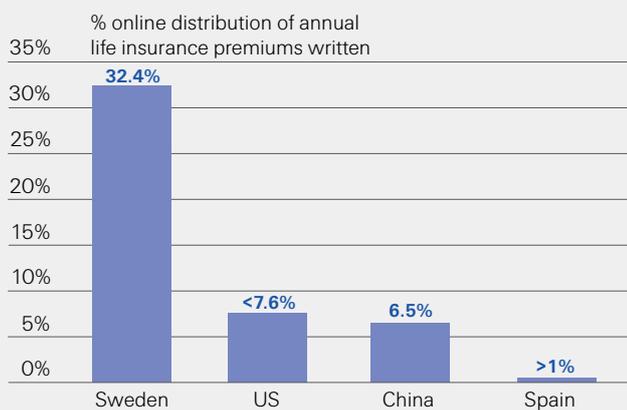
Many use the internet to research insurance but penetration of online purchases is low.

Why do differences in online buying behaviour exist across markets?

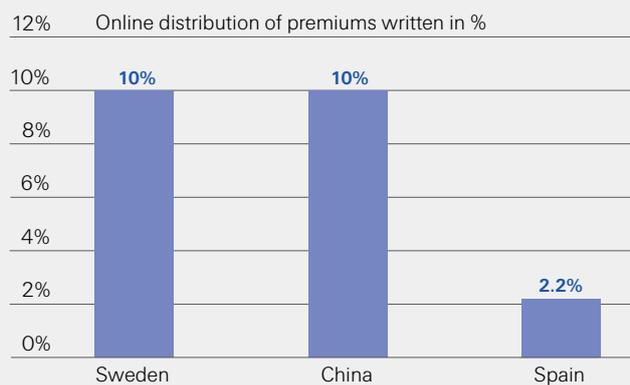
The internet is the most used medium to research L&H insurance in China (59%)¹⁶ and Sweden (68%).¹⁷ However, the penetration of online insurance purchases is still uneven in some countries. For example, online L&H insurance distribution accounts for less than 8% in the US^{18,19} and China²⁰ but already above 30% in Sweden.²¹ The findings are similar for P&C insurance. In both Sweden and China, around 10% of P&C premiums written were distributed online in 2016.^{22, 23} In other markets, levels of digital insurance purchases are much lower despite the internet being used by many as a research tool. For example, in Spain, 52% use the internet to research L&H insurance,²⁴ but online penetration of life insurance is only around 0.02%,²⁵ and only 2%²⁶ of P&C premiums came from online channels in 2015 (see Figure 9). For some commoditised lines such as motor, online purchases are higher: 25% of consumers in the US,²⁷ 11% of consumers in China²⁸ and 5% of consumers in Spain²⁹ purchased their motor insurance online in 2015/2016.

Figure 9
Online insurance purchases

Online distribution of life insurance in 2017



P&C online distribution in 2015/2016



Source: Verdict, 2015; China Statistic Press, 2018; GenRe, 2017; Axco, 2019; Statista, 2019, Swiss Re Institute

¹⁶ *Chinese non-life personal lines: Consumer perspectives*, Swiss Re Institute, 2019.

¹⁷ *European Insurance Report*, Swiss Re, 2015.

¹⁸ Online distribution includes life, health and accident insurance.

¹⁹ *United States Special InsurTech: Online Distribution*, Statista, 2019.

²⁰ *Insurance in China, forty years of reform and opening*, China Statistics Press, 2018.

²¹ Sweden Distribution Channels Life, *axco.co.uk*

²² Sweden Distribution Channels Non-life, *axco.co.uk*

²³ "How Tencent and Ant Financial are rushing into China's insurance industry", *cbinsights.com*, 23 October 2017.

²⁴ *European Insurance Report*, Swiss Re, 2015.

²⁵ Spain Distribution Channels Life, *axco.co.uk*

²⁶ Spain Distribution Channels Non-life, *axco.co.uk*

²⁷ *US Insurance Shopping Study*, J.D. Power, 2016.

²⁸ *sigma* 3/2017 – World insurance in 2016: The China growth engine steams ahead, Swiss Re Institute.

²⁹ *Ibid.*

One reason is that availability of online purchase tools is limited.

Online purchases are higher in markets with low power concentration, high individualism, low uncertainty avoidance...

One reason for the low penetration of online life cover could be that many insurers do not offer the tools to buy online. Looking at provider websites, we found that in Spain, neither the biggest insurers nor InsurTechs sell life insurance online directly to consumers. Similarly, in China and the US, very few large insurers sell life insurance policies digitally.^{30, 31} However, in Sweden, six of the biggest financial institutions do so, which could explain the higher purchase penetration there (32%).³²

Nevertheless, equal access to online purchasing facilities may not necessarily lead to similar penetration across markets. Cultural characteristics based on the Hofstede Cross Cultural Index³³ and preferred leisure activities may also have an impact. This comes through when comparing online insurance penetration to more general e-commerce penetration. We use e-commerce buyer penetration as a proxy for online insurance purchases because countries with a higher e-shopping penetration also demonstrate higher online distribution of life insurance. One reason might be that consumers who use the internet often for different purposes, including online shopping, feel comfortable going online to buy insurance too.^{34, 35}

- Country-specific cultural characteristics such as low “power distance”, defined as the degree to which individuals expect and accept that power is distributed unequally,³⁶ high individualism and low uncertainty avoidance could influence the adoption of technology.^{37, 38, 39, 40}
- Countries with low power concentration have flatter hierarchies and people make decisions by themselves, contrary to hierarchical societies where it is unacceptable to disagree with decisions of a superior.⁴¹ Further, in individualistic cultures people prefer to collect information on their own from direct sources such as the internet, while in collectivist cultures people rely on subjective advice from family and friends.⁴² And finally, in countries with lower uncertainty avoidance, people feel comfortable trying new things, including new methods of buying.^{43, 44}

³⁰ The insurers in China are AnBong Life and PingAn; Insurtechs are Bihubao, HeTai and Xiaoyusan.

³¹ The US insurers include Massachusetts Mutual; Insurtechs are Ladder Life, Haven Life, Spot Life, Ethos.

³² The insurers in Sweden are Folksam, Scandia, Avanza, Nordea Liv, Nordnet and Idun Liv.

³³ The *Hofstede Cross Cultural Index* analyses the national culture of a country based on six cultural dimensions relative to other countries.

³⁴ Bellman, S. et al., “Predictors of online buying behavior”, *Communications of the ACM*, 1992.

³⁵ Lee, H. et al., “Consumer Lifestyles and Adoption of High-Technology Products: A Case of South Korea”, *Journal of International Consumer Marketing*, Vol 21, 2009.

³⁶ See Hofstede Cross Cultural Index at <https://www.hofstede-insights.com/models/national-culture/>

³⁷ Matusitz, M. et al., “Power Distance, Uncertainty Avoidance, and Technology: Analyzing Hofstede’s Dimensions and Human Development Indicators”, *Journal of Technology in Human Services*, 2013.

³⁸ Özbilen, P., “The Impact of National Culture on New Technology Adoption by Firms: A Country Level Analysis”, *International Journal of Innovation and Technology*, Vol 8, 2017.

³⁹ Peterson, M. et al., “The Influence of National Culture in Information Technology Product Adoption”, *AMCIS 2003 Proceedings*, Paper 119, 2003.

⁴⁰ Lee, S. “The impact of cultural differences on technology adoption”, *Journal of World Business*, 2013.

⁴¹ Zakour, A., 2004, Cultural differences and information technology acceptance, Proceedings of the 7th Annual Conference of the Southern Association for Information Systems.

⁴² Lee, S., 2013, The impact of cultural differences on technology adoption, *Journal of World Business*, Vol 48.

⁴³ Laukkanen, T., “How Uncertainty Avoidance Affects Innovation Resistance in Mobile Banking?” *48th Hawaii International Conference on System Science*, 2015.

⁴⁴ Garbarino, E. et al., “How cultural differences in uncertainty avoidance affect product perceptions”, *International Marketing Review*, Vol 24, 2007.

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- Every country has a unique combination of cultural characteristics. China's society is highly collectivist and there is high-power distance, indicating that inequalities are accepted. Yet the Chinese also appear comfortable with uncertainty, much like the Swedes. This could explain why China has a high e-commerce buyer penetration. So too could what count as popular leisure activities. Consumers that engage with technology more frequently in their daily lives and free-time also shop more online.^{45, 46} Noteworthy is that web surfing is a very popular free-time activity in China (ranked first)⁴⁷ and Sweden (ranked third)⁴⁸; not so in Spain.⁴⁹

...and where surfing the web is a popular leisure activity.

All told, we believe that more insurance will be bought online once consumers have easier access. The degree of online insurance purchases will grow faster in markets with certain cultural characteristics (low power distance, high individualism, low uncertainty avoidance), and where use of the internet is a preferred leisure activity. To this end, we see more opportunities for online insurance purchases in markets like Sweden, the US, the UK, Germany and China (see Figure 10).

Figure 10
Culture and leisure across markets

Factor	Sweden	US	UK	Germany	China	Spain	Italy	Turkey
High individualism	✓	✓	✓	✓	✗	✗	✓	✓
Culture Low power concentration	✓	✓	✓	✓	✗	✗	✗	✗
Low uncertainty avoidance	✓	✓	✓	✗	✓	✗	✗	✗
Leisure activities*	✓	✓	✓	✓	✓	✗	✗	✗
E-commerce consumption	80%	78%	89%	82%	71%	59%	53%	33%

Note: Digital e-commerce buyers are defined as consumers who use the Internet and have made at least one purchase online in 2017;

* 1 of 3 most preferred leisure activities includes web surfing.

Source: Swiss Re Institute

⁴⁵ Li, H. et al., "The impact of perceived channel utilities, shopping orientations, and demographics on the consumers online buying behavior", *Journal of Computer-Mediated Communication*, Vol 5, 1999.

⁴⁶ Bellman, S. et al, 1999, op. cit.

⁴⁷ Chen, M. et al., "Leisure activities and leisure motivations of Chinese residents", *PLoS ONE*, Vol 13, 2018.

⁴⁸ *En undersökning om svenska folkets tidsanvändning år 2010/11*, Statistiska CentralByrån, 2011.

⁴⁹ *2009-2010 Time Use Survey*, Instituto Nacional de Estadística, 2011.

A theoretical framework helps understanding of what affects the decision to buy cover online.

What drives online purchasing behaviour if access is provided?

Models based on consumer value and need theories can help answer the above question.^{50, 51, 52} Figure 11 depicts a theoretical model tailored to online life insurance buying behaviour. It consists of three value drivers: functionality, emotions and personal growth. To date, insurance product design has mostly focussed on functionality, with little consideration of emotional and personal growth values.

Figure 11
Schematic showing of drivers of insurance purchasing behaviour model



Source: Swiss Re Institute

Consumers value simplicity and want to be emotionally fulfilled.

Analysing 400 consumer reviews of two US digital life insurers (Ladder Life and Haven Life), we find that when consumers buy cover online, they value functional but also emotional and personal growth elements (eg, empowerment).⁵³ The most commonly mentioned emotions are “no pain” and feeling of “happiness” and “delight”; 23% said they find buying online “painless” while 22% said they feel “great” to buy online. Another 20% of consumers said they “enjoy” completing their application and purchase online. Nearly 17% said they feel lower pressure not being in contact with an insurance agent.

They enjoy products that address personal growth values.

The personal growth values perceived by consumers mostly relate to empowerment. Consumers value the ability to acquire information on product prices and terms, and to be able to decide by themselves which policy best fits their needs. One consumer stated, for instance, “it was great (...) to get the information to make a decision yourself”.⁵⁴ These empowered consumers are no longer passive shoppers dependent on an agent’s advice. They are active participants who want information to make their own decisions.⁵⁵

⁵⁰ M. Holbrook, *Customer Value: A framework for analysis and research*, Routledge, 1999.

⁵¹ J. Sheth, et al, “Why We Buy What We Buy: A theory of consumption value”, *Journal of Business Research*, Vol 22, 1991.

⁵² A. Maslow, “A Theory of Human Motivation”, *Psychological Review*, Vol 50, 1943.

⁵³ “Reviews”, *trustpilot.com*, and *consumeraffairs.com* last accessed 22 August 2019.

⁵⁴ Consumer review quoted from *consumeraffairs.com*, 1 February 2018.

⁵⁵ P. Bühler, P. Maas, “Consumer empowerment in insurance”, *International Journal of Bank Marketing*, Vol 36, 2018.

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Insurers need to better relate with consumers on higher-level emotional attributes.

These value drivers play an important role in understanding consumers' choice behaviour and future purchasing intentions.^{56, 57} For example, Alibaba's critical illness insurance⁵⁸ and Lemonade's home insurance^{59, 60} offer a simple and immediate purchase process, and also address emotional and personal growth values (see Figure 12). In the case of Alibaba, consumers emotionally experience insurance as a community product since they only contribute to a pay-out when someone is ill. The personal growth value (empowerment) is fulfilled by allowing a large group of pre-approved consumers decide through a collective voting system whether a pay-out should be approved.^{61, 62}

Figure 12
Examples of insurance products based on the three value drivers

Cases: designing insurance based on functional, emotional and personal growth values

	Case 1 Alibaba's critical illness insurance	Case 2 Lemonade's home insurance
Functional value	The purchase process is simple and immediate via the transaction app Alipay.	The purchase process is simple and immediate via the Lemonade app or a laptop/tablet.
Emotional value	Consumers experience insurance as a community product since they only collectively contribute to the payout when someone is ill.	Customers choose a non-profit organisation for the leftover money from the monthly flat fee and join a community that believes in the same cause.
Personal growth value (empowerment)	(Empowerment): Preapproved consumers decide themselves through a collective voting system whether a payout for claimants should be approved.	(Empowerment): consumers are empowered by deciding which social cause they want to choose for their leftover money.

Source: Swiss Re Institute, based on information from company websites

In the future, all ages will be attracted to digital insurance.

In the next three to five years, the digital insurance consumer will likely remain the Millennials, with higher levels of income and education. In the longer-term, as millennials become seniors, all age groups will be attracted to digital insurance, with income and education less relevant factors in purchase decisions. New, innovative digital cover options for consumers with lower income are already available. For instance, micro L&H insurance products offered by China Life⁶³, PROSUR⁶⁴ or Jubilee,⁶⁵ and also Alibaba's critical illness product "Xiang Hu Bao" attract consumers from all backgrounds, irrespective of income and education levels.⁶⁶

⁵⁶ J. Sheth, et al, "Why We Buy What We Buy: A theory of consumption value", *Journal of Business Research*, Vol 22, 1991.

⁵⁷ M. Holbrook, *Customer Value: A framework for analysis and research*, Routledge, 1999.

⁵⁸ "Alipay Health Plan Aiming For 300m Users", *alizila.com*, 11 April 2019.

⁵⁹ "Instant everything" on *Lemonade.com*

⁶⁰ "The Lemonade Giveback" on *Lemonade.com*

⁶¹ Ant Financial Aims to Disrupt Health Insurance with New Chinese Health 'Collective', *insurancejournal.com*, 11 April 2019.

⁶² "Jack MA is Selling Cancer Coverage for Pennies a Month in China", *bloomberg.com*, 20 May 2019.

⁶³ *Microinsurance and rural development in China: A Q&A with Associate Professor Yi Yao (Kitty) of Peking University*, MicroInsurance Center at Milliman, 21 March 2019.

⁶⁴ "POSUR Micro-Insurance" on *prosur.com.kh/*

⁶⁵ "Micro Insurance: Enabling people to overcome uncertainty", *jubilee.com*, 23 August 2014.

⁶⁶ *insurancejournal.com*, 11 April 2019, op. cit.

The digital insurer

The future insurer will be hyper-aware of customers needs and preferences, and offer personalised, flexible products and services in real time. Data-enabled processes will minimise friction and streamline the customer insurance journey, from request for coverage to claim. Artificial intelligence will be used to interact and build understanding of the customer, and servicing will be through (personal) virtual assistance, 24/7.

The offering

Digitisation can provide more timely feedback loops.

Personalised, social, sustainable and engaging

Digitalisation can provide far more timely feedback to insurers by leveraging a range of daily interactions, for example across mobility, health and recreational behaviour. Feedback loops have always existed in insurance, influencing purchasing patterns, insureds' risk behaviours and how they make claims. The feedback has traditionally been ex-post, and that has sometimes meant a long time lag.

These constant feedback-based processes provide better insights for risk management...

Balance autonomous insights and empathetic care

Digitalisation goes beyond data collection. It also gives insurers power to understand risks more dynamically.⁶⁷ Insurers may discover uncovered exposures that they can seek to close (see Figure 13). For example, combining traffic, weather patterns and other factors, insurers may determine that a driver spends the majority of time on higher-risk roads. Insurers are taking first steps in engaging customers in an empathetic manner based on such observed behaviours. For example, Generali has a real-time coaching tool for motor insurance clients, helping them drive better and work on accident prevention. The focus is currently on mobility services, with plans to expand to other areas.⁶⁸

...and allow insurers to propose innovative coverages quicker.

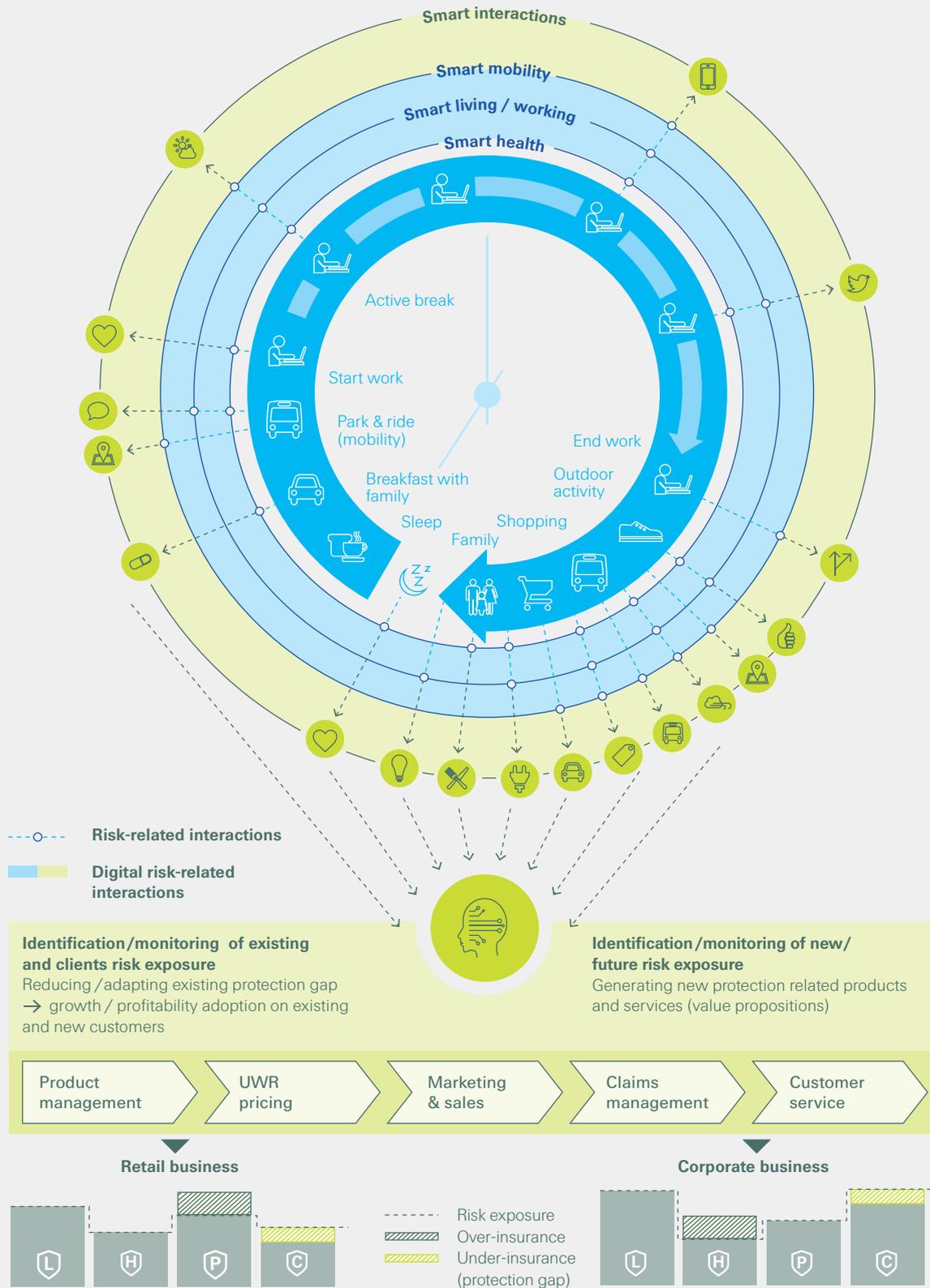
Access risk insights across new touchpoints and channel formats

With digitalisation, insurers can obtain risk-related data from a variety of touchpoints, and can identify and monitor existing and new risk exposures. New data sources and analytical capabilities can provide instant in-depth view of risks across touchpoints, which facilitates quicker risk assessment and allows insurers to propose innovative and relevant coverage. Pre-digital, insurers have had to wait till loss data is available to assess if a customer is adequately covered.

⁶⁷ For example, when someone stops working due to a disability, insurers can use data to suggest ways to help the customer recover more quickly. See "MetLife hooks into external data feeds to help curb customer risk", *CIO.com*, 15 October 2018.

⁶⁸ "We innovate for our customers", on *generali.com*

Figure 13
Insights improve the existing value chain



Source: Swiss Re Institute

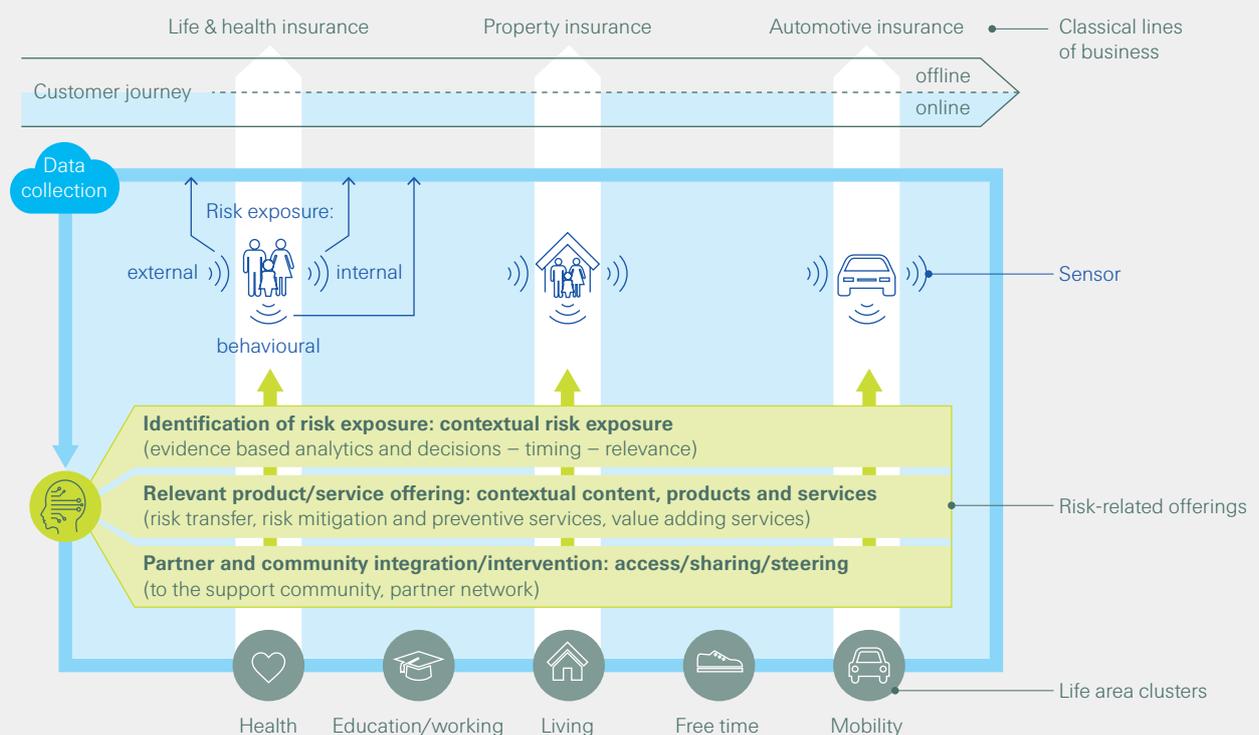
Insurance will thus become more proactive.

Shift from product to service orientation

Digital interactions will enable insurers to create personalised insurance and new protection-related services. Traditional risk selection will remain a core activity, but will be faster, simpler and based on real-time data. Greater volumes of digital data will help quantify different kinds of exposure, (eg. behavioural, external and internal, see Figure 14).

- Behavioural exposure is the risk of aberrant actions, such as driver speeding, failing to maintain safe distance, or choosing dangerous routes.
- Internal risk exposure covers the inherent risk of each insured or asset (eg. quality of construction for a property).
- External risk exposure covers environmental factors like catastrophe risks for property, or bad weather and street conditions for drivers.

Figure 14
Representation of an ideal state of risk quantification



Source: Swiss Re Institute

The digital insurer

This ideal state is still a way off.

The key task for insurers is to develop their digital capabilities to access relevant information about changes in risk exposures, convert them into actionable insights and then package and communicate these to customers in a user-friendly manner. To do this, insurers need to upgrade digital capabilities across three areas.

- 1 **Identify true risk exposures:** Not all data can be used for risk exposure identification. Insurers need to understand risk exposure (evidence-based analytics and decisions), based on timing, relevance and true signalling power.
- 2 **Create relevant product/service offerings:** Insurance cover should adapt to changing needs, ensuring that cover is appropriate across different life stages. To this end, insurers will need to be able to contextualise products and services (risk mitigation and preventive services, value adding services).
- 3 **Partner and community integration/intervention:** Insurers can steer the support community and partner network. With advanced analytics, they will be able to identify customers most likely to buy based on risk sub-segments.

Higher-quality service will lead to greater loyalty.

As insurers refine these capabilities, they will be able to provide higher-quality service interactions, which should lead to greater loyalty. For example, if a property insurer can access and analyse data on changes in risk exposure, whether from owned or third-party data, it can enable safety and security services to prevent damage and losses. It could also advise on real estate purchases across hundreds of relevant risk variables. For example, one insurer is exploring how to engage with customers on predictive indicators such as if a property is in public transit corridors, the number of emergency calls made from the property, hygiene of nearby restaurants, and infrastructure quality in the area.⁶⁹

Insurers in emerging markets are leapfrogging peers in advanced markets in some innovative areas...

Technology is accelerating the development of insurance in emerging markets. What took many years of development in advanced markets is being compressed into just a few years in the emerging territories. This is "leapfrogging", where some technology steps are skipped. These disruptive technologies are facilitating convenient access to insurance products and services as part of local requirements.

...and are working with digital ecosystems to extend their reach.

Insurers in emerging markets are taking the lead in leveraging new digital ecosystems; these offer multiple touchpoints to capture user attention, and often evolve from their original businesses, to move into new domains. Such as in the case of Grab based in Asia, which started with passenger mobility, then entered food and goods delivery, and is now expanding into healthcare.⁷⁰ Insurers in Asia are forming partnerships with such firms: the insurer brings the underwriting expertise and the partner firm an entry point to ecosystems, allowing the insurer to extend its reach, target specific segments and mine user behaviour. Along these lines, in China, Aviva has partnered with internet major Tencent to sell critical illness policies online. In another example, in Africa insurers are selling insurers through ride sharing drivers in mobility ecosystems.⁷¹

⁶⁹ "MetLife hooks into external data feeds to help curb customer risk", *CIO Magazine*, 15 October 2018.

⁷⁰ "Ping An Good Doctor and Grab Form Joint Venture to Deliver Transformative O2O Healthcare Solutions in Southeast Asia", *grab.com*, 16 August 2018.

⁷¹ "How Nairobi-Based Ridesharing Service Little Competes With Uber in Africa", *skift.com*, 19 June 2018.

Flexible and modern platforms can help insurers enter new markets.

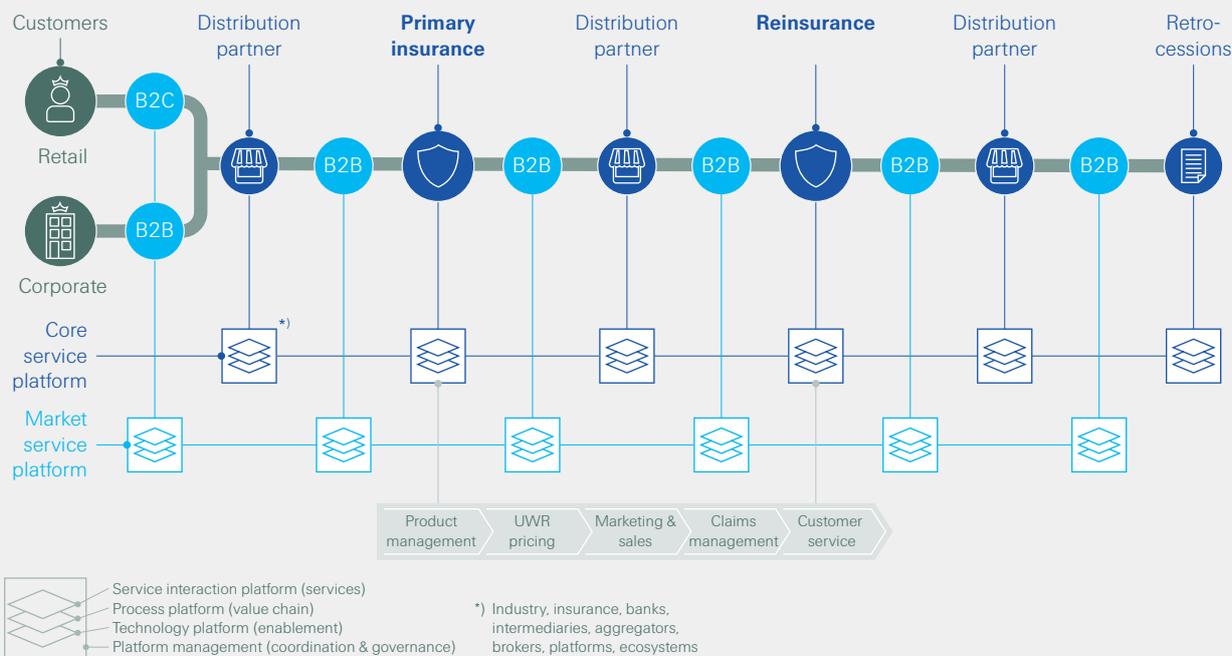
They also connect market services for different parties.

Insurers can use digital platforms that are modern and flexible

Insurers can leverage flexible, product-agnostic and fully-integrated digital platforms to engage with customers through the buying journey. Core value chain components like underwriting can be transformed into insurance as a service (see Figure 15). For example, Swiss Re has a partnering solution, iptiQ, that allows insurers to harness the power of cloud applications and data analytics to make buying cover easier.⁷²

Platforms can also act as intermediaries connecting market services for different parties, (eg, enabling brokers to manage and deliver cross-border programs from a single online platform).⁷³ Two types of platforms have been established. First, core service platforms, which enable part or the whole value chain of an established industry as a service (IaaS – Insurance as a Service solutions). Second, service platforms, which act as intermediaries between supply and demand. In rare cases a combination of both platform types may be established.⁷⁴

Figure 15
Depiction of opportunities for platforms in insurance



Source: Swiss Re Institute

⁷² Swiss Re's partnering solution iptiQ allows insurers to harness the power of cloud-based applications and data analytics to make buying insurance easier, and to help more people to become insured. See *iptiQ: The technology making it easier to buy insurance*, Swiss Re, 7 November 2018.

⁷³ *Swiss Re Corporate Solutions announces collaboration to build a multinational insurance program management platform for Brokerslink*, Swiss Re Corporate Solutions, 18 October 2019.

⁷⁴ *Starling's Marketplace delivers an 'app store' experience for financial services*, NS Banking, 27 February 2019.

The digital insurer

Insurers can use these platforms to influence brokers to partner with them. This allows a seamless customer journey across the value chain.

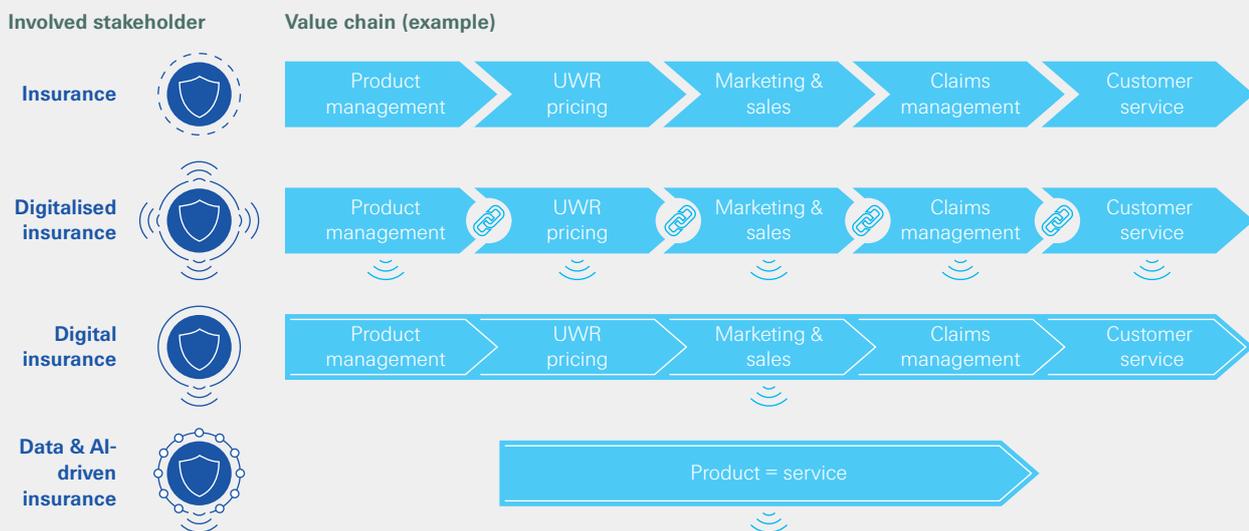
The benefit of these platforms is that insurers can use APIs to integrate with external partners, eg, ecommerce to bring significant efficiency across the value chain due to seamless information exchange. Different components (from need analysis to policy issue) can be customized and co-branded for these distribution partners who can choose which products they want to offer to consumers. This allows a seamless customer journey across the value chain by virtue of remaining on single platform. These platforms can be multi-device (optimised for desktop, tablet and smart phone), and multi-channel, ie, customers can switch between face-to-face with an agent to self-service and can even work with an agent in a call centre with their data being saved and shared.

To iterate quickly, processes will become flexible and open to innovation.

The value chain will become more integrated

The first wave of digitalisation has made the insurance value chain more efficient (see Figure 16). However, multiple digital silos remain unconnected and information is compartmentalised. In the future, critical processes will be connected, and insurers will progress from being mere “digitalised insurance providers” to “digital insurers”. The potential for transformation does not end there. Looking further ahead, as data quality and algorithms improve, the next generation will be AI insurers with value chains that “learn” from data generated by consumers, ecosystems and governments. Developments in cognitive technologies will help such insurers integrate learning to adapt value propositions in real-time, thereby providing a holistic and unique customer experience.

Figure 16
Insurance products growing into a comprehensive risk service



Source: Swiss Re Institute

Better data and digital triggers will accelerate the adoption of parametric insurance.

The availability of such high-quality underlying data will also make it easier to create products with digital triggers, and will speed up the adoption of parametric insurance. Property-level flood insurance that utilises data-feeds from sensors in homes and businesses for parametric triggers is already available.⁷⁵ Basis risk should be much lower because the trigger is based on a data source in the property itself. Over time this will virtualise the value chain and lead to products becoming more parametric in nature (see *Smart contracts*).

Smart contracts can automatically recognise that the terms of an insurance policy have been met.

Smart contracts

The concept of smart contracts aligns with the idea of an AI-driven insurer constructed on an interplay between multiple value-chain components. Smart contracts are self-executing software programs that, for instance, can make a payment when triggered by occurrence of a risk event. Legal (contract) logic is put into computational logic, such that a string of computer code recognises that the terms of a contract or insurance policy have been met. It automatically transfers funds (insurance payouts) at the agreed time and registers those transfers.

However, as of yet there is no international regulation specific to smart contracts.

Existing insurance contracts need to be translated into computational logic. So far, the most promising cases have been in parametric insurance. Lines of business where telematics can be used, such as motor, aviation, cargo and agriculture, offer potential. However, certain challenges stand in the way of wider adoption of smart contracts. Notably, as of yet there is no international regulation specific to smart contracts. As Lloyds recently pointed out, it is unclear how policyholders who disagree with an automatic decision not to trigger cover can defend themselves.⁷⁶

Challenges to digitalisation

Monitoring yet facilitating innovation is a priority for regulators.

Regulation

The regulatory framework will play an important role in shaping the integration of new technology into the insurance space. In monetising the potential of digitalisation, insurers could face regulatory challenges on data protection and privacy, providing incorrect advice, and records retention. Errors or bias in algorithms that might contribute to systemic risk or prompt inappropriate insurance decisions is also an area of regulatory scrutiny. Likewise, it might be difficult for regulators to understand why a complex and proprietary algorithm decided to deny coverage or reject a claim, undermining their ability to fulfil their supervisory and consumer protection tasks.

Insurers could also face country-specific regulatory limitations.

Regulators are also wary of unsolicited use of data. Insurers also face country-specific regulatory limitations and high implementation efforts for product development and modifications. They will have to construct a robust system of data governance to win both customer trust and abide by regulation. There may be additional legal and compliance challenges, such as integrating multiple vendors into one proposition.

⁷⁵ *JBA&FloodFlash launch sensor-based parametric flood cover first*, Artemis, 27 June 2019.

⁷⁶ *Triggering innovation*, Lloyds, 2019.

Consumer reticence to share data varies by country and there may be resistance in some contexts.

The focus should be on loss prevention rather than personalised premiums.

Better to ask fewer, more focused questions.

But some policyholders may be less comfortable with digitisation.

Ownership of data and willingness to share

As data become easier to collect, an increasingly important consideration will be ownership. For example, ownership of images of properties surveyed by drones may rest with clients, not insurers. Consumer reticence to share data varies from country-to-country, and there may be resistance to do so in some contexts. For example, some employers that offer workers boots, gloves and vests with wearables have found some employees refuse to be monitored.⁷⁷ This behaviour differs by line of business; a recent survey found US consumers more willing to share health-related data than home-related data.⁷⁸

Another survey found that consumers are cautious about sharing data, even when they know it will lead to a more personalised experience.⁷⁹ However, an Accenture survey found that eight of 10 would share personal data (eg, on income, location and lifestyle habits) with insurers if it lowers risk of injury or loss.⁸⁰ This suggests messaging around data sharing is more effective if the focus is more on loss prevention rather than personalised premiums.

Data availability

Data is not easily available in the required depth and detail. Insurers will have to strike a balance between more and relevant data. Data can be easily misinterpreted if the background context is not fully understood. For example, a non-smoker who on occasion buys cigarettes for a parent could be identified as a casual smoker, and could be subject to higher premium rates when buying health insurance. Does more data help or confuse? In some cases, asking fewer but more focused questions could lead to more precise answers.

Consumer wariness about automation

Some consumers may be less comfortable in an automated world. For example, 48% of surveyed consumers said they worry about mistakes while filling out insurance forms, and 46% fear that claims pay-outs might not be accurately calculated by machines.⁸¹ Policyholders may be divided in their views on digitalisation. It is vital to win customer confidence by reassuring them about machine accuracy and developing checkpoints to help them avoid mistakes.

⁷⁷ "The Exciting, New Ways Technology Is Streamlining the Claims Management Process", *Risk&Insurance*, 5 August 2019.

⁷⁸ *U.S. Consumer Survey: A Connected-Devices Insurance Roadmap*, Aite Group, 20 May 2019.

⁷⁹ "Promise of personalization has little impact on consumer willingness to share data, study reveals", *Marketing Dive*, 14 August 2019.

⁸⁰ 64% of consumers are willing to share data in exchange for adjusted car insurance premiums based on safe driving and 52% are willing to share data in exchange for life insurance premiums tied to a healthy lifestyle. See *Six in Ten Consumers Willing to Share Significant Personal Data with Banks and Insurers in Exchange for Lower Pricing, Accenture Study Finds*, Accenture, 14 March 2019.

⁸¹ "Future of Claims: Customers Still Want Humans In Process – But Not Too Many", *Carrier Management*, 24 March 2019.

Marketing, distribution and servicing

Insurers are moving away from a product-focused sales approach to one closely tied to the broader needs of the customer, with greater focus on the human experience. New generations of systems will grant unprecedented levels of proximity and influence on customers, and insurers will be able to optimise interaction across a diverse range of customer touchpoints.

Marketing to become more granular

Insurers can use new data to build a consumer journey based on human experience.

Historically, insurance marketing has been about aggregating prospective buyers into groups likely to have common needs and respond similarly to marketing. Typical attributes include geography, demographics, psychographics (eg, values, attitudes, lifestyles) and behavioural aspects (eg, price sensitivity). This approach leads to a relative broad spectrum of consumers in a segment, which can limit effective targeting. With new sources of digital data on life events such as purchase histories, travel behaviour, customer service records, data from devices, wearables and also social networks, insurers can employ advanced analytics techniques to yield more granular classification of existing and prospective customers (see Table 1).^{82, 83}

Table 1
Evolution of marketing and distribution innovation timeline

Marketing and distribution journey	Past	Present	Future	Key enablers
Customer experience	Fragmented, limited channels	Multichannel, somewhat integrated	Seamless, continuous	Platform economy, insights available
Market size/sentiment analysis	Time consuming, Physical	Tech-based, still takes time	Tremendous efficiency and accuracy gains	Online surveys, digital behavior
Personalisation	Not possible, very expensive	Possible, limited scope	Complete customisation	Shorter development time, data insights
Channel evolution	Agent-driven, door-to-door	Direct (online, contact center, bots), Tech enabled agents	Ecosystem based with virtual connect	Chatbots and machine learning
Fulfillment	Exhausting & time consuming	Direct to home	Needs-based "just in time"	

Source: Swiss Re Institute

⁸² *sigma* 6/2015, *Life insurance in the digital age: fundamental transformation ahead*, Swiss Re, December 2015

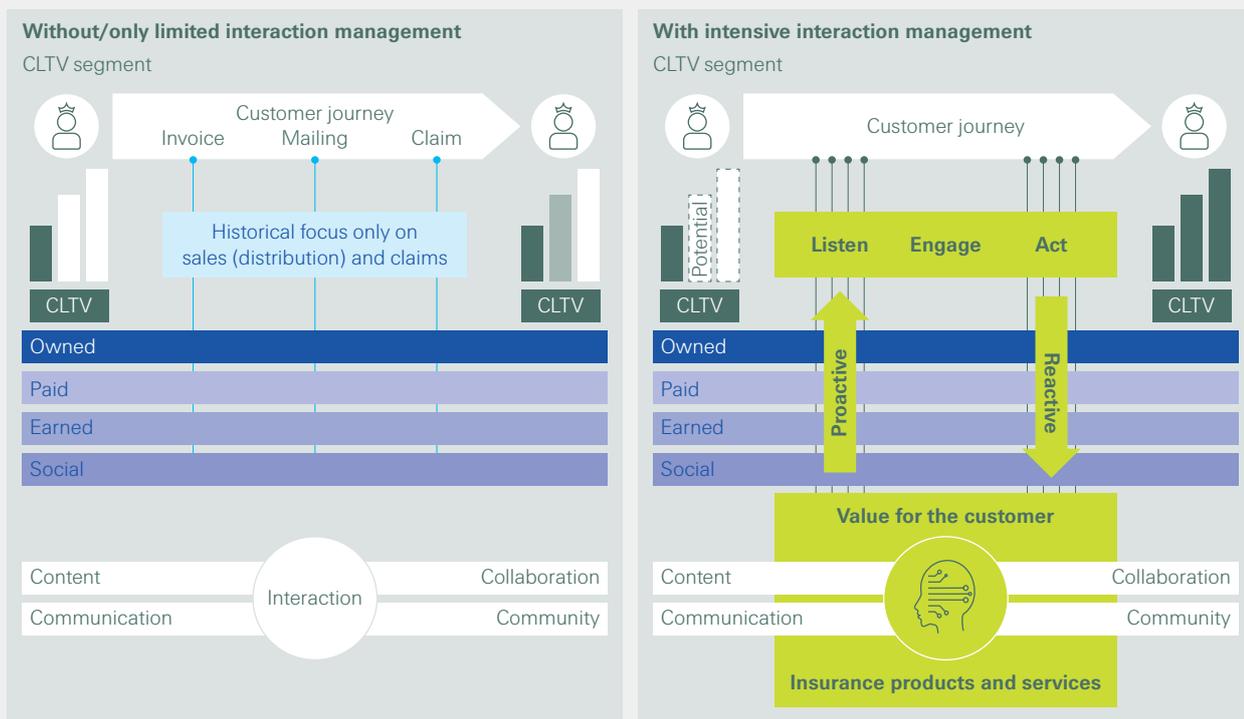
⁸³ *Ibid.*

This can boost customer loyalty.

Smart interaction: the future of marketing

This personalisation can improve loyalty management and impact customer lifetime value (CLTV).⁸⁴ Historically the focus of insurer engagement with customers has been on sales and claims. With new data sources and advanced analytics, insurers can interact with customers over their lifetime on a wide range of relevant issues, developing systems that help them listen, engage and act both proactively and reactively (see Figure 17).

Figure 17
Schematic showing how smart interaction increases loyalty and customer equity



Source: Swiss Re Institute

Lifestyle related interactions will help build deeper one-to-one relationships, at scale.

The more high-quality interactions there are, the more loyal customers will be. To this end, insurers can pro-actively use digital engagement to reduce policyholder churn. For example, recently a major P&C carrier ran a three-month pilot, sending personalised automated texts to delinquent customers and followed up with a phone call, creating a new level of proactive digital and human engagement. Less than 2% of customers opted out, and a large majority of delinquent customers were retained. There was less manual work: the approach yielded results with 50% fewer outbound calls.⁸⁵ Insurers can broaden the scope of these interactions with policyholders to a wider sets of prospects. For example, some insurers have decoupled insurance from their telematics apps. The app is available to all drivers rather than insureds alone.⁸⁶

⁸⁴ Customer lifetime value or CLTV is a measure of net profit attributed to the entire future relationship.
⁸⁵ *Strategy Meets Action. Proactive Digital Engagement: From Reactive to Proactive: A Paradigm Shift for Insurers*, Hearsay Systems, August 2019.
⁸⁶ *Insurance Innovation of the Month: AIG on the Go*, EFMA, 15 January 2019.

Capitalising on unique moments will be key to increasing loyalty and customer lifetime value.

Agents will act as risk consultants with a fuller view of customers' life events.

In commercial, small and medium sized business are also becoming more open to digital distribution.

Distribution: traditional touchpoints will adapt

With digitalisation, insurers will be better able to identify where human interactions play a significant role. Capitalising on unique moments will be key to increase CLTV. Currently digital interactions are mostly transactional (post-sale interactions focused on billing and claims handling), and miss opportunities for insurers to address the full range of customer needs. Insurers need to understand where and how empathy is an important component of brand value by offering a unified customer experience. Automated data capture and synchronisation with customer relationship management (CRM) systems offer actionable insights. For example, agents are alerted when a customer files a digital notice of loss claim and can use that event as an opportunity to call on the same day to better understand other life events (eg, a baby on the way) and, if appropriate within the contextual setting, cross-sell.⁸⁷

Intermediaries: their role will change

As customers become more comfortable with buying insurance online, the role of intermediaries will evolve. Agents will act as risk consultants with an overview of what's happening with each customer across the value chain. Insurers and agents will also need to rethink traditional cooperation models, including how intermediaries are compensated. For example, a client acquired online may require advice from an agent. A compensation model that rewards agents for these services via advisory fees that consumers are willing to pay, may help alleviate channel conflicts that could arise within a pure commissions-based system.⁸⁸

New distribution technology has not impacted wholesale commercial insurance markets as much as retail/personal lines. However, there are some initiatives to simplify parts of the value chain in commercial insurance. Lloyd's of London for example, mandated its syndicates to use electronic placements for no less than 30% of their written risks by the end of 2018.⁸⁹ Online brokers for small and medium businesses (SME) are also seeing traction. For instance, Embroker and CoverHound use data verification technology to obtain immediately bindable quotes, allowing customers to complete the process almost seamlessly online.⁹⁰ These platforms offer additional services (eg, help SMEs upload and compare policies, generate vendor certificates, and asset tracking), which can strengthen customer loyalty.

⁸⁷ [Insurance] *The Next-Gen Customer Experience – A Dreamforce Case Study*, Hearsay Systems, 16 October 2018.

⁸⁸ *sigma* 6/2015 op. cit.

⁸⁹ "Lloyd's issues electronic placement mandate", *Lloyds.com*, 20 March 2018.

⁹⁰ See Embroker, CoverHound.

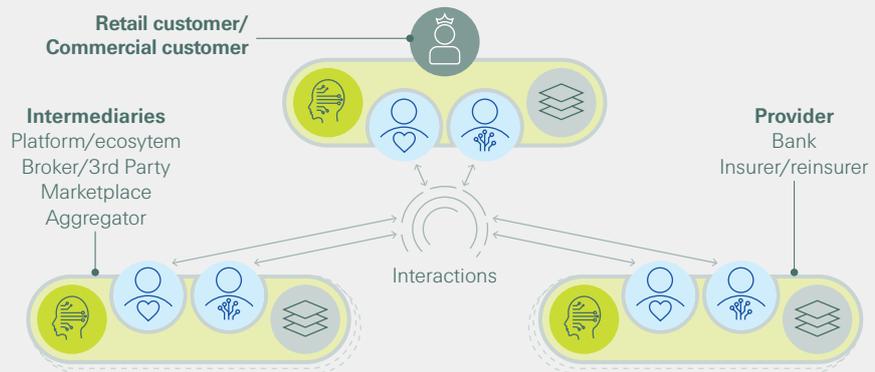
Digitally-augmented channels, combining man and machine will become more common.

Digitally-augmented channels on the rise

New digital interactions will be driven by next-generation empathetic advisory tools, augmented by AI (see Figure 18). Agents and brokers will leverage these to refine their communication to adapt to the customer’s emotional, situational and personal contexts. The power is in combining both functional and empathetic interfaces. The functional interface performs the analytics and provides the intelligence, such as next best action. The agents/brokers provide the human or empathetic interface.

Figure 18
Data and AI-driven augmented advisors

-  Smart-augmented platform
-  Digitally-augmented empathetic human interface
-  Digitally-augmented digital interface



Source: Swiss Re Institute

Big Tech, intermediaries and insurers will invest in different interaction channels.

We believe the use of digital advisors which combine these two capabilities will drive digital interactions in a targeted manner in the future. Generating this intelligence will become a core capability, and not just for insurers. Depending on who the provider is, there could be three types or levels of digital interaction channel. These could work in co-existence, although the one perceived by consumers as most trustworthy and unbiased will likely hold a distinctive competitive advantage.

- “Direct” customer advisors (insurer agnostic), offered by technology companies. For example, these could be enhanced versions of today’s Siri/Alexa/Google duplex assistants.
- The “intermediary advisor”, which feeds intermediaries with better insights so that back-office responsibilities are minimised, and agents can focus on human relations and empathy, augmented by better risk insights and data.
- The “product advisor”, which is fully insurer-owned. Such as, for example, GEICO’s mobile virtual assistant Kate, which intuitively guides customers to the relevant information about their policy and helps in self-service tasks.

Customers may use all three set ups. For example, for L&H insurance they may go to an intermediary, for home insurance direct to an insurer, and for mobility and travel insurance use an enhanced version of customer advisors like Google Assistant. Intermediaries will continue to play an important role, although human interaction may in some cases become less part of the standard process. Where human involvement can be of added value is where the emphasis is on contextual “empathetic interactions”. In the new competitive landscape, insurers will need to balance these customer interactions in the right manner using new loyalty and interaction systems.

Servicing: loyalty and new risk management needs

Additional digital tools and value-added services will help brokers push/distribute to customers.

Servicing is all about building deeper 1-2-1 relationship with customers at scale through risk prevention and value adding services (VAS).⁹¹ This is especially critical in commercial lines where specialised knowledge can be leveraged. Whichever party along the value chain possesses specialised knowledge and provides robust engagement will control servicing.

There is significant scope for insurers to enable agents and brokers with digital tools and value-added services. J.D. Power measures satisfaction scores among business relationships, and finds that insurance agents currently report low satisfaction with the service they receive from personal lines and commercial lines insurers.⁹² The advent of digital engagement in servicing has several implications for insurers:

- The boundaries of traditional insurance are becoming blurred, and distribution is moving towards an integrated ecosystem focusing on an end-to-end buying experience. A survey by Accenture found that three in five insurers (59%) are forming relationships with non-traditional partners to reach customers in new ways and create new value.⁹³ This will have an impact on all aspects of the value chain. To fully realise the benefits of these partnerships, insurers will need to upgrade their predictive analytics capabilities, obtaining risk-related data from a variety of touchpoints and providing tailored content.
- Customers want a positive experience across multiple channels and touchpoints. Gartner believes that in the coming five years, event-triggered and real-time marketing will make the biggest impact across industries.⁹⁴ However loyalty will be hard to come by. Digital-only customers still give their insurers lower loyalty scores than do multi-channel customers.⁹⁵ There is a misalignment between what customers expect from digital channels and what insurers provide. For example, some insurers fail to replicate certain service components, such as their Contact Us page, from their web to mobile sites.⁹⁶
- Shifts toward platform plays and ecosystems appear inevitable, in both personal and commercial lines. E-commerce firms, retailers, automotive OEMs and other non-traditional players are developing, owning and offering new and unique product propositions to customers. They build platforms based on plug-and-pay principles to allow third-party connections. Insurers need to be more cognizant that different elements in the value chain own different customer touchpoints.

⁹¹ Srikanth Madani, *Hypotheses on Innovation Direction in Insurance*, St Gallen Risk & Finance, 2019.

⁹² "Insurers Come Up Short for Independent Agents Despite Critical Role Agents Play in Driving Business, *J.D. Power Finds*", *prnewswire.com*, 31 January 2019.

⁹³ *Accenture, Technology Vision for Insurance 2019*, Accenture, 10 April 2019.

⁹⁴ *Gartner Identifies Four Emerging Trends That Will Transform How Marketers Run Their Technology Ecosystems*, Gartner, 29 August 2019.

⁹⁵ Bain and Company, 10 October 2018. *op. cit.*

⁹⁶ *Gartner Says U.S. Insurance Brands Underperform in Digital, Despite Customers' Growing Willingness to Provide Data*, Gartner, 10 July 2019.

Product development and underwriting

From bikes to trainers, customers like tailored rather than off-the-shelf products. The same will become increasingly prevalent in insurance. Over time Big Data and sophisticated models will allow risk pricing at increasingly granular levels. Emergence of new risks will create new underwriting and portfolio risk management techniques.

Digital-enabled product development

Digitisation will enable direct touchpoints with customers and real-time demand assessment.

Real-time demand assessment

Increasing digitalisation will present opportunities to connect directly with customers and assess product demand in real-time, rather than rely solely on channel partners (see Table 2). For example, in-app surveys and tracking search behaviour will provide clues about unmet customer needs. Based on granular customer data, insurers can more precisely segment customers and develop tailored products. Moreover, timing of product searches, when correlated with personal data, may provide the context in which a product is demanded. Such constant feedback will help insurers develop new products but also refine/adjust existing ones.⁹⁷

Table 2
Impact of digitisation on product development journey

Product development journey	Past	Present	Future	Key enablers
Demand assessment	Time consuming, dependent on channel partners	More efficient, based on limited customer data collection	Real -time, based on changing customer life stages	Online surveys, digital behavior tracking
Coverage design	Fixed coverage for longer duration	Partially modular coverage for shorter duration	Completely modular and real-time coverage	Hyper connectivity enabled by sensors, 5G, LPWAN ⁹⁸ and satellites
Pricing	Fixed pricing for defined risk categories	Short-period pricing based on limited behavioral data	Dynamic pricing based on real time behavioral data	
Partnership strategy	Mainly distribution-based partnerships	Extended partnerships across insurance value chain	Ecosystem partnerships driven by cross-industry value chains	APIs ⁹⁹ , cross industry ecosystems
Regulatory approach	Finite experimentation due to lack of data	Sandbox experimentation on data-based evidence	Approval for wide range of data in risk modelling	Sandboxes and innovation hubs
Customer feedback	Almost non-existent	Limited feedback based mainly on claims experience	Continuous feedback at multiple touchpoints	End to end digital delivery of products

Source: Swiss Re Institute

⁹⁷ K. Cool, C. Angoulvant, et al., "ZhongAn's Micropremium Model: The Future of Insurance?", *knowledge.insead.edu*, 18 May 2018.

⁹⁸ Low Powered Wide Area Network, a low bandwidth wireless technology covering wide areas.

⁹⁹ An interface or communication protocol that allows two software programs to talk to each other.

Digitisation has enabled coverage customisation, while preserving base product structure.

Real-time risk data will facilitate more innovative insurance solutions.

Better data quality is facilitating construction of new risk indices and creating new markets.

Data-driven and granular insights to facilitate new risk covers

At present, digitalisation drives modest coverage customisation in products. Such incremental innovation preserves the basic product structure, while using short time scales to price short duration covers and add-ons to provide coverage carve outs. These solutions are either white labelled or written directly by insurers.¹⁰⁰ Most of the covers are fixed for shorter durations. Products may use sensors to track asset usage or movement of individuals to activate coverage or offer minor premium credits, but this information is not widely used for real-time underwriting and pricing.

In the sharing economy, modularisation and real-time coverage adjustment will enable new products to adapt to the frequently changing risk profiles.¹⁰¹ Modularisation means the de- or re-coupling of coverage and services to suit the changing needs of a customer.¹⁰² Personal risk exposures will be tracked and modelled more easily so that insurers can more confidently de-couple coverage elements within existing monolithic products. Commercial risks are more complex and do not change as frequently. Digitalisation can help in coverage re-coupling across products to reduce protection gaps and achieve price efficiencies. In this dynamic environment, product life cycles will get shorter and speed-to-market will be crucial.¹⁰³

Some innovative products for new risk pools are emerging with granular data collection and analysis enabled by digitalisation. For example, we see first solutions emerging for personal cyber, use of cryptocurrency exchanges, or IoT infrastructure risks.¹⁰⁴ Better data quality also facilitates construction of new risk indices and parametric products, such as covers to protect against economic impacts of infectious disease outbreaks. These use pathogen sentiment indices from digital sources to gauge public fear and behavioural changes to measure the cost of epidemics.¹⁰⁵ In the future, we think algorithmic risk products will become mainstream, with assets and processes becoming more autonomous and intelligent.

¹⁰⁰ Toffee insurance, Trov and Element are examples of agencies providing pay-as-you go insurance via online portals. Metromile and Lemonade are licensed insurers with usage-based products.

¹⁰¹ Traditional asset insurance mandated a clear commercial or personal insurable interest. However, this classification is blurring with the sharing economy allowing individuals to put personal assets to commercial use via online platforms.

¹⁰² See *Mobility ecosystems striving towards a seamless interface for customers*. Swiss Re, 2018.

¹⁰³ Current average speed-to-market is eight months for new Life and Annuity products, and four months for modifications. For Property and Casualty insurers, it is seven months for new products and three months for modifications. See *Speed to market for life/annuity insurers*, Novarica, March 2019 and *Speed to market for property/casualty insurers*, Novarica, March 2019.

¹⁰⁴ Bitflyer and Mitsui Sumitomo are selling insurance for users of Cryptocurrency, while Munich Re and Relayr have developed customized insurance products to facilitate IoT infrastructure investments.

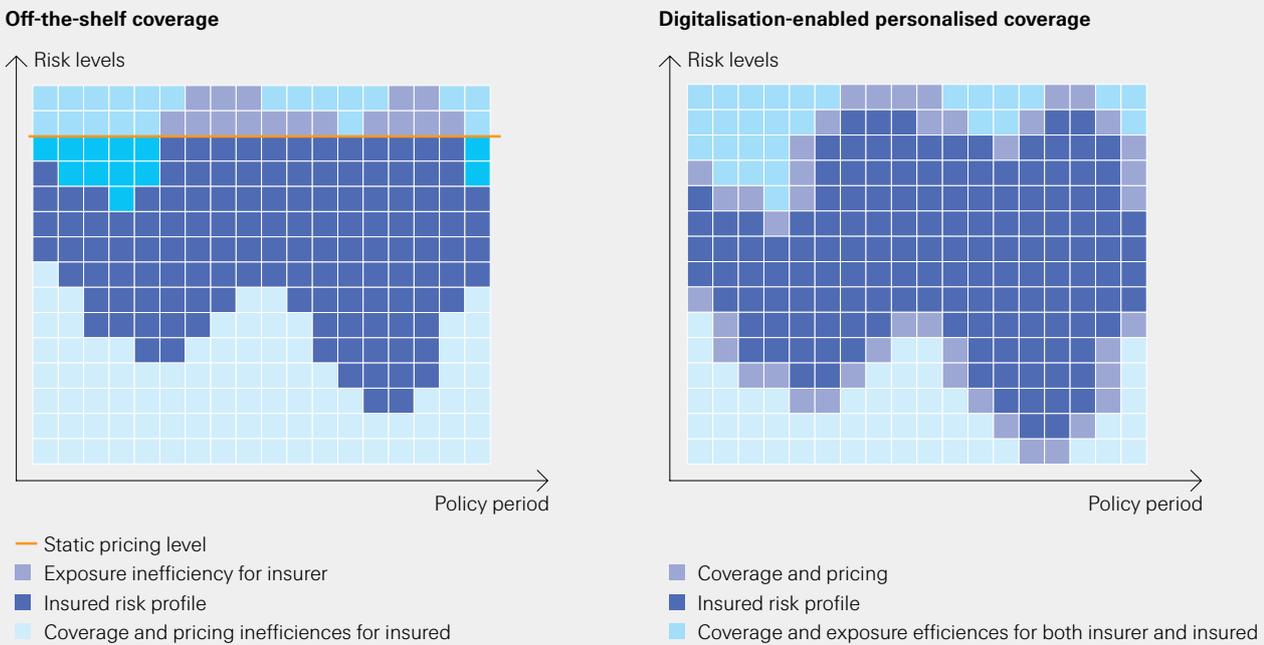
¹⁰⁵ Andrew W. Singer, "The Evolution of Parametric Insurance", *rmmagazine.com*, 1 April 2019.

Pricing based on granular data will generate premium efficiencies and mould consumer behaviour.

Dynamic risk pricing to drive behavioural change

Insurers will be able to micro-segment risk pools, thus accurately reflecting the risk of each unit within an insured pool. For example, Zurich Insurance in Spain partners with Klinc to offer coverage that can be turned on and off. This is for personal devices and other items from a catalogue of over 2 000 products, and there are plans to expand into categories like auto and home, all enabled by availability of granular behavioural data and advanced modelling.^{106, 107} Such pricing may change dynamically, based on changing risk profiles.¹⁰⁸ Going forward, cross-industry platforms and seamless insurance portability can integrate all the risks, exposures and covers for an insured under a universal insurance policy. This policy will be customised according to the insured and it will adapt the coverage in real-time on the basis of a change in the insured’s risk profile (see Figure 19).

Figure 19
Tech-enabled insurance product and service opportunities



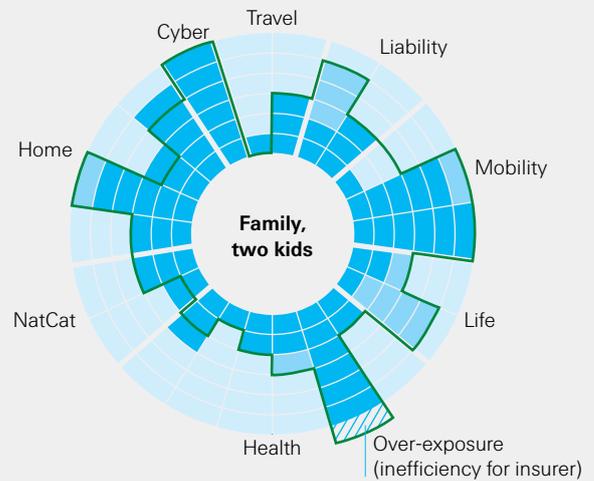
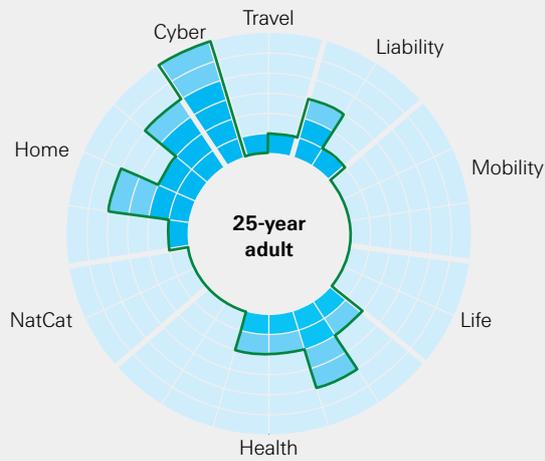
¹⁰⁶ Zurich’s innovation efforts recognized with Global Innovator Gold Award; Klinc takes top award in Products & Services, Zurich, 25 June 2019.

¹⁰⁷ In absence of granular data, insurers use proxies such as driver age, type of car or gender to assess driving behaviour.

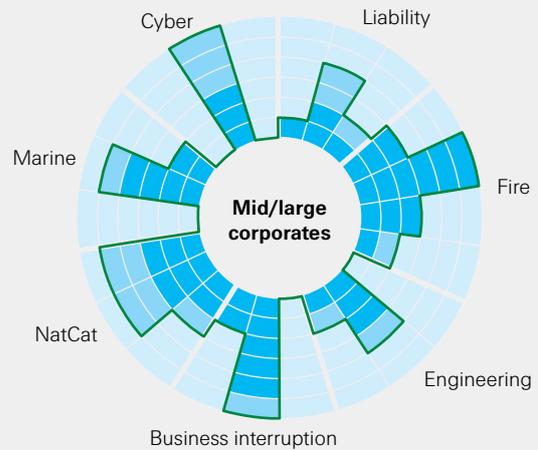
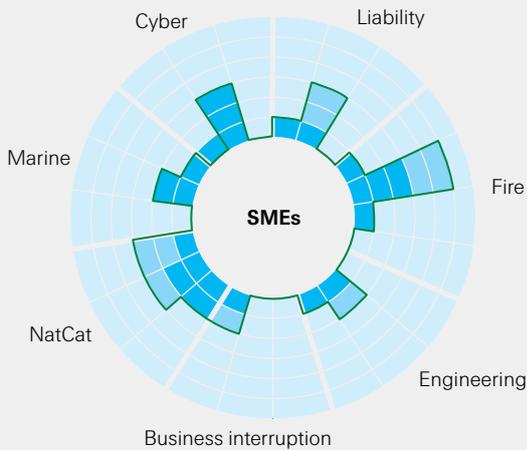
¹⁰⁸ Products like Pay as You Live (Health Insurance) or Pay as You Drive (Auto Insurance) rely not on the dynamic pricing, but short-period pricing based on limited behavioral data, which is a finer version of static pricing.

Tech-enabled insurance product and service opportunities (cont.)

Modularisation global insurance coverage in retail business



Modularisation and global insurance coverage in commercial insurance



- Risk exposure
- Risk coverage and price
- Under-insurance (protection gap)
- No insurance coverage

Note: The green (risk exposure) line in the circular charts indicates an insured's dynamic risk profile revealed by processing of granular insured data. The segments and blocks in the same chart indicate the extent to which coverage can be modularized across exposures under different risk areas (eg, cyber, fire etc.)

Source: Swiss Re Institute

Insurers may need to focus on preventing accidents and improving quality of life.

A wide range of services could be provided as part of the overall insurance package.

Extending insurance reach with preventive and value-added services

Insurers with strong distribution networks, brand and ability to adapt to meet customer needs (eg, simplifying tasks, offering outcomes that reduce pain/improve gain) could develop new relationships based on trust and value add. They will reinvent themselves from risk protection to value-add and preventive service providers. This will help counter any decline in premiums caused by reduction in loss incidences due to various safety features enabled by technology. Prevention could contain future claims while value add services build loyalty. These services (see Table 3) will grow more sophisticated as insurers harness network effects within cross-industry ecosystems, and should also increase customer stickiness through increasing touchpoints.¹⁰⁹

In commercial lines, insurers could partner with providers of technology to monitor industrial assets to improve efficiency, safety and early warnings. For example, one insurer offers a free online tool that helps SMEs assess risk of cyberattacks and become more proactive on security.¹¹⁰ In personal lines, insurers can enable access to technologies for coping with or mitigating morbidity. For example in Italy, Axa has prototyped a cancer profiling service that allows patients with advanced and/or metastatic tumours to access personalised cancer care.¹¹¹ And South African insurer Discovery has a service that provides additional pay-outs to insureds stricken with permanent disabilities to help them adjust to a new way of life.¹¹²

Table 3
Examples of value-added and preventive services

Service Type	Auto	Property	Life	Health
Preventive services	<ul style="list-style-type: none"> ■ Safe driving alerts ■ Maintenance rewards ■ Anti-theft and breakdown alerts ■ Geo fencing (eg, alert if driven outside of safe neighbourhood) 	<ul style="list-style-type: none"> ■ Remote monitoring and alerts ■ Flood monitoring in home basements ■ Automatic shutdowns of gadgets during fires 	<ul style="list-style-type: none"> ■ Online diagnostics ■ Help finding doctors ■ Scheduling appointments 	<ul style="list-style-type: none"> ■ Medical consultations ■ Screening and counselling ■ Behavioural assessments
Value added services	<ul style="list-style-type: none"> ■ Assistance to buy car ■ Concierge services ■ Alert when vehicle is moved, towed or hit when parked 	<ul style="list-style-type: none"> ■ Property security advice ■ Facility maintenance ■ Emergency repair services 	<ul style="list-style-type: none"> ■ Meal and fitness vouchers ■ Retirement, financial planning ■ Healthcare services 	<ul style="list-style-type: none"> ■ Digital health records ■ Fitness club memberships and discounts

Source: Compilation of value-added and preventive services by Swiss Re Institute

¹⁰⁹ *Digital ecosystems: extending the boundaries of value creation in insurance*, Swiss Re, 2019.

¹¹⁰ "Cyber Insurance" on armourinsurance.ca

¹¹¹ *Efma and Accenture Reveal Winners of Innovation in Insurance Awards 2019*, Accenture, 25 June 2019.

¹¹² *The Purple Life Plan*, Discovery, 2019.

Digitalisation and underwriting

Digitisation will enable more forward-looking underwriting.

Digitalisation of external and internal data will improve risk selection and pricing, while automation will streamline manual submissions, triaging and binding (see Table 4). Overall, these developments should reduce underwriting costs, loss ratios and free up time for underwriters to engage in softer aspects of business (ie, negotiation and relationship building). Also, developing repositories of digitised risk information will enable more efficient underwriting than decisions based on limited claims experience data. For example, Helvetia Insurance enables logistics companies to purchase transport insurance for their customers through a straightforward online app in less than two minutes.¹¹³

Table 4
Impact of digitisation on underwriting value chain

Value chain	Past	Present	Future	Key enablers
Submissions	Lengthy proposal forms and human interactions. No data collection for post submission analysis	Proposal auto-filling through third party data. Chatbot interaction but limited data collection	Fraud detection, behaviour analysis for spotting dishonest disclosures. Complete data collection	<ul style="list-style-type: none"> Advanced text and speech analysis (AI/ML) Efficient information storage systems
Triaging	Delays due to inefficient workflows and time-consuming decisions on referrals	Better quote to market speed on some LOBs due to auto-referrals to appropriate authority	Submission ranking based on conversion probability and auto suggestions on capacity management	<ul style="list-style-type: none"> Intelligent business workflows (AI/NLP) Better readability of digitized information (OCR)
Risk assessment	Manual, time consuming and limited at the point of underwriting	Usage of third-party data for external risk features, and automated report interpretation	Evolution into a risk foresight activity with frequent touch-points and real-time sensor data	<ul style="list-style-type: none"> Digitisation of asset and biological data Text and image analysis Processing of sensor data
Coverage and pricing	Coverage governed strictly by insurability, while pricing based on static risk matrix	Flexible cover and pricing for some LOBs, driven by data on asset usage and individual movements	Real-time coverage and pricing adjustments, Seamless cover portability across insurers	<ul style="list-style-type: none"> Real-time risk modelling Capacity sharing (P2P, Digital risk consortiums) Connected sensors
Binding	Delayed binding due to data entry of paper-based information in multiple systems	Reduction in binding time and errors due to higher flow of digitised submission data in to binding process	Instant binding on the basis of end to end digitised submission and risk assessment data	<ul style="list-style-type: none"> Same as submission and triaging

Source: Swiss Re Institute

Submission level accuracy will be much improved with availability of more granular customer data.

Submissions triage and routing to become more automated efficient

Increasing digitalisation of geographical, personal and asset information will be leveraged by insurers to auto-fill proposals, offer risk scores, and even identify more honest brokers.¹¹⁴ Already pin-code and license plate numbers reveal location specific hazards and vehicle details, while business registration numbers linked with municipal data are used to provide occupancy and previous loss history for commercial clients. For example, about 85% of submissions for Chubb's business

¹¹³ Helvetia transforms logistics and freight companies into insurance professionals, Helvetia, 7 October 2019.

¹¹⁴ Berkshire Hathway Guard Insurance now obtains needed information based on data available online and offline, which has reduced time from submission to quote. See "Berkshire Hathway GUARD Insurance Companies partners with Planck to create full digital underwriting for their commercial lines", *prnewswire.com*, 7 March 2019.

Product development and underwriting

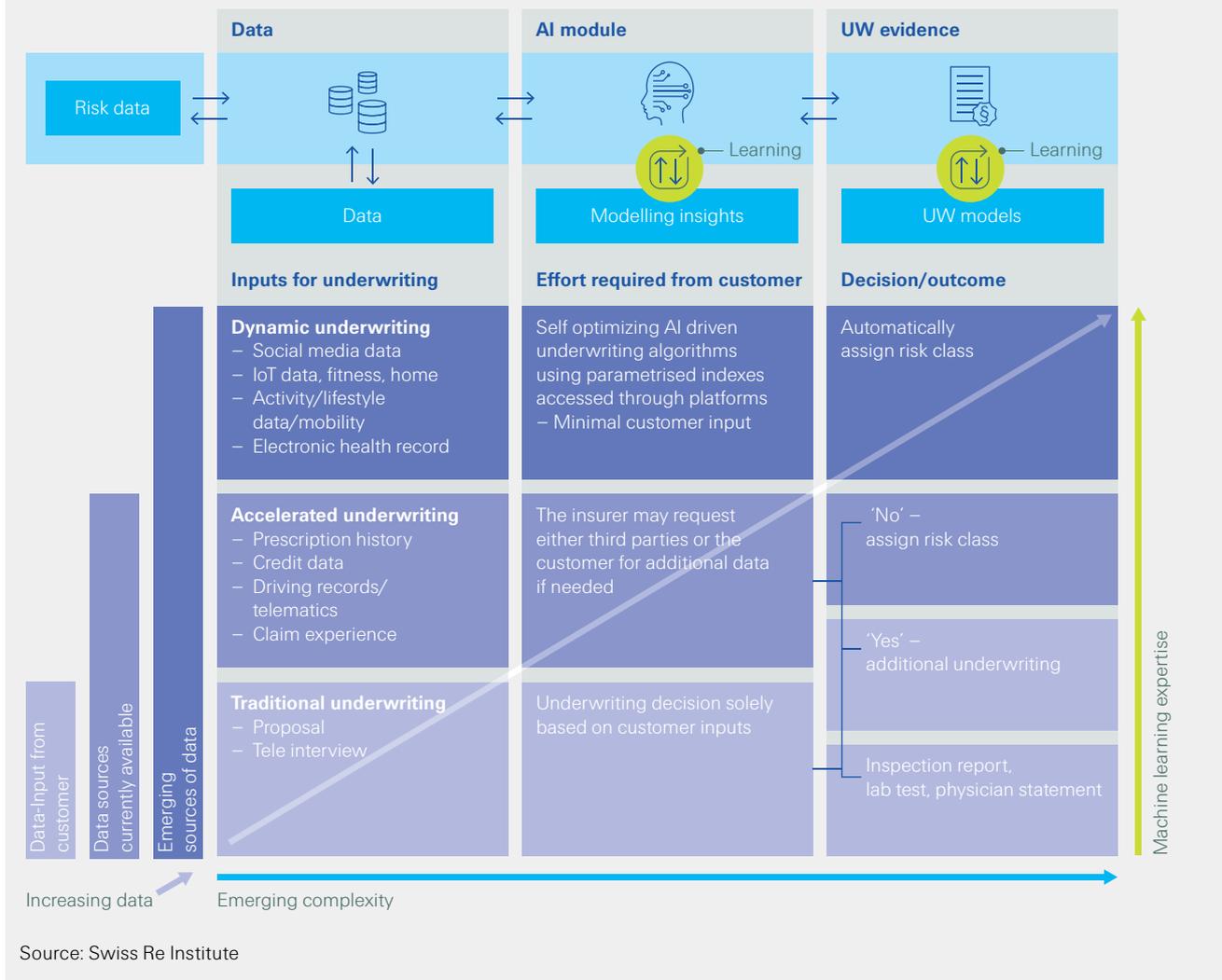
owners policy for SMEs can now flow straight through without any human intervention on Chubb's part.¹¹⁵ In the future, intelligent and automated workflows for triage and routing will be more effective than current business rules.

Digitisation will reduce the cost of insurance and turn risk assessment into an early warning tool.

Risk assessment and underwriting to be more cost effective, engaging

Availability of digitised risk information (eg, biomarkers, activity data, building footprints, occupancy, vessel/vehicle data) will create risk profiles without physical risk inspection or medical underwriting requirements (see Figure 20). These data sets will be especially useful for geographically-scattered assets and individuals. More complex proposals may still require traditional risk assessment, but intelligent workflows can automatically assign tasks to suitable risk engineers/doctors, and natural language processing can enable underwriters to interpret results faster.

Figure 20
Different levels of underwriting maturity



¹¹⁵ Andrew G. Simpson, "InsurTechs Take Note: Chubb's Digital Marketplace Serves 1,000 Agents a Day", *insurancejournal.com*, 13 February 2019.

Dynamic underwriting can provide mutual benefits to insureds and insurers alike.

External data helps digital risk assessment for SME risks, even for niche products.

Digital underwriting for large corporate risks is less advanced.

Standard and accelerated underwriting approaches differ in speed, but both are static. They evaluate the risk at the time of underwriting but do not track future behaviour, either positive or negative. This results in price inefficiencies for both policyholders and insurers. In life and health, greater availability and quality of Electronic Health Records (EHR), and fitness and social media data can allow dynamic underwriting and provide predictive insights on state of health. With this information, insurers can evaluate the change in risk factors (ie, smoker status, BMI, blood glucose, blood pressure, cholesterol) over time, and predict claims probability.

SMEs and mid-corporates have diverse business activities and many exposures, which are sometimes too small to justify complete risk assessment by an insurer. For this reason, insurers leverage third-party data sets to auto-fill proposal forms and offer risk scores. For example, online reviews related to small businesses can be used as a proxy for their operational risk levels. Some insurers use social media to improve customer experience by tracking changes in SME payrolls, office premises and revenue to indicate growth or retrenchment, so that brokers can refine target strategies.¹¹⁶ Others leverage digital footprints to deliver niche products like trade credit insurance to SMEs by tracking live financial data. In cyber, new tools can ingest and analyse data to generate cyber risk scores for SMEs in less than two minutes.¹¹⁷

Large corporate risks require bespoke solutions and critical underwriting information for such risks is not yet sufficiently digitised. As such, the underwriting approach is more case based. Digitalisation of geo-spatial information has assisted large-corporate underwriting to some extent. For example, InsurTechs provide property risk engineering solutions to insurers, especially to assess natural hazards.¹¹⁸ In another case, cargo sensor data can be used to provide enhanced marine coverage.¹¹⁹ Remote risk inspection can be enabled by allowing risk engineers to transmit live feeds to underwriters.¹²⁰ The full value of digitalisation in dynamic pricing will only be realised when live data from industrial control systems and facility monitoring systems is integrated with underwriting systems.

¹¹⁶ "A move from static data to live data in insurance", *digitalfineprint.com*, 31 July 2019.

¹¹⁷ Cyence for Small Business, *guidewire.com*.

¹¹⁸ *Insurtech Impact 25*, Oxbow Partners, 2018.

¹¹⁹ Smart Cargo+Cyber Insurance, Covus Insurance, see *info.corvusinsurance.com/*.

¹²⁰ "Virtual i Lets You See" on *virtualitechnologies.com*

Product development and underwriting

Price and coverage are being automated based on better assessment of risk data.

This is valuable when there is wide variability in costs for similar procedures.

Underwriting fraud is a risk in the digital world with decisions needed in near real time.

Insurers will look for innovative technology to help identify high risk cases.

Adverse selection could increase if insureds withhold new information from their insurers.

Pricing and coverage determination to accelerate, be more risk based

Automation of submissions and risk assessments may trigger faster determination of coverage and better pricing. Automated price and coverage determination are more common for personal (L&H) and retail (P&C) business. Several examples are beginning to emerge. In China, Ping An claims that of the nearly 20 million applications for insurance received in 2018, 96% were auto-underwritten by AI.¹²¹ Continued testing, focused on scalable and replicable use cases will inform insurer strategies in the next few years. Mid-market and commercial insurance segments still require significant manual effort due to underwriting complexity and price sensitivity.

In corporate health insurance, automated pricing and coverage determination is improving. This sector struggles with high costs and wide variability in treatment costs for similar procedures. Using Big Data and a modern tech stack, UnitedHealthcare and Bind, on-demand health insurance start-ups, are designing better health coverage plans for big employers. To lower costs and better match risks to employees, they identify about 45 top-up optional procedures that have the widest range of cost, treatment and effectiveness. Members can opt for these options only if they need it. Customers pay a base monthly premium that can be as much as 40% less than the other options that their employer offers.¹²²

Fraud detection and managing moral hazard will become more critical

In a digital world, underwriting decisions on large volumes of insurance applications need to be made in near real-time. If insurers are not careful to filter out fraudulent applications, they can build up a wrong customer portfolio. Some are successfully using new sources of data to prevent high risk profiles from entering their portfolios. For example, online insurer InShared, an Achmea initiative, has fully automated its risk assessment, and determines risk at the point of purchase using multiple indicators such as the person's conduct, payment risk and claim risk.¹²³

As digital insurance becomes more widespread, insurers will look for new approaches to help identify high-risk cases. About one out of five people admit to lying on insurance claims applications.¹²⁴ To counter this, insurers are experimenting with new digital tools to reduce fraud at the underwriting stage (eg, by utilising facial biometric tools that leverage machine learning and computer vision technology). In another example, using third-party data insurers may be able to determine – without medical evidence – whether a customer is a smoker or not, in order to avoid expensive medical tests in some cases.

With the spread of digital data, insurers are also more susceptible to rising risks of anti-selection (adverse selection) as consumers build more understanding of their own health with different healthy-living apps, genetic tests cheaply available direct to consumers (DTC), and testing devices available on the market. These advances bring equal promise and risks, including over-diagnosis and subsequent unwarranted treatments. The major challenge for insurers is to obtain adequate and risk-relevant information during the underwriting process, since existing regulation was mostly enacted before the widespread adoption of DTC genetic tests.¹²⁵

¹²¹ *Announcement Of Audited Results For The Year Ended December 31, 2018*, Ping An, 2018.

¹²² Susan Morse, "Insurtech entrepreneurs to lead panel at Health 2.0", *healthcarefinancenews.com*, 12 September 2019.

¹²³ *How insurers are in control of risks at underwriting*, *celent.com*, 2016.

¹²⁴ Lying on an insurance application, *www.finder.com*, October 2018.

¹²⁵ *SONAR: New emerging risk insights*, Swiss Re Institute, May 2019

Constant feedback-based processes will provide better insights for new products.

Underwriting implications, for insureds and insurers

Product development and underwriting will increasingly interact and be dependent on customer facing functions. For example, marketing models will integrate data obtained from the initial underwriting experience, customer feedback and other external data to make targeted and pre-approved offers of cover at the right time, based on specific customer needs and behaviours. Offers will focus on increasing existing cover to suit needs but also cross-selling into new products that match new risks, however small, and thereby increase engagement. This can have a direct impact on new product development, with implications for insureds and insurers.

- **Insureds:** Other than for large corporate risks where placement negotiations involve underwriters visiting and explaining technical aspects to clients, underwriting has never been truly customer-facing. We expect modularisation of products and dynamic pricing adjustment will bring higher understanding of underwriting and risk assessment to retail customers. For example, life or SME risk scoring apps will make the opaque and cumbersome underwriting process more consumer-friendly and transparent. Underwriting bundled with proactive risk management through value added or preventive services will change the insurer-customer relationship from risk transfer to risk partnership.
- **Insurers:** Insurers can benefit from dynamic and more accurate risk pricing, but they will need to upgrade their systems to process terrabytes of data coming every day from sensors. Many insurers are still ironing out legacy system challenges.¹²⁶ Also, insurers will need to become more responsive to digital feedback on product development, tests and experiments. The digital world offers immediate and sometimes ruthless feedback. For instance, one on-demand digital insurer saw a massive drop in conversions and discovered it was caused by a small change in the process flow requested by a small segment of customers.¹²⁷

¹²⁶ K. Harris-Ferrante, *2019 CIO Agenda: Insurance Industry Insights* Gartner, 15 October 2018.

¹²⁷ A Khusid, "How we built a customer feedback loop that works", *medium.com*, 15 January 2018.

Claims management

Insurers are using advanced analytics and machine learning to create early warning systems and gather practical insights that prevent accidents, and simplify and speed-up claims processing. Examples include using AI to detect and verify accident hot spots, estimate repair costs, and identify potential fraud. Historically claims processing has been a form filling-in exercise. Digitalisation will help improve customer experience and efficiency of back office processes.

A modular approach is key for end-to-end claim digitalisation.

Digitalisation can improve the claims experience both in terms of trust, lower friction in customer experience, and complexity in back office operations. In a survey, only 57% of adults online in the US expressed confidence that their insurer would treat them fairly in the event of a claim.¹²⁸ A modular approach will enable end-to-end digitalisation and ongoing claims management processes (see Table 5). For example in 2018, USAA launched a 21-member innovation team to digitise components of claims operations and reduce the full claims cycle to days, and even hours in some cases.¹²⁹

Table 5
Claims innovation timeline

Claims journey	Past	Present	Future	Key enablers
FNOL (First Notice of Loss)	Complex forms which require explanation	Customer uses the phone, post, online/mobile apps	Automatically: IoT, satellite, weather stations, etc.	Satellite imagery, weather stations, IoT, etc.
Claims admin	Manually by insurer staff	Data entry by insurer staff	Digitally augmented support in complex situations; AI advice	Connected systems, intelligent algorithms
Data gathering/fraud detection	Rudimentary fraud analytics	Combination of manual and models to identify fraud	Automated using analytics like, big data and AI	Computing power, access to varied data sources
Claims estimation	Manual claims adjudication	Mix of manual inspection or advanced technologies	Automated claim adjudication	Computing power, better algorithms
Settlement	Reimbursement via bank cheques/drafts	Direct to vendor (garage, hospital) and reimbursement	Instant payout, automated validation, options (eg, replacement, second hand)	Linked payment systems, intelligent algorithms

Source: Swiss Re Institute

¹²⁸ Forrester Analytics Consumer Technographics® North American Financial Services Survey, Forrester, Q4 2017 (US).

¹²⁹ Inside USAA's claims innovation team, DIG IN, 15 August 2018.

End-to-end digitalisation of claims management

Loss prevention is an important but undervalued aspect of the insurance value chain.

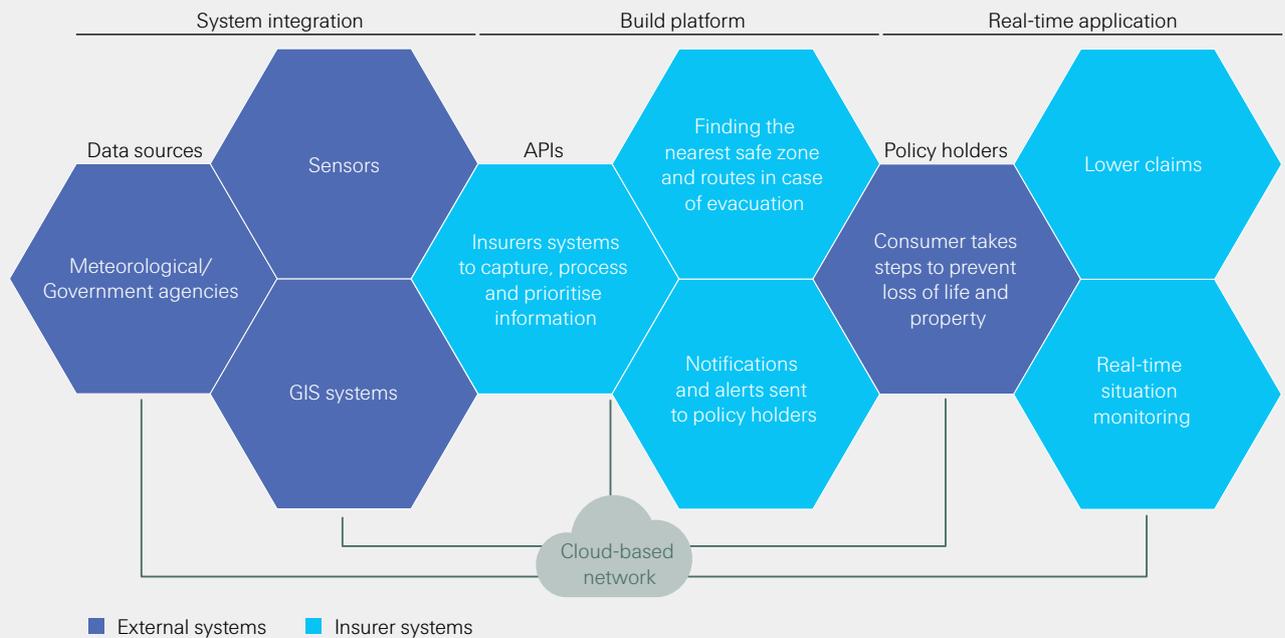
Fast-growing internet and smart phone penetration have made loss prevention action more feasible.

Digital loss prevention

Loss prevention is an important but, arguably, undervalued aspect of the insurance value chain, partly due to lack of research and understanding, and because of its capital-intensive nature. Investing in loss prevention technologies requires significant investment with possibly little to no short-term impact on claims reduction.

Across lines of business, it is becoming more feasible financially and technology-wise to alert policyholders to the potential threat of damage to life and/or property. For instance, on receiving notification from meteorological departments or sensors about a catastrophe, insurers can send push safety warning notifications to customers' smartphones. This will help insureds take preventive measures to mitigate damage. Figure 21 illustrates where an insurer can use external and internal systems to alert insureds to potential threats.

Figure 21
Illustration of a potential digital prevention process for a natural catastrophe event



Source: Swiss Re Institute

New insights are enabling automated-risk management processes via Digital FNOL.

Digital first-loss notification

There has been significant innovation in First Notification of Loss (FNOL) processes given IoT sensors, high-speed internet and a wide range of automated data-capture technologies such as drones and satellite imagery. This data can be shared with a range of audiences. For instance, CSAA Insurance partnered with Owlcam on a Video First Notice of Loss (vFNOL) to send videos to a driver's mobile phone when a car crashes or is broken into. The driver can share it with the police.¹³⁰

¹³⁰ CSAA Insurance Group and Owlcam Partner to Accelerate Insurance Claims Process for Customers by Utilizing Video Technology, CSAA Insurance Group, 5 June 2019.

Claims management

Insurers can initiate contact with policyholders even before a claim is reported.

Insurers now pro actively initiate contact with customers and offer help even before a claim is reported. PZU, the largest insurer in Central and Eastern Europe, has launched a Before-You-Call Service where operational coordinators actively scan digital and analog information for news of loss events from the web, emails, calls from witnesses, TV and radio. If they identify customers who could potentially have been impacted by the loss event, they verify the scope of those customers' insurance, and offer assistance services covered by their policies. A customer can register a claim during this first contact or at a later convenient date.¹³¹

AI applications can accelerate the customer through the next stage of the claims process.

Claims administration

In this phase of the claims journey, a case is analysed based on the information received in the FNOL (eg, checking coverage details, screening for fraudulent claims). With AI assistance, digital assessments can automatically verify coverage details like sum assured, deductibles, co-payments and past claims. The reduction in manual touchpoints can speed up the process significantly, and also lower the costs associated with manual inspections. For example, Farmers Insurance adjudicates claims using only photos and video-estimating technology in 95% of total-loss auto claims. It aims to expand this capability to property as well.¹³²

Advanced analytics can improve fraud detection...

Fraud detection

Insurance fraud costs billions of dollars each year. Traditional fraud-detection statistical models have drawbacks, not least that sampling methods to analyse data can lead to undetected fraud. Also, these methods rely on experience: when a new type of fraud occurs, insurers are vulnerable. With Big Data and AI, new tools can combine thousands of variables from the moment a claim is filed, and identify incoherence between data relating to the claim and the wider context. Many insurers use social media analytics to detect fraudulent individual claims. For example, Allstate is leveraging online information to identify fraud faster (like claimants who say they are too injured to work, yet engage in strenuous activity such as horseback riding).¹³³ Analytics can help uncover large frauds by flagging certain suspicious events like when smaller medical clinics originate large volumes of claims. While individual insurers may lack sufficient data to detect mass fraud, law enforcement agencies co-ordinate among carriers with analytics know-how to uncover patterns (eg, search for comparable bills coming from the same parties).¹³⁴

...and also help automate loss assessment.

Digital loss assessment, claims estimation and settlement

Digitalisation can increase transparency in dealing with customers, with provision of a comprehensive overview of the calculation which could also prevent litigation and recalculation costs. Moreover, automation of claims assessment can help reduce administration costs, making insurance more affordable. During the California wildfires of 2018, USAA used images from drones to settle many home insurance claims on the same day. Previously, it could take weeks or even months for a team to be safely mobilised to inspect and adjudicate the loss to a property damaged by fire.¹³⁵ Other interesting experiments are emerging. For example, Allianz ran a pilot with Amazon to enable claims handlers to make an offer on the day a customer makes a claim by assessing the content loss based on live Amazon prices.¹³⁶

¹³¹ *How PZU has successfully built a culture of innovation*, EFMA, 5 February 2019.

¹³² "How Insurers Are Digitizing Claims with Apps, Photos, Videos, E-Payments and More", *insurancejournal.com*, 11 June 2019.

¹³³ "Allstate Finds Fraud Faster with Innovative Data Company", *prnewswire.com*, 28 November 2017.

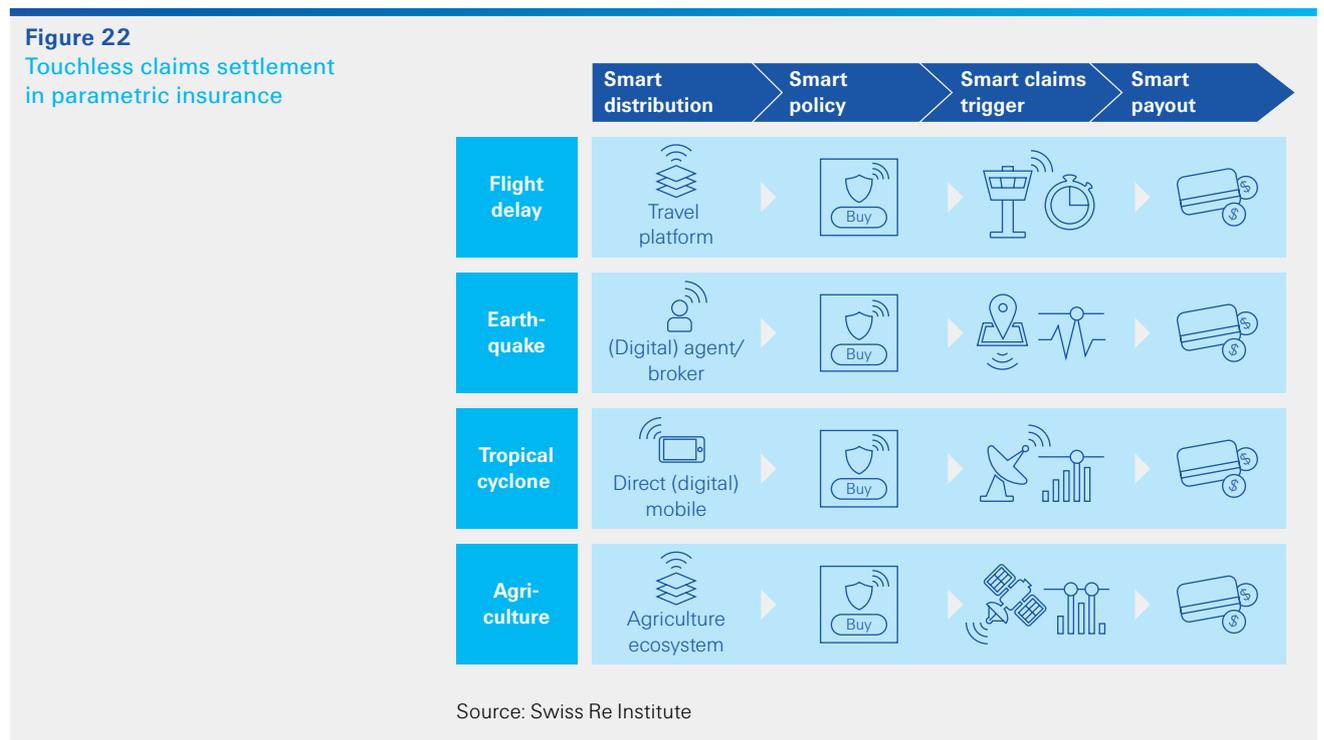
¹³⁴ *sigma* 4/2019 - Advanced analytics: unlocking new frontiers in P&C insurance, Swiss Re Institute, August 2019.

¹³⁵ *Inside USAA's claims innovation team*, DIG IN, 15 August 2019.

¹³⁶ *Allianz Replacement Solution – Allianz France*, EFMA, 2019.

There has been wider adoption of touchless loss assessment and claims settlement in personal and small business insurance...

Figure 22 is a graphical representation of touchless claims settlements at work in parametric insurance policies. Claims for personal lines and small-business insurance can be largely automated, enabling carriers to achieve straight-through processing rates and reduce claims processing times from days to hours or minutes. In motor insurance, use of AI-assisted assessment can significantly reduce the time and cost of loss assessment.¹³⁷ Ping An has employed AI to settle motor claims across the spectrum of activities, including first notice, sharing digital pictures, loss assessment and document handling. Surveys can be completed within 5–10 minutes for 95.5% of daytime accidents and, using facial recognition, payments can be made in seconds.¹³⁸



...and some early experimentation in life lines.

Insurers are experimenting with new claims technology in life insurance too. MetLife piloted an Ethereum blockchain pilot known as Lifechain to help families determine if a deceased is protected by a policy. Once an obituary is placed in the press, the family is automatically informed of this MetLife programme and, if they participate, Lifechain encrypts the deceased’s national ID number and searches for a matching policy. If a match is found, an automatic notification initiates the claims process.¹³⁹

¹³⁷ In case of an accident, the policyholder just needs to take few photos and streaming videos of the vehicle and damaged area and upload it on insurer’s app together with the description of the damage and the accident.

¹³⁸ “China’s Ping An P&C Unveils Credit-Based Smart Auto Insurance Claim Solution”, *insurancejournal.com*, 30 January 2019.

¹³⁹ “How does it make faster life insurance with blockchain?”, *medium.com*, 13 August 2019.

Processes will become flexible and open to innovation

Claims implications, for insureds and insurers

In the future, greater use will be made of characteristics of claims submissions to better inform product pricing and underwriting decisions. Insurers can generate data that leads to better risk assessments for policy underwriting. Using real time claims data, insurers will also be able to better monitor which partners and customer segments offer most growth potential, and adapt marketing and distribution initiatives in real time. To iterate quickly, processes will need to be flexible and open to innovation.

- **Insureds:** The quality of the claims experience has a strong impact on loyalty and renewal behaviour. In a property claims satisfaction study by JD Power, 90% of “highly satisfied” claimants said they would definitely renew their policies. On the other hand, 60% of claimants who were “indifferent” or “displeased” said they would shop for a new carrier within the year.¹⁴⁰ Insurers have built customer experience and digital channels development units to introduce design skills and thinking methodologies into key areas. They have redesigned services and processes by putting themselves in customers’ shoes.¹⁴¹
- **Insurers:** Loss prevention will become a bigger theme in claims management. Insurers will combine claims and behavioural data to action loss prevention measures. As different components of the value chain digitally share information and feedback, this could compress the value chain as digital distribution platforms connect directly with capital providers without depending on traditional capabilities of primary insurers. For example, providers of parametric insurance may dispense with large claims departments and assessors, except in cases of suspected fraud. In another example, a global insurer used an InsurTech program platform to transfer part of a >USD 100 million layer of parametric risk to multiple risk markets.¹⁴²

¹⁴⁰ *Satisfaction with Property Insurance Claims Surges, Even as Number of Catastrophes Reaches 10-Year High*, J.D. Power Finds, J.D. Power, 1 March 2017.

¹⁴¹ *We innovate for our customers*, Generali. op. cit.

¹⁴² “Tremor places world’s first programmatic parametric swap transaction”, *Artemis*, 20 May 2019.

Outlook

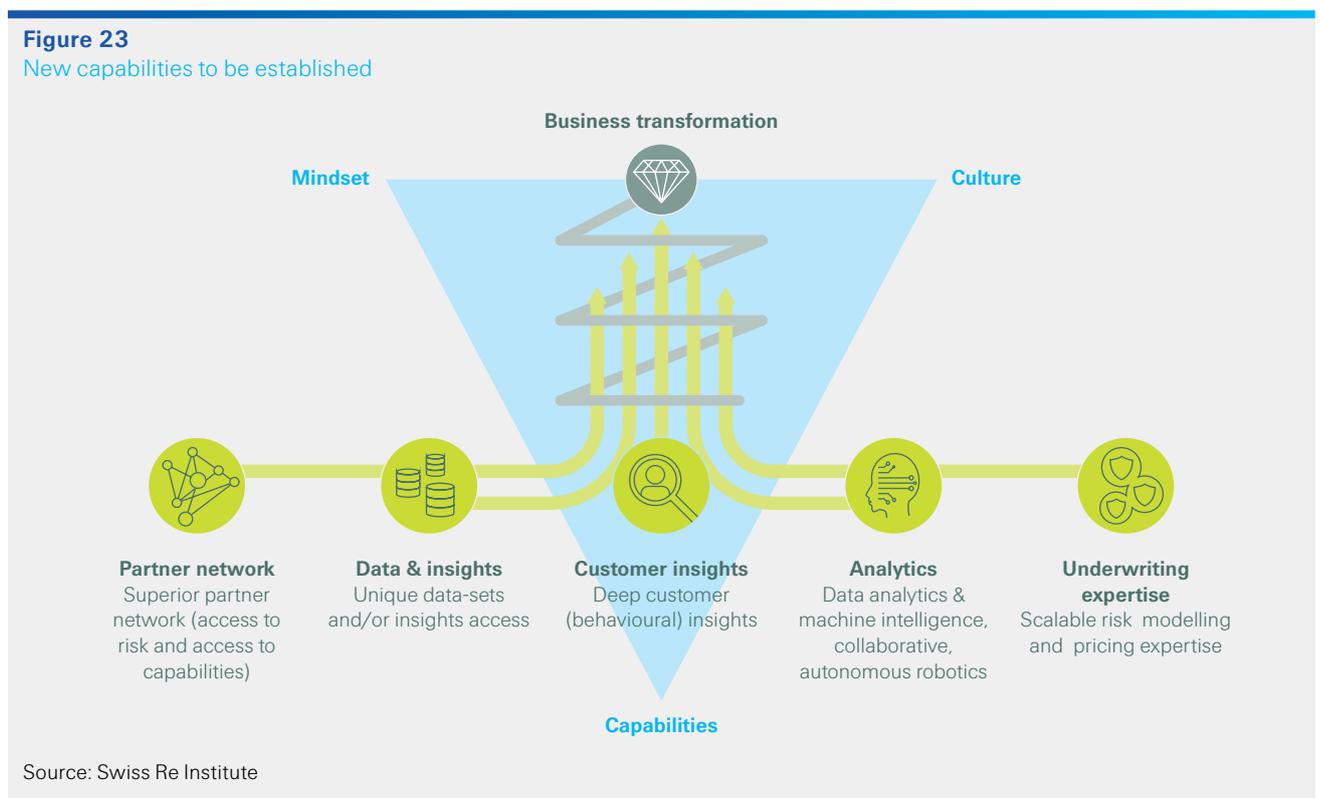
Digitalisation will enable development of new data-driven business models that impact the entire insurance value chain. Access to data and the capability to model risks will be core to success. True leverage will be through collaboration with other assets such as key supplier partners, entry points to ecosystems and the know how to generate customer insights.

Refining existing and developing new competencies

The insurance value chain can benefit from new data and analytics.

In recent years, as premium growth has slowed, insurers have been looking to a variety of approaches to differentiate products and services within the rapidly expanding new economy sectors (see Figure 23).

Figure 23
New capabilities to be established



Insurers will need to build capabilities in the following areas:

- **Building a superior partner network:** Identifying innovative and appropriate ecosystem partners and suppliers, including in the technology space, to offer unique value propositions to customers. Competition for suitable partners is high, and relationships need to be fostered, the focus being on creating mutual value.
- **Accessing unique and large data sets:** Besides existing and accessible data, owning unique data sets for superior risk modelling is becoming an important differentiating factor. The key is to assemble data layers in a way that creates unique insights that cannot be easily copied by competitors.
- **Developing deeper customer insights:** Putting the customer at the centre of the ecosystem and aligning all actions to customer needs. Using behavioural insights to personalise offerings is essential. This holds true even if an insurer does not own a customer relationship directly.

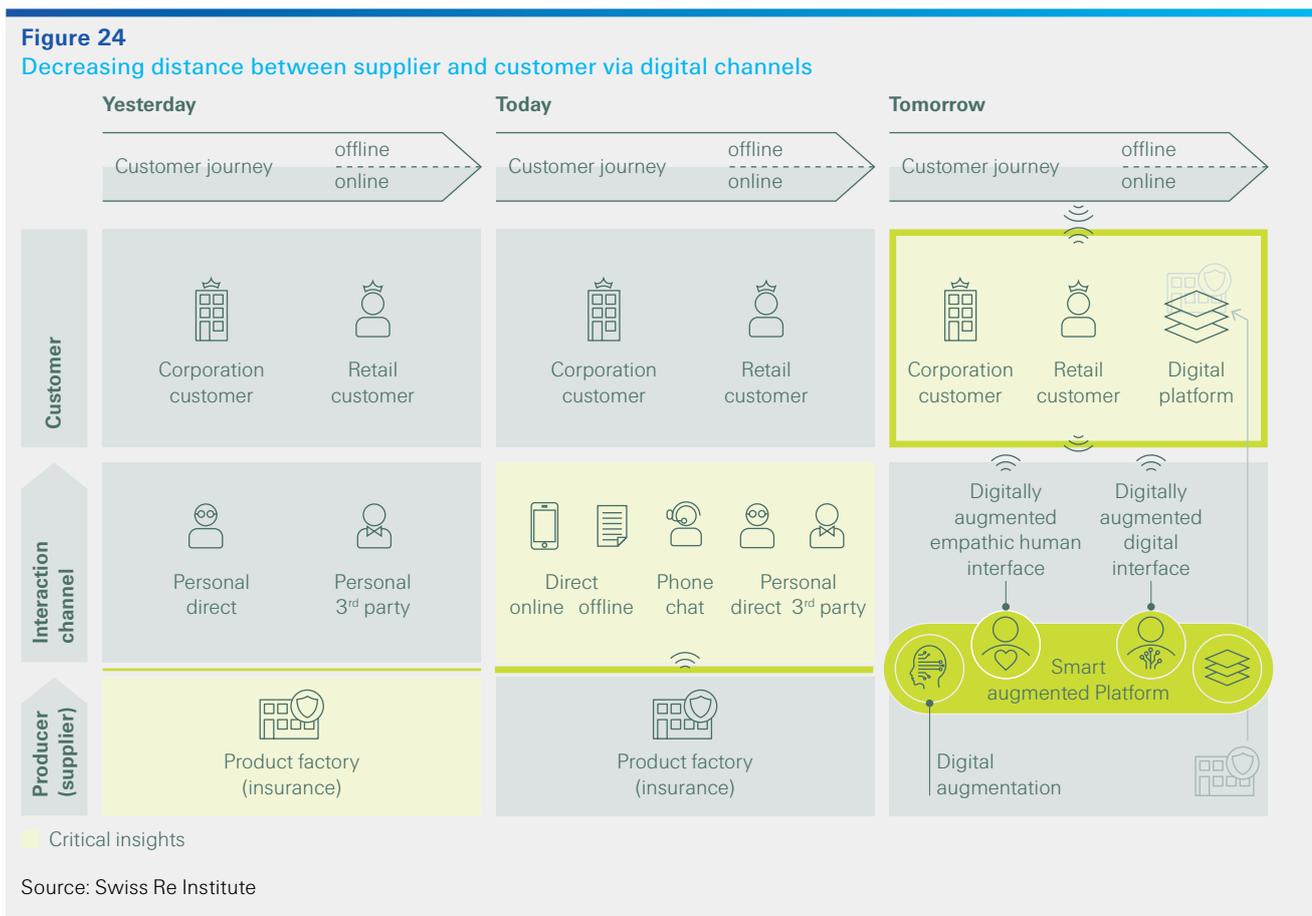
Outlook

- **Analytical expertise:** The more insurers understand data and related context, the more sophisticated risk modelling can become. AI stands to reshape the risk landscape, resulting in better simulations.
- **Scalable underwriting expertise:** Insurers can build superior risk models based on existing and unique data sets, combined with analytical methods and tools that can be scaled across ecosystems and value chains. This will enable insurers to make appropriate adjustments to value chains and respond more dynamically.

Impact on the existing insurance value chain

The focus of customer insights within the value chain is changing.

There will be a close interplay between product design, claims management and distribution touchpoints to generate customer insights. The changing location of the yellow box across the three panels in Figure 24 shows how the sources of customer insights are changing. In the past, the product factory (the insurer) was disconnected from the direct customer. There was instead close collaboration between the insurer and the physical sales channel, the intermediary. Intermediaries were in direct contact with the customer and, with their customer insights, could go back to the insurer to ask for products to be designed in a particular way.



The product factory accesses insights from multiple channels.

Today, the landscape has shifted towards a multi- and omni-channel approach, and the product factory is getting closer to the end customer. This is because insurers have greater influence over product design. Products must be customised to be sold via different channels: simpler products are sold direct, while products with greater

complexity are largely sold through personal channels (eg, life insurance combined with investment management). The greater the complexity of products, the lower the willingness on the part of consumers to buy online. At the same time, the more insurers move to direct channels, the simpler their products need to become. Product portfolios will therefore begin to display a wide mix, as insurers create products that can be modularised and sliced and diced for different channels.

In the future, product factories will directly access all the ingredients for policy design...

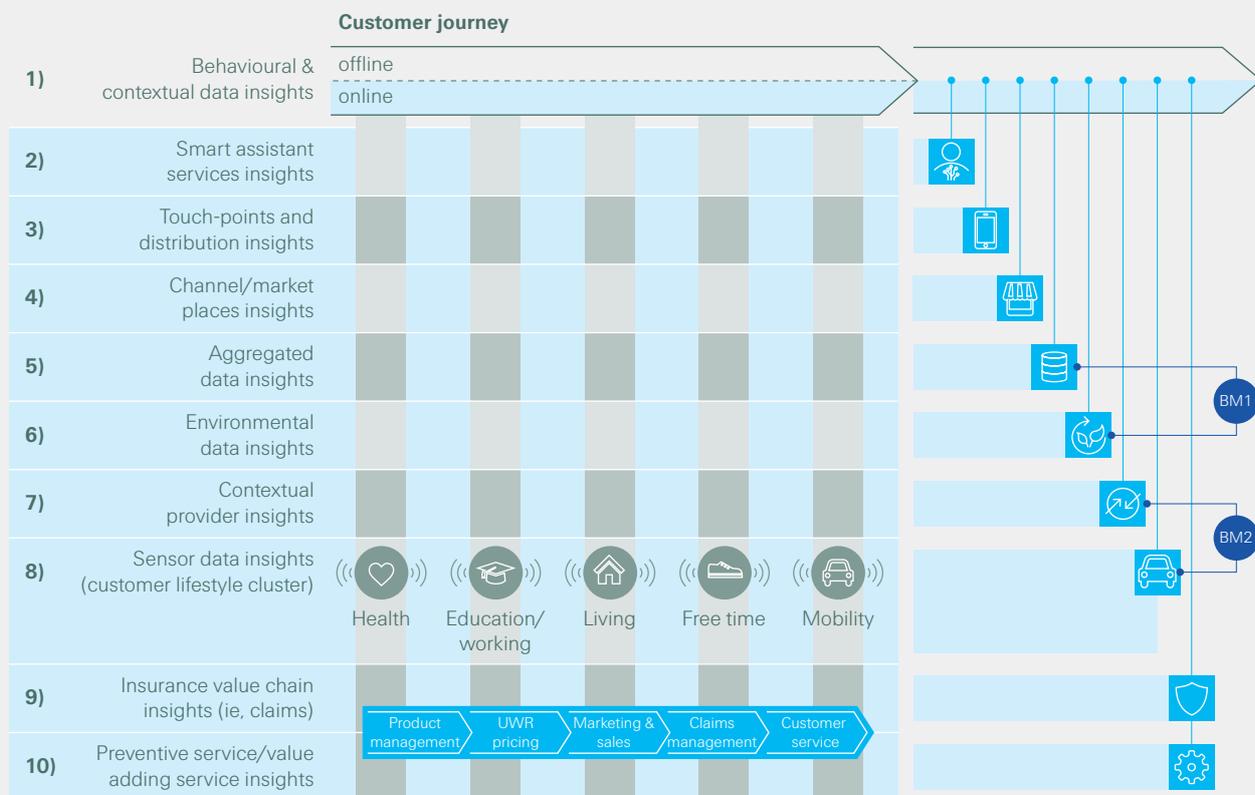
In the future, product factories will be able to directly access all the ingredients of product design and will be much closer to the risk. These insights will be customised based on digital touchpoints, and inputs about exposure will be generated in real time. We think this will result in new business models being created purely around data access.

New business models around data

...including access to secure data.

These business models will require secure access to data that can be combined in different ways, including insights from connected objects, platform providers, behavioural insights from the consumer and environmental data. Categories 1 to 10 in Figure 25 show examples of data that will be available to an insurer. Some of these are newer data (eg, behavioural data based on customer context), while others are classical traditional data (eg, from claims and preventive services).

Figure 25
Illustration of a potential digital proposition and digital business models along the customer journey



Note: BM stands for Business Model
Source: Swiss Re Institute

Outlook

Data from multiple providers via open Application Programming Interfaces (API) may be combined to enable different business models.

Insurers may need to invest in separate new data businesses.

In the future, insurers will operate in an environment where they will need continuous access to different data sources. This is a strategic issue, taking insurers beyond their existing value chain. No single firm or market place currently provides all these sources of data. While many data vendors focus on extraction and distribution of data, few concentrate on data refinement.¹⁴³ We expect that this will give rise to specialised aggregators focused on integration and refinement. The more integrated and refined the data, the wider the service offering to a customer. This has many implications for the insurance industry, in particular the need for modular products, personalisation and better distribution.

Insurers will need to decide if they are mere suppliers of coverage, or whether they are willing to collaborate or own other business models to gain control over the key areas that impact their business. Different stakeholders will seek control over data driven businesses. For example, if all telematics data were put onto one platform anonymously, who would be most likely to own that market place? Will brokers stake a claim? Players that cannot influence such data aggregators will find the going difficult. If data brokers become omnipresent, the insurers dependent on them could, over time, be relegated to the status of suppliers.

¹⁴³ *How data will shape the new urban future*, Swiss Re Institute, 15 January 2019.

Conclusion

Consumers are more demanding than ever before. Using digital technology, insurers can respond.

The insurance landscape is changing as consumers seek more engaging and personalised purchase experiences, relevant to their lifestyle. Empowered with digitally-facilitated information and greater choice, consumers have become more informed and self-directed than ever before. On the supply side, tools like AI enable more effective customer interaction, allowing insurers to better understand consumer preferences to develop customised and flexible product offering, with dynamic pricing and servicing through (personal) virtual assistance, 24/7. New sources of data also offer opportunities for more granular client segmentation

Boundaries are increasingly blurred across sectors.

The impact of digitalisation extends beyond the insurance value chain itself to the whole business ecosystem in which insurers operate. Industry boundaries are becoming blurred as firms in several sectors build digital platforms that can connect to different market places, supply chain hubs and financial networks. Non-insurer participants in business ecosystems like manufacturers and telecom companies too are gaining access to customer data, and digital analytics capabilities can enhance their client product offering.

Lasting change will require more than incremental thinking.

Utilised more fully and intelligently, new data and technology can reinforce and secure the relevance of the insurance industry to future customers. The same is true of leveraging cross industry ecosystems. This *sigma* depicts the end version of what a digital insurer will look like. While high barriers to entry offer protection against competitive threat to some extent, incumbents must continue to embrace both incremental and sometimes more radical innovation to optimise the potential of consumers touchpoints from both the insured and the insurer perspective.

Innovation will help transform the effectiveness and raison d' être of the insurance industry.

Full-scale disruption of existing insurers seems unlikely, at least in the near term. Incumbents have time to adjust to the changing risk environment, shifts in customer attitudes and accelerating advances in technology, but there is no room for complacency. Successful insurers will be those that can leverage insights from their investments, partnerships and collaborations to upgrade their business practices. Forward thinking and innovative insurers could build on the new infrastructure being created today to offer compelling risk protection solutions aligned with evolving regulation and, in doing so, genuinely transform industry effectiveness.

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